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Labour against Ecology. A Theoretical Approach to Work as a Contributor to Environmental Crises and the Case for the Abolition of Labour

Victor Elias Okpe
International Environmental Studies

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Victor.e.okpe@gmail.com

Noragric
Department of International Environment and Development Studies
The Faculty of Landscape and Society
P.O. Box 5003
N-1432 Ås
Norway
Tel.: +47 67 23 00 00
Internet: https://www.nmbu.no/fakultet/landsam/institutt/noragric

Declaration

I, Victor Elias Okpe, declare that this thesis is a result of my research investigations and findings. Sources of information other than my own have been acknowledged and a reference list has been appended. This work has not been previously submitted to any other university for award of any type of academic degree.

Signature……..

Date……01/08/2021……

Abstract

The present ecological crises call for fundamental transformations of capitalist society. However, these calls seem to not include the transformation of labour as a social structure, only its technical aspects. To rectify this lack, this thesis contributes to developing a critique of labour and its mechanisms as a social relation from an ecological standpoint. This thesis investigates this question along three lines: first, the question of which aspects of labour drive ecological impact, and what drives aspects. Second, it considers the limits of policy approaches that do not change qualitatively labour itself. Third, it discusses the political implications from the preceding analysis. The approach is theoretical and uses existing literature to develop its arguments.

To build an understanding of labour and its impacts, I primarily use the one extant publication on this topic, that of Maja Hoffmann and Roland Paulsen, and give a revised version of their four factors of labour's ecological impact – the time, scale, income and work-induced infrastructure and mobility factors. To better explain why these factors happen and propagate, I introduce Moishe Postone's Marxist understanding of labour and value to show that as labour constitutes value, the dominant form of wealth, labour is driven by the a-ecological logic of value, and results in and drives the aforementioned factors.

The discussion of two current policy approaches, work time reduction and universal basic income, finds that as long as they only change labour's quantities, such as the length of the working day, as opposed to its qualities, they can only temporarily lessen the impacts of labour. These approaches do not remove the dynamics of value and the aforementioned factors from labour.

Regarding political implications, the overall conclusion is that the abolition of labour is a necessary condition for sustainability, and that human productive activities should be organised in a different manner. The why and how production must change – the metabolism of humans and nature must be actively regulated, and production must happen for specific goals and not value. Production should conform to ecological rhythms, not uniform and abstract time norms. Productivity improvements should not be to the detriment of ecological integrity. Productive activity should not be subject to the wages system or something like it, wherein participation in production is necessary to gain the means of subsistence. These qualitative social changes must happen with and not instead of changes in technical aspects and the quantitative level of production.

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Part I

1 Introduction

Humanity is in a time of ecological crises. Climate change marches onward, while the integrity of the biosphere deteriorates rapidly. The ultimate cause of these crises is the currently dominant economic system – capitalism, and its incessant need for economic growth (Angus, 2016; Hickel & Kallis, 2019). While there may not be agreement on the precise cause of the current predicament, even the top-level panels on biodiversity, IPBES, and climate change, IPCC,[1] gathering the research consensus on their respective topics, conclude that transformative societal change is necessary (IPBES, 2019; IPCC, 2018). More overtly radical political approaches also argue that transforming society is necessary, such as those in the degrowth movement (see Demaria et al., 2013) or ecosocialists and Eco-Marxists (e.g. Burkett, 1999/2014; Angus, 2016).

Capitalism, then, is an obstacle to achieving ecologically sustainable societies. Above all else, capitalism is a system of production, giving particular arrangements for how production happens, why some things are produced and not others. If this system poses a problem, one should reasonably assume that the parts that make it up also constitute problems for sustainability, or at least they should be investigated to determine whether that is the case.

Labour is one of these components of capitalism – that is, labour as a social category and structure specific to capitalism. Environmental crises and labour are regularly discussed together, and how to ensure "green" jobs for all is generally the chief concern, both among politicians and in labour movements. That is, the question is how to achieve both full employment and ecological sustainability, as many jobs, for example those in the fossil fuel industry – would have to cease to exist (see Barca, 2019).

In other words, discourse centres around how to ensure there is enough labour, jobs, to go around. That labour itself does not pose an ecological problem is taken as given. To the extent that any problem is acknowledged, it is either tied to the specific jobs that exist currently, which could simply be replaced with other jobs, or the solution offered is to reduce the standard length of work time. This latter type of policy has different configurations, but typically it will share what work there is around to more people, give people more leisure time in general as well as reduce greenhouse gas

[1] The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services and The Intergovernmental Panel on Climate Change, respectively.

emissions (Frey, 2019; Bernmar, 2017; Kallis et al., 2013). Labour as a social structure otherwise remains unchanged.

This situation, where labour itself is not really delved into from an ecological perspective, stands in stark contrast to how labour has been approached as a purely social issue. There is a long line of literature discussing labour itself as a problem and a root of problems, ranging at least from the 19th century (Marx, 1867/1990; Lafargue, 1883), to the present day – even a cursory look at the last couple of years provides several books that directly critique work itself (Jaffe, 2021; Horgan, 2021; Pfannenbecker & Smith, 2020). These literatures critique not only the quantity of work, the long hours and short weekends, but also labour itself, as a social structure and concept (Marx, 1867/1990; Weeks, 2011).

In my opinion, the lack of similar types of investigations from an ecological standpoint leaves a large blind spot in the efforts toward building a sustainable future. With only one paper – by Maja Hoffmann and Roland Paulsen (2020) – as the exception,[2] there seems to be no studies considering whether the social structure of labour itself is an ecological problem. That is, studies critiquing not only how much labour is done, but rather what dynamics it generates as a specific type of human activity.

If labour itself is an ecological problem, then the currently dominant approaches to resolving the dilemma of work and the environment are fundamentally insufficient. If labour has dynamics, *qualities*, that generate ecological destruction, then current politics that only change labour's *quantitative* aspects will not resolve the underlying problems. I argue that this is the case – labour, a social structure constituted in capitalism, has certain mechanisms that makes it drive ecological degradation. The purpose of this thesis is to contribute to investigating this claim and the normative and political implications it carries.

1.1 Research Questions

In this thesis I will argue that *labour, a historically specific form of organising human productive activity, is in itself an ecological problem, and that resolving this problem requires steps beyond changing the quantitative size of labour – rather, it requires,* qualitatively, *labour's complete abolition and replacement with a different social structure for productive activity.* I make this argument through answering the following three research questions (RQs):

[2] The paper is based on Hoffmann's (2017) master thesis.

RQ1 What are the ecological problems of labour, and why do they happen?

Answering this question requires both establishing a concept of human-nature relations (established in part I) and a definition of labour. Through this, a relation between labour and ecology will be established, and the problems of this relation discussed. This discussion will also consider *why* these problems appear and persist, considering labour's mechanisms of operation within capitalism.

Concluding on RQ1 gives a basis for providing a critique of political approaches that want to solve the problems of labour and ecology only through changes in quantitative manners, without changing labour in terms of its *qualities*:

RQ2 Why are quantitative approaches to solving ecological problems of labour insufficient?

The argument will not be one of complete rejection of these types of policies, but of the insufficiency of a purely quantitative approach to labour and ecology.

Finally, with the ecological problems of labour of labour identified in RQ1, and the limitations of quantitative approaches shown in RQ2, RQ3 discusses what politics that can be drawn from the preceding analysis:

RQ3 What are the normative and political implications of the ecological problems of labour?

This RQ concerns both the abolition of labour itself, as well as the political directions implied by the specific problematic aspects and dynamics of labour, as identified in RQ1.

1.2 Thesis structure

Part I of this thesis begins with this introduction as chapter 1, while chapter 2 discusses methodological aspects. Chapter 3 establishes the views on the humanity-nature distinction and relationship, the conceptualisation of ecological crises as well as on capitalism and economic growth as ecological problems. These views form the background premises for the subsequent chapters of this thesis.

Part II starts with discussing existing scholarship on labour, beginning with Hoffmann and Paulsen's (2020) study of the ecological harmful factors of labour in chapter 4, followed in chapter 5 by a Marxist approach to labour and value, through the lens of Postone's (1993) reconstruction of Marx. Subsequently, I discuss the borders of labour and non-labour activity in chapter 6, and the work ethic in chapter 7. Chapter 8 brings these discussions together. I provide a definition of labour and discuss its relation to the metabolism of humans and nature as well as the relevance of value to labour's

destructive tendencies. Subsequently, I discuss and revise Hoffmann and Paulsen's factors of labour's ecological destruction, as well as their relation to value, before summarising the chapter. It is in this part, and especially in chapter 8, that RQ 1 is answered.

Part III begins with discussing normative premises for the subsequent political discussions in chapter 9. After that, I will consider two approaches that I consider insufficient to changing labour *qualitatively* – work time reduction and universal basic income, in chapters 10 and 11, respectively. Those two chapters answer RQ2. Subsequently, I move to discuss the political problems that are posed by labour in chapter 12. RQ 3 is answered by chapters 12 and 13. Chapter 13 discusses the abolition of labour as the necessary way out of labour's ecological problems in chapter, as well as aspects of what a post-labour situation would need to entail in chapter. After that, I briefly discuss aspects of political change, including what actors that could have an interest in enacting such fundamental change. Finally, I provide an overall conclusion to the thesis with chapter 14.

As many terms are introduced and put to use throughout the thesis, I have an appendix with a glossary of a selection the terms.

2 Methodology

The arguments made in this thesis are of a theoretical nature. I am not discussing the ecological impacts of labour in terms of *quantity*, but in in terms of *quality*. In this thesis, labour is considered as a historically specific *social structure* with certain qualities that drive ecological impacts of human productive activity. The central premise is that beyond the contingent quantitative aspects, there are inherent qualitative ones that drives labour to give quantitative ecological impacts.

I situate this investigation within critical realism. Within this tradition, (social) reality is stratified into the *real*, the *actual*, and the *empirical*. The *empirical* is the level of appearance, the social events that can be observed. The *actual* is the level of all active observable and non-observable (social) mechanisms, whereas the *real* is the level of mechanisms, tendencies themselves, whether they are activated or not in a single event (Benton & Craib, 2010; Gorski, 2013; Vatn, 2015). As such, the existence of social structures, or mechanisms, is not reliant on our knowledge of them, including that our everyday practices can produce and reproduce social structures without at all appearing to us to do so. Moreover, social structures attain and have emergent properties beyond what is intended with any instance of practice within them (Joseph, 1998).

When I am investigating labour and ecology in this thesis, I am working at the levels of the actual and the real – I want to discern the *real* aspects of labour that give labour's *actual* ecological impacts, while not trying to empirically observe labour as the cause of any specific instance of environmental damage. In other words, my interest lies is the essential aspects of labour as a social structure, not the specific appearances.[3] While the latter and former are mutually reliant, they are not the same thing – the underlying structure is not the same as the particular instance (Moses, 2020). Social reality can be said to have *generative mechanisms*, which may or may not be exercised in the specific instance – they are tendencies, meaning also that mechanisms may have different powers in different situations (Joseph, 1998). As such, while labour may have generative mechanisms as general tendencies, it may not be the case that these mechanisms are apparent in every instance of labour as observable activity.

This thesis is a theoretical study, investigating labour through engaging with existing literature. The analyses do not then take the form of empirical research and results, but is done through reasoned, critical, evaluation of previous relevant literature on labour. These literatures therefore both form

[3] In this context, *essence* should not be understood as being of a realm of unchanging objects, completely separated from actual reality and *appearance*. Both are historically and socially contingent – the distinction here is rather about discerning between concrete social activity and social structures (see Joseph, 1998).

the bases for understanding labour, ecological crises and human-nature relations, while at the same time being objects of critique.

What, then, do I mean by a reasoned approach? The problems of labour that I am investigating are really things underlying and structuring concrete social practices, as well as being produced and shaped by those concrete practices (Joseph, 1998). As such, any developments made and conclusions drawn must make sense *of* the world and make sense *with* the world. The latter means that the logic of whatever understanding I end up with must be compatible with perceivable socio-ecological reality. By the former, I mean both that the conclusions drawn must give a further (or different type of) understanding of the world than mere observation would do and what extant theories do; additionally, my position is that the conclusions *should* give a (more) satisfactory understanding or explanation of the current state of affairs.

This way of reasoning can be understood as a form of *abduction* – which can be described as "inference to best explanation" (Douven, 2017). Instead of sticking only to what can be inferred as necessary from the premises (deduction) or from statistics only (induction), abduction also appeals to explanatory value as a criterion. That is, a selected conclusion can be seen as valid if it makes (logical) sense *and* gives a satisfactory explanation of what is being analysed (Douven, 2017). In my case, this means producing an understanding of the relation between ecological crises and labour that is reasonable – that it makes logical sense and can be *and is* thoroughly reasoned for. Moreover, the produced understanding should be explanatory (explains the state of affairs), more so than the material (that is, the literature used) it builds upon.

Up until now I have only discussed understanding and critique, the focus of RQs 1 and 2. However, this thesis is also concerned with normative, political questions – especially in RQ3. Normative statements, value judgements, are not the same as analysis. At the same time, critical realism posits a connection between knowledge and emancipation, at least insofar as revealing the truth of social structures reveals oppression (Benton & Craib, 2010; Gorski, 2013), and encourages normative critique (Vatn, 2015; Hoffmann, 2017). This should not be understood as research being the only possible source of normative values and value judgements (Gorski, 2013), but since social structures are ultimately human, they can also be changed if their workings are known (Joseph, 1998).

My discussion of normative aspects in RQ3 – as undertaken in part III of the thesis – will be based both on the critique of labour developed in part II, as well as certain normative premises. The developed knowledge and the declared value judgements will be combined to give a reasoned discussion of what should happen with labour given those premises.

However, the normative discussion of what must be done is limited. It will be constrained to discuss what mechanisms must be abolished and why. The discussion of possible new forms of organising production is chiefly limited to how they necessarily must be different from the old ones, so as to avoid the same problems reappearing. At the same time, I discuss what *direction* a new politics should take, without giving detailed proposals of new institutional arrangements. That is, the political discussion, too, concerns the level of the real and actual, and not the empirical.

Since the analysis that precedes it works at the level of underlying mechanisms, the subsequent normative discussion is also limited by the scope of that analysis. A discussion of more concrete policies would require an additional approach that could bring in the empirical level of concrete practices as they are currently done – it would require an empirical overview of what happens and would necessitate the ability to say what part of a given practice is due to the mechanisms discussed as opposed to other societal mechanisms. Such an effort is beyond scope of this thesis, as well as its practical limits.

The criteria for selection of literature to study and evaluate is also an important methodological issue in a thesis like this. Two aspects seem important. First, there is the use of empirical information; second, the selection of theoretical approaches to engage with. Regarding the first, empirical sources serve two purposes in my analysis. One is, together with accompanying theory, to establish the background for the entire investigation – that is, establishing what understanding of society and human-nature relations that I take as given premises. This is primarily done in chapter 3. The other purpose of empirical research is to make sure that theory fits with reality, meaning that theory is applied to empirical statements, which I especially do in the chapters in part III. One use forms the background for theory, the other is itself an object of theory. In both cases, I have not attempted full literature reviews, but tried to reach a point of saturation, where further reading has not provided much new relevant material.

The second aspect of literature selection concerns the theoretical approaches to labour. Here, the situation is more complicated. As discussed, Hofmann and Paulsen (2020) seem to be the only ones providing a specifically ecological critique of labour, which is something they themselves state, and I have not found anything indicating that this is not true. This implies that their developments constitute a central part of the material for this thesis. At the same time, there is a wealth of *social* critiques of labour. I will not give a comprehensive review of these traditions but have selected those that have appeared to be most relevant to my purposes. What figures most heavily outside Hoffmann and Paulsen is Postone's (1993) Marxist based work – giving his reconstruction of Marx's critical theory, focusing specifically on labour. Marxism has proved useful, as it treats labour as a

social structure to be investigated, and Postone has been selected specifically, because his work seems to have the most thorough investigation of the role of labour among the Marxists. Other publications in Marxist traditions discuss labour, but seem to not really consider labour *in depth*, instead focusing more on issues of distribution and property.

Beyond this, I have selected critiques of work that consider certain other aspects of labour. Both Weeks (2011) and Frayne (2015) discuss labour less in terms of its internal workings as a social structure, but rather its social role in a broader sense – its impacts on and structuring of people's quality of life and wellbeing, impacts on other spheres of activity such as household activity, as well as the work ethic that gives a socially overt compulsion to have a job. The research efforts of Munro (2019) and of Barca (2019, 2020) I have used to create links between labour and other human activity, which also has entailed considerations on what is specific to labour as opposed to other doings of humans. Together, I believe these selections, while non-comprehensive, have enabled a detailed investigation into labour that furthers the ecological critique of it.

I will also note, as contrast, some literature that has been excluded from in-depth treatment here. Most significant in terms of effort on my part is Arendt's *the human condition* (1958/2018), wherein she discusses the *vita activa* – the active human life and different types of human activity. While an extensive part on this work was planned to be included, it was scrapped, as Arendt's work did not, in my final view, add anything new to the analysis that was not already covered by the selected literature. The aim was to utilize her framework to show that different types of human activity were different and could be categorised differently than simply as labour. However, this ended up only generating a need to make another set of terminology and framework compatible with the others used, while providing little of the way in increased understanding of the ecological problems of work, even with the literature that reads Arendt in an ecological context.[4]

Others have been excluded for from the outset not having much relevance. While I, in my critique, are interested in aspects of labour itself, many critiques eschew such discussions and focus more on the effects on the bodies and psyches of workers, wider social consequences and so on, often also with alternative ethical frameworks, praising leisure instead, for example (see e.g. Lafargue, 1883; Graeber, 2018; Jaffe, 2021). These are not irrelevant aspects, but I believe them to be adequately covered by those authors selected e.g. Weeks (2011), Frayne (2015) and Barca (2020). Others again purport to be against labour, but the critique seems to end up in not being interested in changing labour per se, but rather changing its quantity or other aspects that did not really entail a qualitative

[4] See for example Whiteside, 1994). Especially the discussions of Hoffman and Paulsen (2020) and Postone (1993) made the use of Arendt superfluous.

change of labour itself (e.g. Lafargue, 1883; Gorz, 1980/1997). I will again stress that there may be works I have missed. As Hoffmann and Paulsen (2020) note, the critique of work is growing, and so is thus the rate of publication of critical literature.

The process of writing this thesis has presented some challenges. Selecting literature been a challenge, also beyond the mis-selection of Arendt, and it has been necessary to exclude avenues that could have been interesting to pursue. For example, I believe a fuller engagement with some Marxist approaches not included in this thesis (e.g. Moore (2015) or Burkett (1999/2014)) could have been fruitful. Additionally, a more in-depth discussion of non-labour forms of production both past and present (such as indigenous societies) may have provided interesting and illuminating contrasts both for understanding labour but also regarding what could replace it. I discovered Hoffmann (2017) and Hoffmann and Paulsen (2020) midway through work on this thesis, which overturned some of my original plans and thinking. At the same time, their work has been indispensable as it provides a framework for understanding labour's ecological problems.

Some theoretical developments have also posed particular challenges. Making value analysis and Hoffmann and Paulsen's framework compatible with each other has required several reworkings of my understanding of both them and of Marxist value theory, but has been necessary to make central arguments regarding both RQ1 and RQ3. The most unexpected development, however, was the need I found to dig into what "labour" meant, and to provide my own definition of it. As can be seen from chapter 8.1, this is not because I deviate that much from others' definitions (or simply their use of the term, when they did not really define it). However, because different literatures used somewhat different understandings, and the more I entwined these literatures with each other to understand the role of labour as an ecologically destructive force, the more it was necessary to be exact in what labour meant when I wrote about it. Landing a definition that was compatible with my purposes and coherent (and having to do so at all) took more effort than I had expected.

3 Ecology and Capitalism

In this chapter, I will establish the basic relations between humans and nature and present an understanding of the current ecological crises. In addition, I will give a brief description of capitalism and its growth problem, being the overarching societal cause of ecological crises. This way I intend to establish a background for the ensuing discussion of labour and ecology, and to clarify the understandings it is based on. Chapter 3.1 establishes the basic relations of humans and nature, being both distinct and interrelated. Chapter 3.2. provides a basic understanding of the current ecological crises, as well as their interconnections. Chapter 3.3 briefly introduces capitalism and its dependency on economic growth as the overarching societal driver of the ecological crises and as the societal context for the following discussion.

3.1 Humans and Nature

First of all, there must be an ability to distinguish humanity and nature. In one sense, they are not distinct – us humans and our societies are just as much a part of the planet's biosphere as trees or frogs are. A distinction between the cultural, or human, and the natural is as such a complete artifice. That is, humans do live *within* nature and are part of it, and so are the things humans build and make. Hence, nature's destruction ultimately entails human destruction. However, this does not get us very far. After all, what is of interest is our effect on the *rest of* nature, and how that affects us in turn.

I will follow Malm (2018), in saying that while human societies and nature are made of the same substance, they are functionally different, a "property dualism" (Malm, 2018, p. 55). Human societies have emergent properties distinct from those found in nature, and irreducible to their material components. When humans encounter nature, we then encounter it as something separate from us, something distinct that we interact with, but also something that is prior to us and is a necessary condition for our existence (Malm, 2018; Foster, 2000; Marx, 1867/1990).

That is, nature pre-exists societies, and is an autonomous entity. When humans change something in nature, we affect something that would continue existing, including changing in its own ways, without societal intervention or existence. Certain states in nature are a product of human intervention and would not remain if it were not for continued human intervention. As humans depend on nature, our impacts on nature in one way or another impacts us; the more the human societies try to form nature, the more nature affects them (Malm, 2018).

While this type of distinction ultimately may be problematic from an ontological perspective (that is, in a more refined ontology), it is methodologically and pragmatically useful for my purposes. To understand the crises we are in, and how they happen, it is pertinent to have a separation between the agent – specific forms of human society – and the object of those actions – nature. At the same time, this distinction also includes the concept that while human society is separate as agent, it still exists within its object. Thus, the object again affects the subject, as the subject is subsumed in it.

The base relation between humans and nature – the (two-way) exchange of matter and energy between them necessary to propagate life and a society – can be termed as a social metabolism or a metabolism of humans and nature (Foster, 2000; Fischer-Kowalski & Haberl, 2015; Marx, 1867/1990). This concept has both been used to denote the empirical analysis of material flows (e.g. Fischer-Kowalski & Haberl, 2015) and to act as a concept in social theory (e.g. Foster, 2000; Malm, 2018). I use the concept in the latter sense. Furthermore, when I speak of metabolic relations, I do not mean to imply that there is a *single* way of regulation human-nature relations valid for all societies and all of history.[5] Ostensibly, there are many ways to organise societies and their relations to nature. There must, however, always be *some kind* of regulation, and so every society has *a* social metabolism.

Foster (2000) develops Marx's (1867/1990) conception of social metabolism into metabolic rift theory.[6] The idea is that a rift in the social metabolism opens up when a form of social practice becomes disruptive of the earth's metabolism. That is, the problem is not change as such, but a change in social metabolic practice that disrupts the normal (Holocene-like) operation of nature's processes (Malm, 2018).[7]

What drives today's rifts in the social metabolism of humanity as a whole is growth, and its driver, capitalism (see e.g. Pirgmaier & Steinberger, 2019; Malm, 2018; Kallis, 2019). This is an issue I will return to in 2.3 below. Labour needs to be investigated as both a part of this specific social system, and as a part of social metabolic relations.

[5] Stoner and Melathopoulos (2018) criticise Foster (2000) for treating the metabolism of humans and nature as an "original identity" – a specific transhistorical way of regulation.
[6] That "the metabolic rift" is a theory developed based on parts of Marx's writings, and not just extracted out of them wholesale, is discussed in Malm (2017).
[7] The distinction here can be seen as similar to the concept of thresholds in resilience theory (see e.g. Vatn, 2015, p.24-5), wherein a system can withstand changes up to a point, but crossing a threshold sends it into a new state (a difference is that metabolic rift theory is put in more qualitative terms, and arguably focuses more on the social side of anthropogenic perturbations). On thresholds see also chapter 3.2. below.

3.2 Planetary Boundaries and Ecological Crises

The planetary boundaries model provides a framework for understanding the crises, their risks and their interconnections. I will not describe the numeric specifics of the crises, and only provide a brief description of climate change and biosphere integrity – my purpose is only to provide a generic understanding. Primarily, this chapter describes overarching technical aspects of the crises, while the next chapter considers the overarching societal ones.

The Planetary Boundaries framework was first presented in Rockström et al. (2009) and updated in Steffen, Richardson, et al. (2015). It posits nine interdependent boundaries of the Earth System which are to define a "safe operating space" for humanity (Steffen, Richardson, et al., 2015). Each boundary has a zone defined as safe (green), a zone of uncertainty (yellow) and a zone beyond where boundaries have been transgressed (red), each zone having increased risk of causing a shift in the Earth System to a new state. The boundary itself lies at the border of the green and yellow zones (e.g. 350 ppm CO_2 for climate change) (Steffen, Richardson, et al., 2015).

The boundaries as such set limits of acceptable risk, which involves normative evaluation as a component (Rockström et al., 2009; Steffen, Richardson, et al., 2015; Biermann & Kim, 2020). This conceptualisation has been heavily criticised for leaving out equity and justice issues, and for turning global environmental policy into a form of technocratic rule (Biermann & Kim, 2020). It is indeed true that the boundaries' control variable levels are set only by the authors of the papers, and that e.g. civil society has not been involved. However, while this raises questions about where and how the exact values of the boundaries' variables should be placed, I do not believe this invalidates the framework itself as a heuristic and as a tool for understanding – in my case the numbers also matter less since the framework itself is more of interest than set numerical values. The underlying understanding of the crises and their interconnections can still be used, even if the exact numbers are up for debate.[8]

The boundaries themselves represent safe levels (an acceptable amount of risk) of perturbations of the given boundary that can happen without sending it into a different state – e.g., for climate change, the amount of CO_2 that can be released without causing a qualitative shift in the earth system. The boundary values are set at levels where there is enough time for society to react before crossing into a point of no return (Rockström et al., 2009; Steffen, Richardson, et al., 2015). Thus, the

[8] However, this does probably mean that its use in concrete policy processes might need amendment, or that some entirely different framework should be used. This is already done by e.g. Kate Raworth (2017, who Bierman and Kim (2020) also briefly discuss), who bases her "doughnut" on both the planetary boundaries as an ecological ceiling, and adds a "social foundation" with a set of indicators for wellbeing, giving a "safe and just operating space for humanity" (Raworth, 2017, p. 44)

boundaries are not the same as thresholds or tipping points, and nor do all of them have those (Steffen, Richardson, et al., 2015).

The boundaries are climate change, biosphere integrity, land-system change, ocean acidification, freshwater use, biogeochemical flows, ozone depletion, aerosol loading and novel entities (Steffen, Richardson, et al., 2015)[9]. Of these, biosphere integrity and climate change are identified in Steffen, Richardson, et al. (2015) as "core" boundaries, as the other boundaries both operate through and regulate them, and they both are each crucially important for the earth system. Furthermore, the boundaries can be differentiated on whether they have singular thresholds or not.

Thresholds are when a boundary reaches a point where non-linear change starts and the boundary in question reaches a qualitatively new state (Steffen, Richardson, et al., 2015). The most well-known global examples are probably the fear of climate change tipping points, where going past a threshold triggers feedback loops, which in turn increase the risk of other feedback loops happening (Lenton & Williams, 2013). The other core boundary, biosphere integrity, probably does not have a threshold. Rather, the global shift happens through a cascade of non-linear changes at lower levels, which cumulatively cause a global-level shift (Lenton & Williams, 2013). While not all the boundaries have thresholds, Steffen, Richardson, et al. (2015) argue that their weakening past some point would affect the earth system's capacity to retain its current qualitative state.

Climate change and biosphere integrity are especially interconnected (Steffen, Richardson, et al., 2015). I will emphasise these and their interconnections, due to their own significance as well as their implications for all other boundaries. I will focus on drivers of the crises and how the crises affect each other.[10] The thesis does not go into detail about the technical specificities of impacts of labour, instead focusing on labour as a social structure and driver. It is important, however, to keep in mind that no amount of social reform will solve the crises without including technical and physical changes. The drivers of environmental crises discussed in this chapter (3.2) are physical processes, which themselves are driven by social ones, among which is labour.

Anthropogenic climate change is driven primarily by greenhouse gas (GHG) emissions, of which CO_2 is the main gas (IPCC, 2014b). The main drivers of emissions are energy (a large part of which is driven by industry and buildings), industry, agriculture, forestry and other land use (IPCC, 2014a). As a core boundary, climate change is interconnected with all the others, including the other core boundary, biosphere integrity. The warming itself, and in addition other effects such as higher sea levels and

[9] The original version (Rockström et al, 2009) had ten boundaries, where geochemical flows were split in nitrogen and phosphorus cycles.

[10] The impacts om humans are well described elsewhere, e.g. by the IPCC (2014a, 2018) and IPBES (2019) panels.

more extreme weather, will reduce the geographic ranges for a number of species, as well as causing extinctions due to species not being able to adapt to rapid ecosystem changes. Ecosystems themselves are at risk of loss and changes (IPCC, 2014a, 2018; IPBES, 2019).

Biosphere integrity is measured in biodiversity loss in various ways (Steffen, Richardson, et al., 2015). IPBES (2019) categorises the direct drivers of biodiversity and ecosystem loss as (from largest to least impact) Land use, direct exploitation, climate change, pollution and invasive species. Direct exploitation has the largest impact on marine systems through fishing, and also refers to renewable and non-renewable resource extraction in general. Sea use includes fishing grounds, aquaculture, bottom trawling and ocean mining (which includes offshore petroleum extraction).

Rockström et al. (2009) stress that the state of the biosphere is important for the general functioning of the earth system, and that its degradation would mean that the earth system as a whole is more vulnerable to perturbations from the other boundaries – in a sense this boundary works as a regulator. The integrity of both marine and terrestrial ecosystems is also important in halting climate change, as both function as carbon sinks, decreasing the impact of GHG emissions (IPBES, 2019).

3.3 Capitalism and Growth

The specific form of organising production and distribution that shapes modern society's metabolic relation with nature is capitalism. In general terms capitalism can be characterised by a few elements: Private property is the predominant form of ownership over economic resources, either by individuals or private companies. Those who do not own and control the means of production depend on selling their capacity to work in order to gain income – creating the labour market. Goods and services are predominantly distributed through a system of generalised commodity production – they are exchanged as commodities in the marketplace. The state has a distinctive role, regulating private property rights, the specific rules for markets, and so on. Furthermore, capitalism has an expansionary tendency – the point of the economy is profit, which requires continued economic growth (Stillwell, 2012; Pirgmaier & Steinberger, 2019).

A core part of capitalism is the separation of the labourers from the means of production, such as land or machinery, which creates a class dependent on selling its labour-power in order to afford to live (Stilwell, 2012; Komlosy, 2014/2018). While wages existed in previous social formations, it is with the development of capitalism that it emerged as the dominant form of structuring productive activities (Komlosy, 2014/2018). This is what creates the capitalist class relation between those who

own the means of production, capitalists, and those who have to work for a living, workers (Stilwell, 2012).

A metabolic relation is needed for survival. The probably most discussed problem with capitalism is its need for growth, a need which ensures it both degrades the environment both through extracting its inputs and through using nature as a dump for its waste – that is, metabolic rifts. In ecological economic terms, it is an open system being part of the social sphere within the biosphere (Martínez-Alier & Muradian, 2015).

The mainstream opinion is that the ecological crises can be resolved without compromising on growth, through so-called green growth. This is to be done through absolute decoupling of the carbon emissions or material footprint of societies and economic growth, measured in GDP. Empirically speaking, this is a highly unlikely possibility. As Hickel and Kallis (2019) show, neither historical trends nor modelling show any sufficient decoupling of CO_2 emissions and GDP growth,[11] nor any absolute decoupling at all between material footprint and GDP growth.

As Hickel and Kallis (2019) show, the possibility of green growth breaks down the moment thermodynamics or actual tendencies of the economy are brought in. Theoretical assumptions of infinite green growth through technological change, substitution and changes in what types of goods are consumed cannot keep up when the capitalist economy is treated as a real system operating in social and physical reality.[12] Ward et al. (2016) use a simple model to show that even if decoupling were possible, it would only be temporary.[13] Since any product requires a minimum of energy and materials, there is a physical limit for how efficient any commodity can be in terms of matter or energy use. Thus, at some point, continued economic growth would necessarily entail increased materials and energy use, as further efficiency gains would be physically impossible.

Following Pirgmaier and Steinberger (2019), I believe that growth, green or not, should be treated as an *emergent* phenomenon of capitalism – a result of the system's underlying drivers. Part of the ensuing discussion is as such what role labour plays in this system of drivers, and how it does it. That capitalism is unsustainable does not automatically imply that everything contained within it is unsustainable as well. As such, the question of the unsustainability of labour must be investigated on its own.

[11] Sufficiency here means reducing CO_2 emissions fast enough so that global warming does not increase more than 1.5°C or 2°C above pre-industrial temperatures (Hickel & Kallis, 2019).
[12] Hickel and Kallis (2019) also state that trying to determine growth through value creation also does not suffice, as no theory of value (i.e. utility, energy, labour theories of value) exists that allows for empirical measurement of its magnitude.
[13] They use a modified version of the I=PAT (Impact, Population, Affluence, Technology) model.

Part II

In this part, I will discuss some approaches to understanding and critiquing labour, with the aims of constructing an understanding and definition of labour and understanding its relation to ecological destruction. With chapter 4, I begin with introducing the research of Hoffmann and Paulsen (2020; Hoffmann, 2017), who provide the one extant contribution to an ecological critique of labour; as will be seen, they consequently form one of the most central sources in this thesis. Then, in chapter 5, I proceed with a Marxist understanding of labour and value, using primarily Postone's (1993) reconstruction of Marx. In Chapter 6 I discuss productive activities that are outside the sphere of wage labour, using feminist approaches. Chapter 7 discusses the "work ethic".

With chapter 8, I provide my own definition of labour, as well as the relation of it to metabolic relations. Before this chapter, labour is not properly defined, but should minimally be understood as waged purposive[14] renumerated activity under capitalism (Hoffmann & Paulsen, 2020), while at the same time the use of the word among these different approaches varies. However, throughout all chapters I will use "work" and "labour" synonymously, which generally is the practice of others as well.[15] I will use the term "productive activities" for human production in a transhistorical sense, as well as for current activity that falls outside the definition of labour, but is still not leisure (and what one might in everyday language call "work"). Further on I chapter 10, I develop the understanding of labour's ecological impacts, beginning with the role of value, followed by my reappraisal of Hoffmann and Paulsen's factors of labour's impact.

[14] As opposed to unpurposive – e.g. breathing.
[15] Frayne (2015) and Weeks (2011) both explicitly state adherence to this practice.

4 Hoffmann and Paulsen

This chapter provides a brief overview of Hoffmann and Paulsen's (2020) research, as well as some initial comments. Their work in this vein encompasses both their 2020 article, as well as Hoffmann (2017), which the former publication is based on.[16] I provide a more thorough discussion and critique in chapter 8.4 below, as well as in chapter 12 in part III. Through their research, they have provided a descriptive framework that categorises labours ecological problems, which I will in turn will base my later analysis on – the developments I make would not have been possible without their initial thorough appraisal of work's ecological problems.

According to Hoffmann and Paulsen, work is "is defined in its modern meaning as an abstract economic activity based on abstract time, mainly commodified as gainful employment within the structures and institutions of modern, industrial society." (Hoffmann & Paulsen, 2020, p. 351)[17]. That is, "Work" is expressly *waged* work, the currently dominant form of organising productive activities (see chapter 8.1 for further discussion of the definition of work).

4.1 Hoffmann and Paulsen's Ecological Critique of Work

Hoffmann and Paulsen (2020) present a qualitative framework of four factors of the ecological impact of work – scale, time, income and work-induced consumption, mobility and infrastructure.

The *time factor* consists of two main aspects. The first, *time-scarcity*, concerns itself with the effect working-time has on households – less time available outside work means time-saving forms of consumption (Hoffmann & Paulsen, 2020; see also the discussion of work time reduction in chapter 10 below). The second aspect regards the basic notion of time and work under capitalism. The "abstract work" (Hoffmann & Paulsen, 2020, p. 345) of capitalism presumes abstract time – in their definition, linear, mechanical, clock-based time. Ecologically, this is at odds with the diverse "temporalities of the biosphere" (Hoffmann, 2017, p. 24). Abstraction towards work as quantity allows for a pressure towards acceleration of work time and consequently production. Detached from ecological temporalities, the processes of ecosystems cannot cope with the accelerated rates of pollution produced, thus causing damage that is either irreversible or will heal at time-scales too long to be relevant to current human societies (Hoffmann & Paulsen, 2020; Hoffman, 2017).

[16] The content in each is largely overlapping. I will primarily refer to the 2020 paper.
[17] One thing to be noted already here is that neither Hoffmann (2017) nor Hoffmann and Paulsen (2020) define what "abstract work" actually is.

The *scale factor* is concerned with how the more one works, the more input one needs, and the more output one gets – that is, more work means more ecological impacts through the increased use of materials and energy (Hoffmann & Paulsen, 2020). As such, this is the qualitative statement of the total sum of work having the *wrong* scale compared to the biosphere's capabilities for sustaining itself – a quantitative problem for the metabolism of humans and nature. Note too that this is a problem of the quantity of the social phenomena of *waged work*, not the quantity of any specific type of physical effort.[18]

In addition to this core aspect of the factor, Hoffmann and Paulsen (2020) also point to conditions of work as part of the "Industrial-capitalist" (Hoffmann, 2017, p. 22) system. Among these conditions is the externalisation of costs – among other things the biosphere is outside the scope of normal cost calculations. Another condition is the combination of fossil fuel dominance and industrial technology resulting in higher labour productivity, which in turn results in growth.[19] Finally, turning into waste is the designed end-state of most commodities produced by contemporary work, and at times waste is their end-state even before they reach the market (Hoffmann & Paulsen, 2020; Hoffmann, 2017).

The *income factor* is the relation of income and the resulting environmental degradation entailed by it. Generally, more hours of work means more income, which means more environmental harmful consumption. Structurally, this is a never-ending cycle having to work to gain money to spend on living, which gets used up, necessitating more work. This cycle also engenders a style of life that gives the need for a rising income to consume even more (Hoffmann & Paulsen, 2020).

The final factor is *work-induced mobility, infrastructure and consumption*. These three are things not caused by work per se, but the structures around it. Mobility is about commuting and business travel. Infrastructure is things required for work to happen, such as, factories, office buildings, certain roads and tracks, cafeterias, etc. Consumption is purchases that are needed because of work, such as babysitting or work clothes. The category concerns instances of these that only exists because work has to be done (Hoffmann & Paulsen, 2020).

4.2 Initial Comments on Hoffmann and Paulsen's Factors

While I will return to Hoffmann and Paulsen, I will here provide some initial comments on the framework, which form the basis for further discussion, beginning with the time factor. The function

[18] As Hoffmann and Paulsen (2020) note, there are differences between types of work, but even service work has direct and indirect impacts, as well as often forming part of the infrastructure for more directly harmful work. See also Kallis (2017).

[19] While it is true that these are enablers of growth, this does not explain *why* growth happens or is necessary.

time has, regarding defining a set number of hours "at work", irrespective of the actual level of production, is certainly central. It is both central in the terms of its opposition to ecological temporalities, and in its contrast to task-based organisations of production. In the latter case, Hoffmann and Paulsen (2020) draw on Thompson (1967)[20]. While it is not as obvious as an ecological issue, the move away from task-based to a time-based organisation of productive activity does engender a change in how productive activity is discussed. Instead of discussing a concrete action or a task, the discussion primarily becomes one of hours worked. Furthermore, one can connect this focus on work hours to the problem of ecological temporalities – an organisation around *task* more easily lends itself to adjusting the concrete productive process to the concrete relevant ecological temporal conditions, as there is not a mechanism inherent to the organisation of production competing with that social goal.

Concerning the scale factor, the relation between the amount of work hours and ecological impact that Hoffmann and Paulsen (2020) posit is not so clear. As I will discuss in chapter 10, the historical trend is both a reduction in working hours and an increase in ecological destruction. The factors Hoffmann and Paulsen note, technological development and the availability of fossil fuels, which enable a much higher labour productivity, offers conditions that enable this increase in production and reduction in hours, but we are left with no reason for *why* this happens. Hoffmann (2017) and Hoffmann and Paulsen (2020) refer to no social force that explains *why* these technological conditions of increased productivity continuously give the result of increased production – why growth happens.

With the income factor Hoffmann and Paulsen (2020) give a basic relation – the wages generated from work are spent, and the more you work, the more income you have, the more you spend. As they argue, this is true even among the more well-off – the work-spend cycle happens because one runs out of money, and so one inevitably goes back to work. However, is this consumption a factor of work? Would this not be the case too with money for nothing, for example in the case of a universal basic income? The production of demand that e.g. advertisement ensures (as Hoffman and Paulsen (2020) note) certainly has a role to play, but this is again not a factor of work as such. This is exasperated by the question of why people get the need to consume more. Again, we can point to advertising, as well as the availability of cheap commodities (Hoffmann, 2017), but – is this consumption an ecological impact produced *by* work? And if so, is it because of *income*, or is it because of production, or because people will spend their money no matter what? While income

[20] Thompson's article is a discussion of historical variations of organisation of productive activity, using the categories time- and task-based work.

generated by work gives the means to consume, this is not enough to say that the subsequent consumption in general is caused by work itself.

Turning lastly to work-induced mobility, infrastructure and consumption, the structural or indirect components could be seen as indirect consequences of the work society – and the impacts thereof would not have happened, at least to the present scale, without this organisation of work. As with the income factor, however, the work-induced ones seem to not give a clear delineation between what is caused by work and what is caused by other societal processes.

In sum, Hoffmann's framework provides insight into component part of work's impact on the environment. However, there seem to be some limitations. While Hoffmann provides a descriptive categorisation of work's ecological impacts, she does not seem to provide a reason *why* the conditions that exist result in overproduction and expansion – that is, there is a lack of a *social driver,* or a generative mechanism. Second, at times the difference between work as the reason for impact, and some other (but related) phenomenon, such as demand creation, as the source, is somewhat unclear.

5. A Marxist Understanding of Labour

In this chapter, I primarily will not deal with Marx's works directly. Rather, I will concern myself with a specific approach, that of Postone (1993). There are two main reasons for this choice: First, there are a myriad of interpretations of Marx, many of which contradict each other and pull very different things from Marx's writings.[21] Keeping things narrow to one specific interpretation enables focus and clarity. Second, Postone's reading and reconstruction of Marx is interesting in particular, as it has precisely labour as its prime object[22]. As such, I am not giving a literature review of interpretations of Marx, nor claiming to follow "the" correct one, but instead using a way of reading Marx that is enlightening in the context of the aims of this thesis.

5.1 Labour and its Dual Character

According to Postone, in his analysis of capitalism, Marx comes to treating labour as a historically specific type of human productive activity that is historically specific to capitalism. Commodity-producing labour becomes the dominant form of productive activity, and the great majority need to be employed at a workplace in order to live. When discussing labour in this chapter, I am primarily speaking of *commodity-producing* labour; a distinction between the two terms will be discussed in chapter 8.

Labour has a *dual character*. Its historical specificity concerns both the social logic of how labour is organised under capitalism, as well as concrete matters of how production done as labour is shaped. Labour done for commodity production under capitalism can thus be seen as having two properties – it is simultaneously concrete labour and abstract labour (Postone, 1993).

Concrete labour is the "intentional activity that transforms material in a determinate fashion" (Postone, 1993, p. 150) – that is the specific actions taken to produce certain end results, which in the capitalist mode take the form of commodities. Postone (1993, p. 153) notes that the category, while including transhistorically necessary metabolic activities, is itself historically constituted; grouping various different activities into a single category – labour – is not something that is true across time and cultures, but something specific to capitalism (see also Komlosy, 2014/2018).[23]

[21] See Elbe (2013), Chambers (2018) as well as the extensive commentary in Postone (1993) on other Marxisms and interpretations of Marx.
[22] There are various literatures utilising ecological readings of Marx, such as Burkett (1999/2014) or Foster (2000). However, these interpretations do not in my view focus as closely on labour as much as Postone does, nor do they give it anything like the level of critical scrutiny that Postone achieves.
[23] Indeed, some cultures do not have a general word like labour or work (Komlosy, 2014/2018)

Abstract labour, on the other hand, is the social function of labour in capitalism. That is, according to Postone, Marx's term should not be understood merely as "concrete labor in general" (1993, p. 150), an understanding which would not really say much. Whereas individual concrete labours taken together form a heterogenous lump, the basis of abstract labour is generalisation away from specificities to a general, homogenous category. This homogeneity is not about some specific physical property of labour,[24] such as the expenditure of energy,[25] but is a socially constructed equalisation of different concrete labours (Chambers, 2018, p.138). Individual abstract labours taken together are not various different instances, but a homogenous lump (Postone, 1993). The social function of this homogenisation is to make commodities equivalent in exchange – see chapter 5.4 below.

5.2 Labour, Metabolism, Nature

I have noted that for Postone, concrete labour is a category itself constituted under capitalism, and is as such historically specific. Consequently, the metabolism of humans and nature and concrete labour are *not* identical categories (Postone, 1993). As noted in chapter 3.1 above, while some form of metabolic relation with nature is transhistorically necessary for humans, the social form this relation takes varies across time and space. Thus, while capitalist concrete labour *is* metabolic, in that it transforms matter as a part of purposive activity, it should not be treated as identical with metabolism as something transhistorically necessary.

A consequence of the dual character of labour is that labour encompasses both relations between humans and nature, as concrete labour, as well as relations between humans and humans, as abstract labour. According to Postone, "[t]his conflation shapes both the form of production and the form of social relations in capitalism, and it relates them intrinsically." (1993, p. 220). In capitalism, the metabolic relation to nature is brought into the same category (labour) as, and shaped by, relations among people. Specifically, the mechanisms of capitalism – abstract time (see below), the endless need for production and economic growth – take precedence over adhering to ecological temporalities, over not exhausting the earth, and so on.

[24] Marx is at times unclear on this point. See Heinrich (2004/2012) or Postone (1993)
[25] And the value theory that ensues (see below) is, after all, not an energy theory of value.

5.3 Abstract Labour and Abstract Time

A central part of Marx's analysis is the concept of socially necessary labour time (SNLT), which he defines as "(…) the labour time required to produce any use-value under the conditions of production normal for a given society and with the average degree of skill and intensity of labour prevalent in that society." (Marx, 1867/1990, p. 129).[26] According to Postone (1993), SNLT is in turn based on abstract time.

Postone contrasts abstract time with concrete time. None of these are time as in a natural property of the world *itself*, but as a social category and unit – the social function of time. *Concrete time* is time as a dependent variable. Instead of time units being invariable, units of time change with events, such as the objective length of an hour varying by the season, or the length of a month varying with lunar cycles.[27] Concrete time is then time measured *by* events, and it is a social framework made *of* events.

In contrast, *abstract time* is a social framework *for* measuring events. Abstract time is time as an independent variable – the framework events are measured against. With concrete time, the length of unit of time varies, but with abstract time each unit of time is invariant, every hour, minute, second is the same as another. However, abstract time is *not* exactly the same thing as mechanical clocks (which ostensibly have invariant time units) – while its basis is invariant units, abstract time is a social function, not technology per se. As Postone discusses, clock technologies giving invariant time units were invented several times without invariant time becoming a socially *normative* force.[28] For labour, however, abstract time is a norm-setting framework for activity (Postone, 1993).

For the individual worker, labour needs to be done according to a set time-norm, e.g. X number of Y tasks in Z hours. As per Marx above, this norm is not set by any individual worker, but is constituted socially – based on what the societal normal time to make that product is, hence the normal labour time *necessitated* by a task is set *socially*, hence the category "socially necessary labour time."

It is in this sense that abstract time relates to abstract labour. An abstract labour hour is not determined by any individual worker's labour but is normatively determined by the socially generalised standard of productivity. The dominance of this standard is altogether different from

[26] Postone (1993, p. 190) quotes this passage as well, but changes the translation slightly.
[27] Postone (1993) gives historical examples of these types of time units. The length of an hour varying by the season can for example mean that the number of hours in a day remains constant, but since the actual time between sunrise and sunset varies across a year, the length of each hour will vary according to the season.
[28] That is, while technology may exist to e.g. objectively measure the length of lunar cycles or other astronomical phenomena, this does not mean that this type of time becomes socially dominant or relevant. Postone (1993, p. 200-216) discusses historical instances of the invention of objective time measurement being developed without achieving social relevance.

what was and is found in other societies – see e.g., Thompson (1967) who discusses the difference between task- and time-based organisations of production, where the former has been prevalent in non-capitalist societies.[29]

However, when the standard of SNLT changes, due to changes in productivity, the grounds for that change is found in *concrete* labour. This change in concrete labour is not expressed in abstract time (which is an independent variable for – and not of – concrete activity). Postone solves this apparent paradox by positing *historical time* as a type of concrete time specific to capitalism. Historical time reflects the dynamic of the ongoing transformation of social life – including labour. It is within historical time that the socially abstract labour hour (which in its own term remains unchanged) changes, and it is through historical time that socially general productivity changes are expressed. The resulting dynamics means historical time is also *directional* – increased productivity, in redetermining the new standard abstract labour hour, SNLT, also redetermines a new *norm* for productivity (abstract time being a normative social phenomenon). However, while change happens in historical time, it does not in abstract time – so abstract time remains as a static frame (Postone, 1993).

Thus, while productivity is increased (in whichever way), and the qualitative standard for SNLT changes, this does not change abstract time, and the abstract labour which it is the norm for – an hour of abstract labour is an hour of abstract labour as long as it meets the norm set by SNLT at that *historical* moment. So, while the rate of commodities produced per time unit increases, this does not as such matter for abstract time, nor for abstract labour.

Following this logic of capitalist labour up to this point, some things can already be asserted: The twofold nature, or social function, of labour means that labour functions both as a relation between humans and nature, and as a relation between humans and humans. The former is labour as concrete labour, and the latter is labour as abstract labour. With capitalism it is, however, the abstract property that dominates, and individual labours are ruled not by specific (concrete) questions of transforming matter for specific ends, but are rather bound to the norm of abstract time – to be labour *proper*, an hour of labour must conform to the norm of production set by socially necessary labour time, that is, the societal norm, determined by the socially generalised level of productivity.

[29] in task-based situations, productive activity was done when needed and ended when the concrete goal (e.g. a set number of products) was reached. In contrast, the modern working day is predominantly time-determined, where one is required to be at work regardless of whether there is anything to do – see for example Graeber (2018) for numerous examples.

In other words, the logic of capitalist labour, if we follow Postone and Marx, means that what matters is producing as much in an hour (or day, etc) as whatever the social norm of productivity is per time unit – conforming to SNLT. This takes precedence over any considerations of ecology (or of whether the resulting level of production is needed), which belongs to the realm of the concrete, of metabolism. The category of abstract time also is at odds with ecology – the frame which steers production is a norm set by productivity, not ecological temporalities.

However, none of this really explains *why* this problem exists. That is, why does abstract time take such precedence, why does abstract labour take precedence? At this point, there's no *compulsion* in this system for changes in productivity, in historical time, to mean that a changed average productivity level should entail that the amount of time spent producing should stay the same, or that production can't remain constant (or even decrease), even as productivity increases.[30] Explaining this within a Marxist framework necessitates bringing in Marx's value theory and discussing the opposition between what Postone (1993) calls value and material wealth.

5.4 Marx's Theory of Value and Forms of Wealth

In Marx, *value* is a historically specific social form of wealth. Specifically, it is objectified abstract labour time. Any commodity is both a value and a use value. What determines the value of a commodity, or the magnitude of value, is how much abstract labour (of society's total labour) went into it. As such, value is purely quantitative. Opposite this, the commodity as a use value is qualitative – the usefulness of a thing is a subjective evaluation by the user (Postone, 1993; Heinrich, 2004/2012).

A commodity is both a value and a use value, wherein use value is the utility the product for an individual. Use values are not commensurable, since the utility of something is entirely dependent on an individual's preferences (Marx, 1867/1990; Heinrich, 2004/2012). The function of abstract labour is to make commodities commensurable as products of homogenised human labour time – to make them exchangeable as values (Heinrich, 2004/2012), which is done through the medium of money – exchange value.[31] This is why abstract labour time is necessarily a question of norms – to equate

[30] In capitalism, competition among firms makes actually decreasing *productivity* (not production) unfeasible regardless – one would simply be outcompeted by firms keeping up with the standard of productivity in the marketplace (less resources used (including human labour) generally means cheaper goods, after all) – see Heinrich (2004/2012).

[31] In our daily lives, we exchange commodities according to price expressed in money (exchange value) – which is determined by value. However, price is not necessarily an accurate reflection of value. Prices are set through a variety of factors, and value theory is not a theory of price formation – at least at this abstract level. However, the claim *is* that the ultimate source of the logic of exchange *is* value and that this *does* steer price, but not

things as products of labour, these labours must be equalised, conforming to a standard, in this case being SNLT.

The magnitude of value is temporal, based on the socially standard duration of labour – value is abstract labour time objectified. However, as discussed, abstract time is *normative*; for commodity-producing labour to count as *value-constituting*, it must conform to the *current* SNLT (the ever-changing societal standard). Establishing this magnitude can only happen through the process of exchange of the products of labour, commodities. (Marx, 1867/1990; Postone, 1993; Heinrich, 2004/2012).

This also means that how much abstract labour time is in an individual labour is not measurable by the clock – the magnitude of labour time of an individual labour is only established in being brought in relation with other individual labours. Value and abstract labour time are a matter of relating individual labours to the total labour of society, which is what enables different products of labour to be commensurate as commodities (Heinrich, 2004/2012).

Postone (1993) posits two forms of social wealth: value and *material wealth*, the latter being made up of use values. When productivity increases, material wealth increases, but value does not automatically increase. For value, the change in productivity only means a new standard (SNLT) for labour – the concrete labour of a unit of abstract labour time changes, but an hour of abstract labour remains an hour of abstract labour (Postone, 1993). When the workers at the shoe factory produce 80 pairs of shoes in a day instead of 40, the material plenitude of shoes increases, but the value of the workers' labour is constant – as a result, the value contained in each pair of shoes *decreases* (Heinrich, 2004/2012).[32]

It is not, in the first instance, questions of material wealth that determine the level of production, of how much labour is done, but value.[33] That is, since profit is made through successful exchange and commodities are exchanged as values, production happens to create and realise value, as opposed to fulfilling specific needs. Since exchange must be successful for value to be realised, commodities do have to fulfil the buyers' needs as use values. However, this is essentially a by-product of the purpose of value creation.

alone (Postone, 1993; Heinrich, 2004/2012). For why value – abstract labour time – has to be expressed in exchange as money, see Heinrich (2004/2012).

[32] This is also true in the case where the socially average time to produce something *increases*, in which case the value of the single commodities also increases (Heinrich, 2004/2012)

[33] If, for example, satisfying the material needs of the firm owners was the only goal, then production would only happen until they had enough spending money to get whatever use values they want from the market (Heinrich, 2004/2012, p. 123).

Historically, value as a form of wealth, according to Postone (1993), made sense. If one wanted to increase production in order to increase material wealth, one had to increase the amount of labour hours worked. However, as ever new levels of productivity have developed (through technologies, energy, skills, and so on), value as a form of wealth has become anachronistic. No matter how many commodities are churned out, the value of units of abstract labour time remains the same. Production accelerates while value remains in place. As productivity improvements are made – as historical time changes – so does the norm for abstract time change.

When an improvement in productivity is made, the firm that makes this improvement is able to realise more value from a workday than its competitors. In effect, the firm is getting more abstract labour "hours" from the same amount of clock hours worked by the workers. When this improvement becomes generalised, this benefit disappears as SNLT is asserted at a new level.

Value as a form of wealth is thus one that can accumulate and *grow*. Up to this point, the theory of value and labour explains *how* growth happens, but not *why* it happens. That is, the form of wealth that grows is established, as well as how it is created. However, why the increase of this wealth actually happens, or needs to happen, is not clear.

In Marxist theory, the aim of production is accumulating and increasing surplus value – which is the value that is left over after the costs of production are paid for, including wages. This process happens with the circuit of value: Money-Commodity-Money, or MCM', where M'>M. This circuit is what capital is – "Self-valorizing value" (Postone, 1993, 269). *Surplus* value is the value that is left over after the costs of production are paid for, including wages.

This necessitates specifying something about workers. Wages are here not payment for labour (though they may appear to be so). Rather, wages are payment for the value of labour-*power*, the worker's capacity to work in the form of a commodity. The value of labour-power is not how much value the labour from it creates, but the cost of its reproduction. Surplus value comes from the difference between the cost of labour-power's reproduction (as well as the cost of tools, machinery, etc) and how much value the actual labour of the worker constitutes. Hence, the rate of surplus in a firm does not increase with the number of workers, but with how much (surplus) value, abstract labour time, the capitalist gains from the purchased labour-power (Heinrich, 2004/2012). It would then not be possible to profit by employing a thousand workers to produce a thousand shoes when in other firms the same amount is produced by a hundred workers.[34] This would both be expensive, as the value gotten from the labour-power would be less, and it could result in the firm having

[34] All else being equal. More workers producing less efficiently giving more surplus value is possible if, for example, there is a great discrepancy in the value of labour-power in one place compared to another.

trouble realising the value produced on the market, since the firm has increased the cost of production of a single commodity, which other firms sell at a much lower value.[35]

Labour constitutes value. The function of gaining value is in turn creating more value. This is not a specific decision made by any firm owner or worker, but a demand set by capital's logic – rather than being something people directly deal with, value takes the shape of an underlying social mechanism. If a firm does not conform to SNLT and does not realise surplus value (needed to conform to ever new levels of productivity, of SNLT), it ultimately gets outcompeted and falls by the wayside. This means that to continue to exist, firms generally have to ensure that they always realise a surplus that at least gives funds to ensure keeping up with SNLT, but really also to have a new circuit of MCM', or rather M'CM'' (where M''>M') (Heinrich, 2004/2012).

This logic means that in capitalism, labour is done for one thing – value, which is objectified abstract labour time. That is, the form of wealth is a *temporal unit* that is purely social (Postone, 1993; Heinrich, 2004/2012), with no regard for nature (or anything else). At the same time, since value is produced through labour and realised through the exchange of commodities, it *does* require resources and energy to propagate itself – it is just that this fact is irrelevant to its logic. Value's end is its own self-expansion as capital, meaning that the production of this form of wealth is a *means* to the *end* of more production – "the goal itself is a means" (Postone, 1993, p. 181). In turn, the value form of wealth (as opposed to material wealth) means that production, labour, cannot consider ecological sustainability *over* the need to produce – the metabolic part of labour is subordinate to the need to increase the specific form of wealth, value.

5.5 Postone, Marx and Hoffmann and Paulsen

Postone's exposition of Marx gives a logic of labour in capitalism, and its centrality in the growth mechanism. However, it only gives the logic at its most abstract level, a limitation Postone also makes clear (see Postone, 1993). Value is not an *overt*, directly observable social category, but rather an underlying logic to capitalist society and how labour is shaped. Similarly, this is true for abstract labour and abstract time. These are aspects of social relations that emerge historically, and in turn become (generative) mechanisms (see chapter 2) perpetuating themselves.

As such, this theory does not explain every aspect of what actually happens in the day-to-day workings of capitalism, such as price formation, or how the social structures posited reproduce

[35] Given that commodities are exchanged at their values. In actual price formation, many things beyond influence the price of a commodity (Heinrich, 2004/2012).

themselves as such beyond logic. Crucially, the Marxist approach is a theory of *commodity-producing* and *value-constituting* labour (Heinrich, 2004/2012), and does not scope over a wider definition of labour, like the one Hoffmann and Paulsen (2020) use. I will return to this issue in chapter 8 below.

This Marxist approach also says little about how we *conceptualise* labour – these are socially emergent structures and categories, not mental ones (Postone, 1993; Heinrich, 2004/2012). A final limitation of this type of Marxist analysis is that there is little normative content – if these social phenomena are core problems for labour, the theory still says little about what should replace them, except the very necessity of their abolition. The absence of normative theory is also reflected in the minimal theory of need in Marx – there is nothing guiding the eventual direct (normative) differentiation of use values, as they are only minimally defined and not differentiated from each other (Marx, 1867/1990, p. 125).

That said, a Marxist approach allows one to see the logic of how capitalist labour drives itself – it gives a social reason for *why* this happens, which was a limitation of Hoffmann and Paulsen's (2020) framework. However, improvement upon that absence in Hoffmann and Paulsen does not on the face of it imply a rejection of their framework. Rather, I believe the most logical route is to consider Hoffmann and Paulsen's framework as one operating on a more concrete (or surface) level of the system of capitalist labour, while Marx in Postone's interpretation operates on the most abstract (or deep) level. I will return to considering combinations in chapter 8 below.

6 Unpaid "Labour"

While the Marxist approach discussed above considers labour with a focus on its centrality in constituting the dominant form of wealth in capitalism, I will in this chapter move to discuss the edge-cases of labour – those activities that are not paid, and whether they can be called labour (or work) or not. Defining the borders of labour – what it is *not* – is just as important as investigating its internal workings. I will specifically discuss domestic "work" in relation to waged work, as well as other activities that are important for maintaining capitalist society, but remain unwaged. Most relevant in this context are feminist approaches, which at least in part focus on activity outside the sphere of (paid) labour (Weeks, 2011; Munro, 2019; Barca, 2020).

While the existence of households is not specific to capitalism, how they function and what their function in society is, is shaped by capitalism. What happens at home, in households (and elsewhere) is the perpetuation of life – not in general, but specifically the socially and historically constituted ways of living in capitalist societies (Munro, 2019). This social reproduction not only reproduces workers' bare lives and their capacity to work – their labour-power, but also contributes to reproducing capitalist society as a whole (including the rearing of children – into future workers).

The "unwaged work" in households requires goods that generally must be purchased from capitalist firms as commodities, and commodities (or state services) may also substitute household "work" itself (e.g. hiring a cleaner, getting food delivered). At the same time, one of the necessary tasks of the household is realising commodities into the goods and services needed by the household members (Munro, 2019).

Additionally, some, such as Barca (2020) have argued that there are other activities that "grant the conditions of production" (Barca, 2020, p. 32). That is, they contribute to enabling production to take place. These activities are not limited to domestic activities but include all those outside the sphere of wage labour who reproduce (environmental) conditions that are beneficial to humans and capitalist productive processes – subsistence farmers, gatherers, indigenous communities, and so on (Barca, 2019, 2020). Together these activities have been called "meta-industrial" labour (Barca, 2020, p.32).

One point of contention has been whether these activities should be considered "work", and compensated accordingly, as they make essential contributions to the functioning of the capitalist system. Part of the discussion within Marxist or Marxist-adjacent feminisms has been whether these activities produce value (see Weeks, 2011; Barca, 2020). However, in a strictly Marxist sense, they do not (Weeks, 2011; Heinrich, 2004/2012).

These non-waged activities will not be considered as work in this present thesis. They do not have the same social status and function as capitalist wage-labour does, nor are they subject to the same forms of organisation as wage-labour is. These types of activity are not subject to the same logic as (waged) labour – they do not directly have to conform to a level of productivity to ensure efficiency, profit, growth, and selling products on the market. Ultimately, the logic is to ensure concrete results within the household or with the environment; the demand to confirm to an abstract level of production is not there. The contrast can be seen if one substitutes domestic activity with paid work. The concrete action of care for an elderly family member has a different social context when done by a hired nurse from a private firm than when done by unpaid family members. The waged nurse must conform to goals of efficiency and providing the service promised, ensuring company profits, under penalty of being fired and losing their livelihood. The household member on the other hand, does not concern themselves with any of this, beyond that if they themselves have a job, this can make them subject to time-scarcity. Instead domestic activity is done out of love, obligation, fear or other factors, and not out of fear of being out of a job, or in order to ensure some profit. Within capitalism, the social conditions of domestic and meta-industrial "work" are different than that of waged labour.

At the same time, domestic activity is closely tied to work. As discussed by Munro (2019), "unwaged work" can be substituted with commodities or state provisions. This substitution can be connected to environmental harm – as both Hoffmann (2017) and Kallis et al. (2013) point out, more time at work means that more time saving and often environmentally harmful commodities are procured,[36] ensuring that less time is spent on domestic productive tasks. Simultaneously, the introduction of ever new commodities can also result in increased amounts of domestic "work" – Munro (2019) points to the changed cleanliness standards brought about by the vacuum cleaner resulting in a higher standard for clean floors, meaning that *more* cleaning must be done as an example. As such, domestic activity is affected both by the income and time factors in Hoffmann and Paulsen (2020, see chapter 4.1 above).

[36] Frayne (2015) also shows the opposite to be true – several of his subjects reported spending less on things after they stopped working. Both as an effect of having less money, but also due to having more time leading them to not having as much of a desire to go shopping.

7 The Work Ethic

This chapter discusses the work ethic, which is a theoretical expression of the status that labour, by virtue of being labour, has in capitalist society. I will discuss what the work ethic is, how it perpetuates itself and how it treats work as something abstract (and so makes people treat work as something abstract when dealing with this ethic). I will also note its effects on labour and ecology.

While the work ethic will not feature as heavily in the discussions below as matters discussed in the preceding chapters, it is nevertheless an important aspect of labour, but in this thesis takes more of a background role. Nevertheless, it will at several points be made relevant in the discussions below (in chapters 12 and 13).

7.1 Identifying the Work Ethic

One central thing that has changed over time in the conceptualisation of labour, has been the move from the idea of labour as a toilsome burden, to labour as an ideal, an end in itself (Weeks, 2011; Frayne, 2015; Hoffmann, 2017).[37] In feudal or other pre-capitalist societies, the amount of time spent in productive activity was not determined by any abstract notion, rather the serf (or equivalent) did as much was needed to subsist – if for some reason less tasks needed to be done, this often resulted in doing less. The serf "worked to live" rather than "liv[ed] to work" (Frayne, 2015, p.24).

With the development of capitalism and industrialisation came a work ethic – what once was toil, became almost life's purpose in the form of work. As Weeks (2011) says, following Weber, in time the religious aspect of this ethic fell by the wayside as society secularised, but the ethic of hard work remained. Later, the work ethic was justified as a way to climb socially, and in more contemporary times, work as a site of self-realisation, as seen in e.g. more contemporary managerial philosophy (Weeks, 2011). While the justifications have changed, the core of the ethic, the exaltation of hard work as an end in itself,[38] remains.

7.2 The Workings of the Work Ethic

One thing to immediately clarify about the work ethic is that, primarily, activities are socially validated as work by the ethic as *waged* activity – what matters within the work ethic is having a job

[37] All of these rely heavily on a Weberian exposition of the protestant work ethic. See also Komlosy (2014/2018).

[38] One might say that today the end is self-realisation, with work as the means. However, this would obfuscate somewhat that the self-realisation is done *through* work – work is not the mere means to, but the *medium of* this self-realisation. Compare this to work being only the necessary toil so as to live *outside* work.

(Weeks, 2011; Frayne, 2015). As Frayne's research makes clear (Frayne 2015) – this is not just a matter of a paid job being what secures material subsistence, but that having a job is what makes a person a *proper* adult.[39] Weeks (2011) notes the societal contrast with domestic work – if it really had the same social status as activity validated as work by the work ethic, then domestic work would have a different place in society.[40]

Central aspects of capitalist society are beneficial for the work ethic's perpetuation. First, there is the fact that to live comfortably, the vast majority must work at some kind of job for a living. Indeed, to become a socially "proper" adult, following the social norms appropriate to that (such as the nuclear suburban family) often requires considerable disposable income, especially if one moves up in the income brackets and must follow the living standards of higher economic strata. Second, the taxable earnings from employment (both wages and business earnings) fund the state's operations (including public welfare services) – thus the state has an interest in perpetuating the work ethic. Third, the work ethic exists as interpersonal pressure; pressure from family, friends and peers towards having a job, and indeed having a *career* - unless one has a reason that is a "good enough" for one to be excused from these standards. One is not only pressured to have a job, but to work full-time (which is the norm) and trying to advance to higher-status jobs (regardless of one's actual desire to so so) (Frayne, 2015).[41]

The work ethic is constituted externally to the individual, appearing as a set norm for one's existence within society. It may then be internalised – and by internalisation and acceptance, people can perpetuate it interpersonally – the individual accepts that this is the way of things. But internalisation may also not happen, and can even break down and be rejected, as Frayne (2015) and Graeber (2018) give examples of.[42]

That which constitutes "work" in the work ethic is the paid job – that is, wage-labour. Only when doing wage-labour is it possible for someone to conform to the work ethic (Hoffmann & Paulsen, 2020). The nature of the job might matter for one's social status, but the condition of having a job

[39] Illustrative of this is that people who for whatever reason choose to, or are forced to, *not* have a job feel a need to justify this (even unprompted) – a tendency noted by Frayne (2015) in his qualitative interview research on non-workers.

[40] Weeks (2011) discusses at length the wages for housework-movement, which precisely tried to put unwaged domestic efforts on the same social level as labour (depending on the group, either to give it its proper value, or to be against both wage labour and the organisation of domestic activity).

[41] Frayne (2015) interviews several people who quit their jobs to work less or not at all because they e.g. realised they intensely disliked the job to the point of leaving them mentally worse off than being less well-off and having a lower-status job or no job at all. Graeber (2018) provides several examples of individuals quitting their jobs due to finding the nature of their jobs unbearable.

[42] Graeber (2018) does not directly deal with the work ethic, but a worker's rejection of what Graeber calls a "bullshit job" can be seen as a rejection of the work ethic's ideal of any job being good regardless of its content.

itself gives a minimum level of standing as an independent adult (Frayne, 2015; Weeks, 2011). As such, what the job itself consists of does not matter for evaluation within the work ethic. What matters is having gainful work *in the abstract*.

While one might have moral concerns about some jobs (such as working at a weapons factory), within the work ethic the job itself gives a validity disconnected from the content of the job.[43] Conversely, concrete activities consequently attain a different status depending on if they are done as part of a job or not. Tending a garden as an employed gardener is in tune with the work ethic. Doing the exact same tasks for the same amount of time without it being one's job, does not confer the same validation within the work ethic – while it might give social status in some other sense, that happens through some other ethic than the work ethic.

7.4 Abstraction and Ecology

Under this ethic, work, in the pure abstract, is an end in itself – it is self-realisation and the way to achieving it (Weeks, 2011; Frayne, 2015), and keeping employment and productivity are seemingly ends in themselves (Hoffmann & Paulsen, 2020). At the same time, doing work is concretely necessary for the individual to gain an income and means of subsistence, as well as being a means to social validity. And societally, work taking is what sustains the state and economy. All these things too, however, only need work in the abstract, what kind of work that takes places is irrelevant in the first instance.

Subsequently, ecology is logically irrelevant to the work ethic. The abstraction away from the specificity of the labouring activity done, the nature of the job, ensures that ultimately, the state of *having* a job is more important than what that job consists of. Which job or career one then has is also socially significant, but comes after the base state of being employed.

For the individual, it can be good to be able to find one's job fulfilling and meaningful due to its content, but this is secondary in terms of the work ethic – it presupposes that having a job as such is fulfilling, work itself, in the abstract, is self-realisation. That is, working *efficiently* and at *work* (see Hoffmann & Paulsen, 2020). Considerations of ecology are either fully irrelevant, or subordinate within the *work* ethic.

The dominance of this ethic, both at a societal and an individual level, makes it difficult to imagine a different state of affairs (Hoffmann & Paulsen, 2020). Indeed, nothing is worse than "the prospect of

[43] It is, after all, more socially acceptable to give a vague answer as to what, exactly, your job is, than to not give an acceptable excuse for why you do not have a job.

a society of laborers without labor," and the concept of there being other meaningful activities outside labour seems entirely foreign (Arendt, 1958/2018, p. 5). Given that work is environmentally harmful, and that it presents a real opposition to ecological sustainability, the ethic poses a problem in going beyond the current state of affairs for work.

8. Labour

This chapter will discuss labour and ecological destruction, combining the material discussed previously in this part. With chapter 8.1 I will give a more thorough definition of labour than the one that has been operational in the preceding chapters, while also being compatible with the one I provided at the start of part II. This new definition is what will be used for the rest of the thesis. Chapter 8.2 discusses the relation of labour and the metabolism of humans and nature. Chapter 8.3 discusses labour and value, and value as a driver and source of labour's ecological problems. With chapter 8.4, I discuss and give a re-appraisal of Hoffmann and Paulsen's factors of labour's ecological impact. I both show their compatibility with a value theory approach, as well as provide some revisions of the factors themselves. Finally, chapter 8.5 gives an overall conclusion to the chapter.

8.1 Defining Labour

To start off, labour, which I will continue to treat as synonymous with work, must at least denote a specific form of human activity, done under a historically specific social structure. Furthermore, I want to delimit labour to only denoting *waged* activity under capitalism.

First, if labour does not denote a specific type of activity, the term effectively becomes analytically useless. That is, if labour simply means *whatever humans do*, the category encompasses more or less anything. My interest is in investigating a specific subtype of activity. Second, I want labour to be historically and socially specific, more specifically – that is, specific to capitalism. I have already discussed capitalism posing the overall ecological problem (see chapter 3.3), and as discussed there, it is labour as a specific type of human activity within capitalism, that contributes to its ecological destructiveness, that interests me.

I also want to commit to a certain strict use of the term that to me seems to be unusual. I will not name anything outside capitalism, or capitalist relations, labour. This applies both in historical terms and synchronically. For human productive efforts in general I use "productive activity". This means that e.g. talking of a continuous history of varying forms of *work* (e.g. Komlosy, 2014/2018) is not really possible with my definition.

Labour, or work, is human activity done for payment within the social and historical context of capitalist social relations. The payment is for the capacity to do a certain activity (or activities) – the worker's labour-power. The activity is generally temporally determined – that is, the renumerated period of labour at some point ends, and the labourer no longer has to labour.

Commodity-producing and *value-constituting* labour, in the Marxist understanding, is a *subtype* within this wider definition of labour. This is where the nature of labour is twofold, as both *concrete* and *abstract* labour, and abstract labour and abstract time are relevant categories, as they are needed for value constitution to happen. The relation between this subcategory and the wider category will be discussed in this chapter (8.3 and 8.4).

I will return shortly to discussing the relation between commodity-producing labour and labour in detail in chapter 8.3, but there are two initial reasons for using a wider definition than that of the Marxist analysis. First, Hoffmann and Paulsen's factors, in my view, scope over not only commodity-producing labour, but labour in a wider sense (see chapter 8.4). [44] Second, and more specifically, there are aspects that are common to what I call labour and commodity-producing labour as well as not common between labour and "domestic work" or "meta-industrial labour." For example, the specific wage-relation of labour is not present for e.g., household work.

Essentially, this definition is compatible with the perhaps more usual term wage-labour. My reason to not just use that term is to avoid leaving the term labour unexamined or nebulous. Furthermore, wage-labour would have to be opposed to *labour*, which could entail either a transhistorical definition of labour (in which case wage-labour could also mean any renumeration of activity in any time period) or a too-wide definition of labour (labour is whatever humans do).

My use of the word labour (or work) differs from those of the authors discussed above. Hoffmann and Paulsen (2020) have a scope of the word "work" that is probably closest to the one I have. However, unlike them, I differentiate between labour as a wider category and commodity-producing, value-constituting labour in the Marxist sense – a difference that is significant, as will be discussed below.[45]

Regarding Marxist approaches, I differ somewhat from their use – the Marxist analysis of labour is primarily concerned with commodity-producing, value-constituting labour (Postone, 1993; Heinrich, 2004/2012; Chambers, 2018). I deal with labour in a wider sense. This means that I relegate the

[44] For example, a schoolteacher may find the job entirely unchanged if the employment changes from public schooling (no commodity produced) to private schooling (education turned into a commodity). What the teacher does may now be a commodity, but the concrete activity and working conditions of the teacher do not in principle change.

[45] Hoffmann and Paulsen (2020) define work as "an abstract economic activity based on abstract time, mainly commodified as gainful employment within the structures and institutions of modern, industrial society." (p. 351). This in concordance with my definition, since it specifies that people sell their *capacity* to work (gainful employment), as well as noting its temporal nature. However, labour is not in my definition based on *abstract time* – which is a question of value-constitution (and not all labour is constitutive of value). The most major difference, however, is that I differentiate clearly between labour in general and commodity-producing labour specifically.

value-related analysis to only labour that can constitute value, that is, labour that produces commodities. At the same time, I give the word "labour" a more specific definition, meaning that also labour outside value production is specific to capitalism – this is a narrower use of the word than what too me seems to be the case in Marxist works (e.g. Postone, 1993), where labour can seem to include non-capitalist and non-renumerated productive activities.

This also means that I differ from feminist approaches where labour explicitly includes unwaged productive activities (Weeks, 2011; Munro, 2019; Barca, 2020) to varying degrees. In contrast, I relegate these activities to stand outside labour, as their execution is not a result of a sale of labour-power. This is because I am interested in a category of activity in capitalism that has certain common features, which is not the case for these types of (re)productive activities.[46]

8.2 Labour and Metabolism

As briefly discussed in chapter 5.2, labour is not the same as the metabolic interaction of humans with nature. The latter is a transhistorical necessity, while the former is a specific social category. Thus, I am following Postone (1993), saying that it is rather that labour gives metabolic interactions a specific form. As Stoner and Melathopoulos (2018) discuss, this is different from Foster's (2000) definition, where the metabolism *is* labour, which is then disturbed by capitalism – entailing a transhistorical understanding of labour, which essentially is the form of regulating the social metabolism. An idea of a rift in metabolic relations between humans and nature (see chapter 3.1) must then be understood as *caused by* labour, and not as something that *happens to* labour.

Metabolic activity is thus not only confined to labour. This is only natural, as anything humans do is fundamentally dependent on and happens within nature. Different types of activities and different ways of doing them are then different ways of regulating the exchange of matter and energy with nature. It is in this context that even concrete labour must be understood as a historically specific category – while the disparate concrete activities are not equalised in exchange as concrete labours (but rather as abstract labour), they are concrete *labours*. Instead of being in other social categories, they are categorised as labour (Postone, 1993).[47] This entails that an activity is not categorised

[46] I also want to emphasise – the point is not to hide away the importance these activities have for reproducing labour-power and capitalist society (see Weeks, 2011; Munro, 2019; Barca, 2020) or their role in maintaining natural and social systems outside capitalism which are at the same time essential for its operation (Barca, 2020). Nor do I deny that they are shaped by capitalism. However, their relations to the system are different than for labour.

[47] In a strict Marxist sense, only commodity-producing labour has the dual character of abstract and concrete (see Heinrich, 2004/2012). At the same time, activities done as labour outside commodity production are too

according to whether or how it regulates the metabolism, but rather according to a *purely social* criterion – is it labour or not?[48] By being categorised as labour, activities regulating the metabolism are limited to a certain social form, which also effects the methods of those activities, the ways they are done. There is however more that results from being subsumed under labour, as I will turn to next.

8.3 Labour and Value

My labour definition, as noted, is wider than the focus in Marxist theory, which is on commodity-producing, value-constituting labour. In my definition, commodity-producing labour becomes a subtype of labour. As discussed in chapter 5, it is labour as abstract labour time that constitutes value and its magnitude. Value is a purely social thing and is thus by its definition *a-ecological* – matters of nature are external to its logic.

Since value, the social form of wealth, is the goal of production, the regulation of commodity-producing labour is also a-ecological.[49] Value is constituted by *abstract* labour, so it is this character of commodity-producing labour that guides the development of production. As discussed, SNLT is changed through developments in labour's concrete character. But in the move from concrete matters to abstract labour time, the concrete conditions themselves are abstracted away from – they only matter insofar as they define SNLT, which sets the benchmark for how much labour becomes socially validated as abstract labour through exchange.

However, this also means that value is objectively dependent on ecological factors, even as value's own logic ignores them. Like any human activity value's constitution is dependent on matter and energy from nature. Value needs to be constituted through the *products* of labour in their social function as commodities, and while commodities are exchanged as values, one only buys something because it has *use value*. As use values, concrete commodities and their concrete production processes (labour as concrete labour) *do* require resources and energy to come into being.

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shaped by virtue of being categorised under and dealt with as *labours* – and so also the metabolic processes of labour outside commodity production are shaped by virtue of being labour. See also chapter 8.3.

[48] Contrast Arendt's (1958/2018) division of human activity into labour, work and action. In her writing, labour is activity that needs to be continuously repeated, while work is what creates lasting products. Both are of course metabolic (even things we intend to be permanent erode), but while her emphasis is on the social aspect of this division, this categorisation also gives different forms of metabolism – constant repetition of exchange (labour) as opposed to an exchange that does not repeat until the product must be replaced after an (in principle) *indeterminate* amount of time (work).

[49] At least when speaking of the mechanisms at play within value's logic. Beyond this, ecology is relevant for regulating production, since states do pass environmental laws, etc.

Thus, commodity-producing labour, being subject to the compulsions of value's logic (including its expansion as capital, see chapter 5.4), *drives* ecological destruction. That logic also ensures that the same labour also abstracts away from ecological factors, which means there is nothing within the logic of value stopping the drive. Ecological destruction happens but is entirely outside value's logic. The drive is not a drive *for* destruction, but one that *causes* it.

However, all this *only* applies to commodity-producing labour. This is the only subtype of labour that is both concrete and abstract (Heinrich, 2004/2012). If labour does not produce commodities, there is no need to conform to SNLT, to try being validated in exchange as abstract labour time.

As such, commodity-producing labour forms a kind of core within labour. It is what constitutes value, social wealth, and it is from the dynamic it is part of that the driver of labour's destructive tendencies originate. The surplus value it generates is also what funds other labour[50] – when workers in other types of labour sell their labour-power, they still have to receive the value of that labour-power as their wages.

This relation of the rest of labour to value and commodity-producing labour gives certain pressures. Since non-value-constituting labours are funded through appropriating from the value surplus, this both gives a pressure to make these as efficient as possible, so as to minimise that appropriation. On the other end, at least in the case of state provision of services, people would naturally want the state to provide as many services, use values, as possible with the amount value it has available. This in turn means that labour that does not have the goal of value creation can be subject to similar pressures for efficiency and the same type of managerial practices (see Weeks, 2011; Frayne, 2015) found in sectors producing value.

While commodity production is only a subtype of labour, the societal centrality of this type of labour means that it also shapes labour in general, as well as other types of activity (see Munro, 2019; Barca, 2020). The effects of the driving force at the centre cause other processes giving environmental effects that scope over labour in its entirety, and this is where Hoffmann and Paulsen's (2020) framework enters.

[50] The probably most prominent example is state welfare programs. The funding from these comes from taking from the total value produced by society, reducing the value surplus available to firm owners (through wealth and income taxes, etc.) (Heinrich, 2004/2012, p. 207-208). This also means that the state is more or less as dependent on labour as workers are on having a job (Hoffmann & Paulsen, 2020).

8.4 The Ecological Impacts of Labour: Hoffmann and Paulsen's Framework

So far, I have established the driver of labour's ecological destructive tendencies – production for value. This is a mode of production which needs ever higher levels of materials and energy throughput but at the same time, in its logic, abstracts away from that throughput. However, this insight alone does not give the mechanisms of how labour impacts the environment. This is what Hoffmann and Paulsen (2020) provide. While I believe they provide a strong groundwork for understanding labour's problems, I have also noted what I believe are the potential weaknesses in their framework. This chapter thus serves two purposes: 1) connect value as labour's driving force of ecological destruction to Hoffmann and Paulsen's categories of labour's specific ecological impacts and 2) re-assess the categories themselves.

The factors scope over labour in its entirety – both commodity-producing labour and labour that does not produce commodities. This means that the factors are not the same as any properties of commodity-producing labour that are specific to it, though there may be similarities. At the same time, commodity-producing labour as the constituent of value holds a certain centrality, as it is directly connected to the underlying driver of labour's ecological impacts. As such, the factors may seem to fit more with commodity-producing labour in terms of their logic, as well as regarding what labour has the highest magnitude of impact.[51]

8.4.1 Time

I will begin with the time factor. The time factor should *not* be understood as the same thing as *abstract time* in the logic of value-constituting labour. Abstract (labour) time is an emergent social mechanism that constitutes value, is only fully realised in exchange and is immeasurable (see chapter 4). Attempts of commodity-producing labour to conform to abstract time (as SNLT) are essentially guesswork, as the validation of labour as abstract labour time (as constitutive of value) only happens after production, in exchange (Heinrich, 2004/2012).

The *time factor* is the direct, overt use of mechanical clock-hours as a temporal norm for tasks done as labour, in order to establish a reliable, disciplined stream of production (Hoffmann & Paulsen, 2020). The necessity of conforming to SNLT means that commodity-producing labour is inclined to generate such overt norms, but this process is something that happens outside of this subtype of labour as well. The existence of invariant (clock-based) time units is necessary for both abstract time

[51] This may well be the case, but determining specific magnitudes is outside the scope of this thesis.

and the time factor, but the two, while interconnected and compatible, are *not* in my analysis the same phenomena.[52] Opposite Hoffmann and Paulsen (2020)

As Heinrich (2004/2012) notes, the SNLT required to produce something may ebb and flow (e.g. if there is a bad year for a crop, requiring more work to produce the same amount as the year before). The desire to countervail these uncertainties and fluctuations – making for less guesswork – is then something that individual capitalists and managers want to do, something not directly due to value per se.[53] Renewable energy production with its unsteady flow of electricity poses a problem for firms' preferences for and need of constant, invariant (or increasing) access to resources;[54] the non-uniform ecological temporalities of the wind, the sun and water cycles come to a head with the desire for temporally reliable and controllable energy flows. With non-commodity-producing labour, such as state welfare services, the dynamic is not one of producing surplus value, but *reliably* and *efficiently* getting the most use value out of the funds (value) available to spend. For example, a nurse making home visits may be instructed to drive fast so that the time between visits is minimised – regardless of the environmental impact of the (potential) increased emissions from the car.

The time factor is also reinforced by the way employment generally happens, which is according to standardised clock-hours of work time. Generally (but not universally), people work a predetermined amount of time per day, and so managing labour is also fitting whatever production that needs to happen within the confines of this set daily (or weekly, etc.) amount of work time, giving rise to a need to keep the amount of work (in a temporal sense) invariant as much as possible. Worst-case, the employer is left with idle workers, wasting the labour-power purchased. Furthermore, the time factor is also reflected in the workers' own relation to work – one of the most central topics of labour struggles has been the reduction of work time (Hoffmann & Paulsen, 2020). Given that workers are dependent on labour and wages to live well (Hoffmann & Paulsen, 2020), this also incentivises a *stable* (invariant) rate of income and thus of working hours.[55]

[52] To give a comparison: If a chef is instructed to prepare three meals per hour, this is the overt, concrete, temporal discipline of the time factor. However, the pressures of value and SNLT – abstract time – are only present when these meals are commodities. Only with the chef's labour as commodity production is there an *abstract* pressure to (over time) increase the rate of meal (commodity) production, in order to conform with the SNLT (which may arrive indirectly as new orders of efficiency). This abstract pressure does not (directly) exist when not producing the meals as commodities, but the time factor may still mean that efficiency gains are made a requirement in the workplace.

[53] The value produced in the crop example would remain the same, after all – only the value of single commodities from production would change. However, the more this fluctuates, the more difficult it would presumably be to correctly estimate the present SNLT.

[54] Bernes (2018) discusses this further in relation to the move from water to coal-based steam power, drawing on Malm (2016). See also Hoffmann & Paulsen (2020).

[55] While workers are, as discussed, paid for their labour-power and not their labour, income is still generally overtly calculated in hours (this can be fit into value terms: if one works part-time, there is less exhaustion and

The differentiation of abstract time and the time factor may seem like hair-splitting – the factor's operation in both commodity-producing and non-commodity-producing labour can be traced back to the centrality of value as the social form of wealth. On the surface of it and in the immediate present, this appears to be true. However, this distinction is important when considering what role labour, and not just as a part of value's logic, plays ecologically, and what that means for how labour should be treated politically.

8.4.2 Scale

While the time factor concerns the temporal matters of labour, the *scale factor* concerns the physical expansion of labour's material throughput. That is, production *expands* as the concrete content of labour changes. This process is intimately tied to time but is different. the time factor concerns a disconnect in temporal logics; the scale factor concerns the problem of the level of throughput of materials and energy in production and its disconnect with what scales are actually sustainable.

Hoffmann and Paulsen's (2020) first aspect of the scale factor is that more work means more material throughput. This is true – mass unemployment would certainly mean a drop in production. It is also the case that all else equal, a 12-hour standard working day would result in more production than the current typical 8-hour standard.[56] The other aspect of the factor is the conditions that enable increased productivity and hence production. In Hoffmann and Paulsen (2020) these (labour) productivity increasing factors include technological development, a fossil fuel energy basis and externalisation of costs. And, I might add, management practices interested in increasing efficiency and labour intensification (discussed in e.g. Frayne, 2015) also contribute to the rise in productivity.

The immediate problem with this second aspect of the factor as Hoffmann and Paulsen present it, is that the increase in scale seems to follow automatically from the *technologies and techniques* of production – that the technologies (including energy production, management) themselves give rise to a dynamic of not only increased productivity but also production. Opposite this, I posit that the dynamic of growth in material throughput results from the social form of wealth – the dynamics of value (capital), as discussed in chapter 5.4. That is, the driver of material throughput growth is a *socially constituted* dynamic of economic growth (value as capital), not something resulting from

thus less working capacity lost that needs to be reproduced. If one then has to work for several employers to get a living wage, the cost of the labour-power reproduction in its entirety is simply spread out across employers).

[56] This arithmetic is what makes the idea of work time reduction as environmental policy appealing (among other reasons) – but as I will discuss in chapter 10 below, the reality is not so straightforward.

technologies themselves. The technologies, however, form a necessary precondition for this growth happening.

While the capital does require its own growth (the self-valorisation of value), this growth does not require any specific type of use value to be created – in principle, all the growth could happen through zero-impact use values, only that this is an impossibility in the world we live in (see chapter 3.3 above). The externalisation of ecology Hoffmann and Paulsen (2020) discuss does not happen in the scale factor, but is already present as a product of value's dynamics. This means that the scale factor is not a result of value as the socially dominant form of wealth as a logical necessity but is rather an emergent phenomenon. As discussed, the constant changes in SNLT result in a dynamic where concrete labour is pushed toward ever new standards of increased production of use values, which means increased material throughput.[57]

As with the time factor, the scale factor emerges from and is physically necessary for commodity-producing labour – all commodities need some minimum of materials and energy. Value-constituting labour has a dynamic independent of physical aspects, as natural factors are external. This dynamic is however also dependent on changes in concrete labour – the changing standard of SNLT and hence for what is required for labour to actually constitute value is dependent on the physical processes of labour as concrete labour. On the other hand, the scale factor is the changes in concrete conditions as such – that the introduction of technologies and energy sources results in more production, and not in e.g. a reduction in work-hours.

At the same time, externalisation does happen outside the underlying logic of value as well – costs are for example calculated with regards to money costs and labour time, not according to material throughput as such. However, this externalisation reflects the actual externalisation in labour's dynamic and is not a thing that just happens. Externalisation also happens through the work ethic – activity that functions as labour is given social validation as useful. The underlying implication is that use-values are first and foremost created through labour – even though, as chapter 6 discusses, this is not at all the case. However, this means that there is an incentive to precisely utilise the most efficient (in terms of labour time) techniques and technology to produce use values – since that means society gets more use values in total, and as that is the activity that gets recognised societally as valuable – as labour.[58]

[57] As Hoffmann and Paulsen (2020) note, this holds even for the service sector. See also Kallis (2017).
[58] Even though other activities may be recognised as also being valuable, it is, following the work ethic, really labour that is *the* socially valuable form of activity.

Thus, even though the scale factor is intimately connected to value's dynamics, its pressures also become independent goals at the socially overt level. And so, maximising labour productivity and production also becomes a goal in non-commodity-producing situations. In addition to getting the most use values for value in terms of labour time, the pressure for maximisation is also present because maximising the productivity of labour is a social goal in itself. Maximising production is maximising provision of use-values, but only use-values insofar as they are products of labour. With for example state provisioned services (those which are not commodities and thus not value-constituting labours) there is also an incentive towards efficiency as these reproduce labour-power and capitalist society as a whole (see chapter 6). Maximising efficiency here reduces the cost (in value terms) of their provision and so reduces the cost of reproducing labour-power.

At the same time, the state may for political reasons decide to allocate resources, including labour, for things benefitting the environment, partly de-externalising ecology from labour. Note, however, that it is the de-externalisation that is a conscious choice – it is value's logic that sets the default. Even so, I believe that with the scale factor, the relation to commodity-production is perhaps the strongest, and so it becomes a less distinct (but still present) effect outside commodity production, and will remain so as long as the ideal for labour is producing as much as possible, in terms of creating products of labour (commodities or not), with ecology coming second.[59]

Both time and scale are factors with socially overt features – they are factors that are overtly prescribed and enforced within the confines of labour. Even as the sources of these are the logic of value, if value were to disappear it might not by itself be enough to make these factors disappear.

8.4.3 Income

Hoffmann and Paulsen (2020) correctly state that generally, more work means more income. Furthermore, more income usually leads to more spending. For workers, the relation of work, income and spending is a necessity – capitalism has a "coercion to seek income" (Hoffmann, 2017, p. 25) through work. Or, in Marxist terms – the condition of workers is that they have nothing but their labour-power to sell to gain the means to live (Heinrich, 2004/2012). I do not want to dispute the obvious – more income does enable and generally lead to more consumption, and that income is for most people generated through work. However, I do want to consider what portion of consumption

[59] As an example of the work ethic's overtness and strength in this department: Even jobs where there is not actually that much to do, there is a pressure to *pretend* to do work, since the work ethic is that one must *work* – see Graeber (2018). Graeber also discusses jobs where the tasks seem to serve no other function than to assert that work is being done, even if the actual tasks serve no utility to anyone, and doing nothing would leave the people concerned better off.

one can posit as happening due to *work* and not due to the access to money – that is, due to income itself, as well as other cultural, not necessarily work-caused factors such as consumerism, etc.

There is arguably little difference between Hoffmann and Paulsen and a Marxist approach at the most basic level, here: the sale of labour-power in order to gain the means of subsistence holds for all labour, not just commodity-producing labour.[60] The difference is that the Marxist approach provides a driver for the continued maintenance of this historically specific situation, and not just an explanation of the present: generating surplus value is dependent on a level of power over workers (or a powerlessness on their part), so that they commit to the sale of their labour-power (preferably at a low price) and accept to work so long that they generate more value than the cost of labour-power's reproduction (surplus value) (Heinrich, 2004/2012).

However, this easy compatibility changes when considering the consumption part of this factor. In the Marxist perspective, consumption generated from wages is definitionally reproduction of labour-power. Whatever the present wage level is for a job, is the cost of reproducing the labour-power for that job, including the general standard of living for a wage level. This means that the standard of living, the cost of labour-power's reproduction, can change when wages are negotiated (Heinrich, 2004/2012). As such, there is no differentiation of types of consumption – everything is reproduction of labour-power.

This general description of the relation of wages and consumption is, I believe, not enough when considering which environmental impacts from consumption are *caused by* labour. If, for example, I enjoy chocolate regardless of whether I have a job or not, it seems unlikely that my chocolate consumption is *caused* by me working. Here Hoffmann and Paulsen are on the right track in opening up the question of the connection of labour and income from it *causing* levels of consumption beyond matters of definition. However, they do not in my view sufficiently discuss the question of what is caused by *labour specifically*.

First, I think it is safe to assume that a basic level of food and other necessities (in other words, a certain level of metabolism with nature) is necessary regardless of whether one does labour or not. Second, for any consumption beyond that I believe there must be some logical necessity at play for a part of consumption to qualify as being work-*caused*, and not merely work-coincidental. At the very least, replenishing the energy spent at work should be considered as directly work-caused. Furthermore, I want to bring two aspects which Hoffmann and Paulsen classify under other factors

[60] Hoffmann and Paulsen do not use the Marxist terminology, but this is largely irrelevant in this instance.

into this factor – *work-induced consumption*, which was categorised under the broader work-induced factor, and *time-scarcity*, which was under the time factor (see chapter 4).

Work-induced consumption compensates for the stress and drudgery caused by work, either as a reward for working and/or as a form of therapy (Hoffmann & Paulsen, 2020; Frayne, 2015).[61] That is, not only is there a question of the physical ability to work, but rewarding oneself for suffering it or compensating for the psychological toll it takes. In one sense, this is another aspect of replenishing one's ability to work, in another, it is about the ethical license to consume, as Weeks (2011) discusses. Regardless, this is *caused by* labour and not just the access to money.

Time-scarcity is also caused by work, as the working-day's colonisation of workers' time makes the time left scarcer, inducing consumption habits that are time saving but ecologically harmful (Hoffmann & Paulsen, 2020. See also chapter 10 below). This too, is induced by the time labour takes, regardless of any other tasks the worker needs to get done.[62]

Both time-scarcity and work-induced consumption are caused by labour and enabled by the income the worker gets from selling their labour-power, hence the recategorization of those two under the income factor. My change of the income factor thus means that it does not only concern the ability to consume (both necessities and luxuries) gained from labour-generated income, but the specific kinds of income-enabled consumption that are in turn also necessitated by labour, giving the factor a narrower scope. Additionally, the sub-factors concerning consumption patterns are placed under the same common factor.

8.4.4 Work-Induced Infrastructure and Mobility

The work-induced factors are what Hoffman and Paulsen call structural, occurring "independently of the work process itself" (2020, p. 345). This must, I believe, be understood as the factors not being completely independent of any aspect of labour, but rather that they are more about being necessary for work to "take place" (Hoffmann, 2017, p. 26).

The first is *work-induced infrastructure*, which is a factor with a rather broad scope. I do not have problems with the content of the factor as such, but I will note something on causes of it. Since the infrastructure in question must be caused by labour specifically, that means that e.g. a road that

[61] Some of Frayne's participants report that they consumed less once they had the time to actually enjoy themselves – or rather, that there was no need to compensate for the unhappiness of one's job (see Frayne, 2015, p.180-181).

[62] This does not necessarily mean that a removal of work's time colonisation would result in more environmentally conscious consumption, as Hoffmann and Paulsen (2020) note – see also chapter 10.

would be necessary in a different mode of production is not as such part of the factor. Rather, infrastructures are only valid members of the factor insofar they in their entirety are necessitated by labour, and/or their *scales* are increased (beyond sustainable levels) by labour. That is, the work-induced infrastructure factor should be seen as influenced by the scale factor, and arguably the time factor, insofar as the infrastructure in question is structured by the need for constant provision of what is needed for labour to take place.

The second is *work-induced mobility*. Hoffmann and Paulsen (2020) give a brief list which includes business travel and commuting. These two types of mobility have somewhat different roles and thus dynamics behind them, but I will keep them under the same factor. Work-induced mobility in general is shaped by the need for travel to be temporally efficient, and hence energy-intensive.

Commuting is travelling *to* work – it happens outside the waged working day. Essentially, this is driven by workers generally having to collectively be at the same place at the same time, owing to concerns of productivity and efficiency (see the scale factor, as well as the time factor). Furthermore, since workers are not paid for their commuting time, they would want to minimise the travel-time to and from work (time-scarcity). Ultimately, this affects the *infrastructure* needed, in terms of e.g. road capacity for the simultaneous transit of many people.

Business travel is travelling *at* work, within the working-day proper. Business travel also tries to be fast, but the incentive here is to get the most production (be that value or e.g. specific services in non-commodity-producing labour) out of the working-day, again caused by efficiency and productivity concerns, which gives connections to the time and scale factors, as well as work-induced infrastructure.

Common to these two work-induced factors is that they are relatively broad, and scope over large parts of society that technically are not part of the labour process proper (except business travel). This is why Hoffmann and Paulsen's (2020) labelling of them as structural is correct. There might be an argument for separating them more than I have done and to spread them out as sub-factors of the others. However, I believe these two represent the complexity of labour's ecological impacts as the discussion moves more towards concrete specifics.

If the existence of value as the socially dominant form of wealth is the underlying driver of labour's problems, then these last work-induced factors are the more "surface"-level and composite (structural) ones. This is also why these are more clearly expressible as functions of the three previously discussed factors (time, scale, income) than of the value-logic of commodity-producing labour directly. At this level of specific, more fine-grained matters, seeing the effects as connected to value and the more abstract factors (e.g. time) becomes more complicated, but I believe that the two

work-induced factors illustrate that the factors are the causal mechanisms in the background, even when considering fully non-abstract matters of work.

8.5 Concluding Remarks – Labour

To sum up this chapter, I believe I have now both improved upon Hoffmann and Paulsen's framework and shown how these factors relate to the underlying mechanism of value, the social form of wealth, while still not being the same thing as it. The time factor has been left relatively intact, but I have separated it as a socially overt desire of temporal uniformity that is closely related to but not the same as the underlying value-constituting structure of abstract (labour) time. I have also been explicit in how it just as abstract time is not the same thing as the mere technological existence of invariant time units.

With the scale factor too, I have emphasised the difference between it as a social structure and its technological conditions and separated out other social conditions from the factor itself. this especially concerns externalisation and the need for economic growth, which I, contra Hoffmann and Paulsen, primarily place within value's dynamics. At the same time, I have discussed how the maintenance of labour's scale happens also outside of value as a driver – costs are primarily calculated without concerns about material throughput and sustainability as such, and the work ethic, in seeing labour as *the* useful type of activity and source of use values (to the neglect of other sources), gives a pressure to maximise its production of goods and services.

I have made an effort to make the income factor something more specific than it is in Hoffmann and Paulsen. Income, or the wage relation, is central to value's dynamics. At the same time, if value were to disappear, a situation where you had to work to live would still maintain the dynamics of wage-labour for the worker. While work is necessary for income, I have tried to specify which uses of income can be said to be caused by *labour*, and not just by the possibilities money as such give. This is also what has spurred my movement of time scarcity and work-induced consumption to the income factor, as these are instances of consumption caused by labour.

Work-induced consumption and mobility have few changes, but I have highlighted how they must specifically concern mobility and infrastructure that is caused by labour, and that would not exist without it. As discussed, these are more clearly expressible in relation to the previous factors, than to value as a driver directly.

With this, I have provided a social *driver,* an underlying mechanism that explains *why* the factors described by Hoffmann and Paulsen come to be. The factors have an existence constituted by value's

logic; they are not the same as it. That is, while their source of origin may lie in value's dynamics, the factors have, as discussed, their own dynamics which I believe would continue to operate on their own if *only value* is removed from the equation.

In chapter 8.3 I discussed value as the central driver of labour's ecologically destructive tendencies. It is a purely social mechanism unconcerned with ecology, while as a matter of fact actually needing material throughput to propagate. However, value is not enough to explain labour's ecological impacts. With my revisions, Hoffmann and Paulsen's framework shows what labour's destructive tendencies are and how they operate, and how they relate back to value – both components are necessary to understand labour's ecological problems.

To reach this understanding, it has been necessary to give an explanation of what labour is, as well as what its fundamental relation to the metabolism of humans and nature is, which chapters 8.1 and 8.2 provide, respectively. While my definition of labour is similar to those used by other authors discussed in the chapters above, I still have believed it important to be explicit in my assumptions – in my opinion, clarity and exactness in delimiting what labour is can be somewhat lacking in other texts. Another point is that my definition is clear on what labour is in general (as a historically specific, renumerated, activity), and how it is different from commodity-producing, value-constituting labour in the Marxist sense. Similarly, it has been necessary to differentiate labour as something historically specific and the transhistorical necessity of a metabolic relation between humans and nature. Some kind of productive, metabolic, activities are required in every society, and labour is one only one historically specific and dominant form of activity.

Part III

While part II is primarily concerned with understanding labour and its ecological impacts, this part concerns the normative and political consequences of that established understanding. Chapter 9 presents two normative premises – degrowth and global justice – that give a background for the discussions in the subsequent chapters. Chapters 10 and 11 discuss two policy proposals concerning labour and the environment – work time reduction (WTR) and universal basic income (UBI), respectively. Both chapters function to show the limits of politics that do not effect sufficiently substantial qualitative changes in labour. Chapter 12 discusses the ecological political problems generated by the different revised factors of ecological impact as well as value. Chapter 13 then discusses the necessity of the abolition of labour, and the direction such a politics can and should take. Chapter 14 concludes the thesis.

My overall point is that labour – a specific form of social organisation of productive activity – is itself a problem that must be overcome to achieve sustainability. The point is not to disparage extant work on concrete matters of sustainable ways of producing. No matter the type of organisation, productive activity needs to change the specific technologies and practices used in production of goods and services. As long as labour and its mechanisms persist, however, the effects of technical changes in production will be limited. Therefore, an ecological politics of labour must concern itself not only with technical aspects, but also with the end of labour and the pressures it generates. The main purpose of part III is to contribute towards the construction of such a politics.

9 Normative Preconditions

A part of the premise of this thesis is that the societal context of labour, capitalism and endless economic growth create ecological problems (see chapter 3.3 above). Before considering the political implications of the critique of labour that I have developed, I will now add two normative premises concerning what an approach for a politics going beyond capitalism and growth should entail.

First, a *degrowth* perspective means both realising that there are ecological limits that humanity should abide by, but also that life can still become better in transitioning to a sustainable society (Demaria et al., 2013). This stands in opposition to a broadly conceived "Malthusian" way of thinking, wherein ecological sustainability requires social unsustainability – through increased misery and (in worse instances) actively reducing the global population (Gómez-Baggethun, 2020). Opposite this, while degrowth is by no means a unitary programme (Demaria et al., 2013), the principle ensures an attitude of change for the better, even if the societal ideals of "better" might have to change (Kallis et al., 2018).

The second premise concerns universal and global justice as political goals (which I will per se only introduce, and not delve more deeply into). That is, no-one anywhere has any more or less a right to a good life than anyone else, which also entails that everyone has an equal right to a sustainable level of resource throughput (which does not necessitate everyone consuming the exact same things, etc. – people ultimately have different preferences). It does *not* follow that there is a singular sustainable and good way of living, or that political configurations should be identical everywhere.

Beyond communities and individuals having different preferences, there is the matter that the richer societies (the global north), a small part of the global population, are responsible for the majority of e.g. greenhouse gas emissions (Steffen, Broadgate, et al., 2015). Furthermore, the global north relies on labour in and resources from poorer societies (the global south) for their current ways and standards of living (Brand & Wissen, 2012). The responsibility for the current ecological predicaments has historically been and remains the global north's. This entails that *degrowth* is different in the global north and south, broadly speaking. More reduction in resource use must happen in the global north than the south, while some societies in the south may even increase their resource use. This is not only a matter of aggregate *ecological* sustainability, but of *social* sustainability and justice within ecological limits – the reduction in resource throughput cannot only look at the ecological, physical aspects, but ensure a just and equitable sharing of what remains.

These considerations of degrowth and global justice do not only hold for consumption (and resource flows in general), but also when considering productive activity. If labour continues to exist, it should be justly distributed. This is the case regardless of whether one's view is of labour, or productive

activity more generally, as pure drudgery or of it as a pure good (though I will not discuss these types of viewpoints here). This is also the case even if labour is abolished – people will still have to engage in metabolic relations with nature, including productive activities that presumably would be socially regulated in some fashion.

10 Work Time Reduction (WTR)

Work time Reduction (WTR) has perhaps been the main approach to dealing with labour in an ecological context. As a policy, WTR has especially been considered within the degrowth tradition, while other fields are less likely to consider the topic of work at all (Kallis et al., 2013; Hoffmann & Paulsen, 2020).

The ecological WTR literature usually approaches work with the aim to reducing environmentally harmful consumption (see Hoffmann & Paulsen, 2020). Cieplinski et al. (2021) summarize research on work time reduction and environmental impacts. Through the literature, they identify two main posited mechanisms that could make WTR generate environmental benefits – the scale and composition effects. The *composition effect* works through increased free time changing consumption patterns away from commodities that are time saving but ecologically harmful (e.g., ready-made frozen dinner), to more time-consuming but not (or less) ecologically harmful commodities (e.g. making a dinner from base ingredients). The *scale effect* (not to be confused with the scale *factor* from Hoffmann and Paulsen (2020) discussed otherwise in this thesis) results from the reduction in income and GDP growth, and thus consumption (Cieplinski et al., 2021; Hoffmann, 2017).

Both the scale and composition effects – in Cieplinski et al. (2021) – can be seen as part of the income factor in Hoffmann and Paulsen's framework. In both cases. The posited environmental benefits come from changing workers' consumption patterns - that is, consumption as induced or enabled by work. The scale effect reduces workers' incomes and so their ability to consume at all – equivalent to how the income factor enables consumption. The composition effect changes the content of consumption towards less energy-intensive and more time-intensive consumption, a possible effect that Hoffmann and Paulsen (2020) also discuss. In my revision of their framework, this can be seen as reducing consumption induced by time-scarcity.

However, both these effects remain posited, with empirical evidence and modelling being limited and contradictory (Cieplinski et al., 2021). The composition effect is entirely contingent on consumer choice – more free-time may also mean increased amounts of environmentally harmful consumption instead of a shift to consumption patterns with less impact (Schor, 2005; Cieplinski et al., 2021).

Furthermore, historically consumption (material footprint)[63] has increased even as labour time has decreased (Hickel & Kallis, 2019).[64]

Cieplinski et al. (2021) find that the evidence from studies on the composition effect is mixed. This makes logical sense, as there is nothing *normative* in the reduction of working hours itself that induces workers to change patterns qualitatively. In principle, they will only shift consumption towards more eco-friendly patters if they already had that preference for less use of time-saving consumption, but did not have the time available to act according to it. At the same time, the study by Frayne (2015) shows that participants consume less as they work less – but note that this reduction is generally part of an active, conscious break with the current norms of society.[65] While Frayne's work is qualitative and not as such generalisable, it does speak to a notion that less work can mean less consumption *if* this is part of not only a desire for less work in isolation, but also of a different way of life.

WTR is generally proposed in the form of converting increased labour productivity into less working hours for workers, instead of converting the productivity increase into higher wages (Kallis et al., 2013; Cieplinski et al., 2021; Hoffman, 2017). The scale effect is strongest if there is no increase in hourly wages while the amount of hours worked per worker is reduced (Cieplinski et al., 2021). However, reduced wages is unlikely to be something workers would assent to (Schor, 2005), as it is generally not desired – for example because lower-waged workers would feel those effects more adversely. On the other hand, higher-waged workers have been shown to sometimes express a desire to reduce working-hours, even if it would mean a lowered total income (Kallis et al., 2013). Thus, the more realistic situation may be one where WTR happens with at least some increase in hourly wages (for example for those in lower income brackets), which then would have less of an effect on the scale of private consumption.

Historically, reductions in working time, which started around 1870 and kept going until late in the 20th century (Schor, 2005) have been accompanied by increases in resource use and greenhouse gas emissions (Kallis et al., 2013; Hickel & Kallis, 2019). However, the actual relation between working hours and emissions is not clear – as analyses both show positive and negative correlations (Kallis et al., 2013; Cieplinski et al., 2021; Schor, 2005).

[63] The situation looks different using different measurements (see Hickel & Kallis, 2019; Schor, 2005). Material footprint measures not only domestic resource use and emissions, but accounts for that happening in production and transport of goods produced outside the country in question.
[64] As for the idea that a transition to a service-based economy would reduce footprints, Kallis (2017) argues – with reference to empirical data – that this is not the case. See also Hoffmann and Paulsen (2020).
[65] Several of his participants do not only reduce working hours, but actively reject employment as such and the work ethic as a mode of living and as a standard for what is moral and desirable in life (Frayne, 2015).

However, even if the relation between GHG emissions and working hours is positive, the reduction in emissions from reduced working hours may not be sufficient to reach sustainable impact levels.[66] Cieplinski et al. (2021) analyse the effects of WTR based on productivity gains being converted to less working hours rather than wage increases. Their model shows that WTR significantly reduces unemployment and gives a small decrease in GHG emissions.[67] At the same time, they also conclude that there is a trade-off between reduced unemployment and environmental goals – the reduction in emissions and consumption is partly offset by reduced unemployment (the offset is partial, as both unemployment and emissions are reduced in all their models). Similarly, Kallis et al. (2013) argue that WTR needs to reduce the hours per *capita* and not per worker – an increase in total employment could negate the effect, as well as having other environmentally negative effects on e.g. transport and infrastructure.

A further aspect limiting the effects of WTR, is that of productivity forming the basis for this type of policy. As Kallis et al. (2013) point out, increases in labour productivity (output per worked hour) can have sources in the productiveness (the capability to produce) of the workers themselves, through education and improved skills, or through other means such as new machinery. The latter source is often ecologically undesirable if e.g. a new or faster machine requires more energy and/or materials.

This means that WTR as an attempt to reduce ecological impacts from the income factor potentially influences the scale factor negatively – reduction in one factor (income) may influence and cause increased impact in another (scale). While this does not mean that these cross-factor changes cancel each other out, this does mean that the total impact reduction across factors may be lowered. In isolation, WTR potentially changes consumption behaviour, but leaves work and its more direct impacts intact (Hoffmann (2017) briefly notes this possibility as well).

One can question whether large enough productivity increases for substantial WTR would even be desirable, or possible. Kallis et al. (2013) point out that the future might hold *less* available energy, and so further improvements on things like automation can become difficult. Hoffman (2017) points out that in care work (e.g. healthcare, teaching), increased labour productivity can be "neither meaningful nor desirable" (p. 30). Thus, as Kallis et al. (2013) say – in a future with less energy, we (primarily "we" in the richest, most industrialised countries) may in the end have to work more, not

[66] Additionally, the reduction of both emissions and unemployment is smaller when WTR is modelled without other policies supporting the effect, or if it's done globally instead of in one country (Cieplinski et al, 2021).
[67] They provide several different scenarios in their modelling – one where WTR happens in a single country, then there is a scenario where WTR happens globally and one where government deficit rules are taken into account. While the scenarios give different levels of greenhouse gas emissions, I discuss aspects that apply to all the scenarios.

less, given that the level of production is to stay similar[68]. However, any definite answer to whether the total time spent doing productive activities would actually be higher or lower in any sustainable future organisation of production is beyond the scope this thesis.

WTR may be a useful policy in the short term, as it can curb output and consumption growth if the reduction induced by the policy is substantial (Kallis et al., 2013; Hoffmann & Paulsen, 2020; Frey, 2019), which entails not reducing unemployment as well as not increasing hourly wages (Cieplinski et al., 2021). One reason why this is a short-term solution, is that it only delays the effects of e.g. technological development – while one set of productivity gains may be shifted to reducing work time, this does not, at the level of underlying social mechanisms, automatically mean that this will be the case with further productivity gains. More fundamentally, since the prospects for WTR seems to lie in productivity increases, this means that WTR does not actually reduce the level of production. The goal of labour is valorisation, not more free time, meaning that the default option according to labour itself is to increase valorisation, not free time. Each round of WTR would then be a new struggle against what the function of labour is – increasing value.[69] Keeping the benefits of WTR and making further progress would then be contingent on beating this driver inherent in labour every time.

Ultimately, WTR comes into opposition with labour and its aspects – WTR does not do away with the problems of labour discussed in chapter 8 above. Labour still has the same purpose as always - valorisation. The time and scale factors still operate as before – whether the working day is 10, 8 or 6 hours does not change that. Kallis et al. (2013) suggests that WTR could reduce impacts from commuting (work-induced mobility), *if* e.g. days off from work are coordinated. If operating hours are shortened, this could also mean less electricity use from workplaces, for example (work-induced infrastructure). This latter point is, however, dependent on not being countervailed by increased electricity needs induced by productivity gains – that is, interference from the scale factor.

While WTR potentially has a suppressive effect on the ecological impact of labour, specifically through the income factor, it does not *break with* the income factor (or any other) as a driver of ecological destruction as such. With WTR, income is still *the* means to consumption. It does not halt this logic of needing to seek employment (and to work a given period of time, at the behest of the

[68] Bernes (2018, p.262-3) discusses this in relation to agriculture, arguing that a move from unsustainable practices common in industrial agriculture means that more people would have to spend more time participating in agricultural production.

[69] Which one can also see historically, beyond pure logic. As Schor (2005) discusses, reducing work hours has historically been and is a policy needing strong pressure against firms' preferences for longer hours.

employer), in order to live.[70] That is, while WTR would make being at work take up less of a working day (or year) – this does not change the role of labour as a driver of ecological degradation. It is rather a matter of curtailing those existing factors of labour, contingent on its context with regards to other policies and events. This does not make WTR useless but shows its limitations regarding solving the problems of labour.

Highlighting these limits also shows that there is reason to be sceptical of the capacity different forms of WTR have to decentre work as such, a capacity suggested by many proponents (e.g. Hoffmann, 2017; Frayne, 2015; Weeks, 2011). WTR changes the time spent at work but does not by itself make work less important in people's lives, both in terms of needing to work to live, and the cultural centrality of one's employment.[71]

In the worst case, centring the quantitative change in work time potentially diverts attention away from the more fundamental ecological problem – the mechanisms of labour. As noted above, achieving sustainability might actually force people to spend more time doing production than they currently do. A too narrow focus on reducing work time may have later adverse repercussions if ecological constraints mean we have to spend more time for the same (or lower) level of output; while less time spent on drudgery that *needs* to be done to live is desirable, having it as the prime goal of labour politics could make political agreement on spending *more* time difficult.[72]

In sum, reducing work time alone holds potential for short-term ecological benefits, at least as a way of staving off the impacts of labour productivity gains. However, this type of policy does not change the underlying imperatives of labour, and so is limited in the long run. Furthermore, as a purely quantitative politics, work time reduction risks being a hindrance for a politics also critical of the *qualitative* problems of labour. Reducing worked hours for people, however socially beneficial, alone has highly limited benefits as long as the factors of labour driving ecological destruction remain. A politics solely desiring reduced working hours also might clash with ecological necessities, if the more sustainable option is for people to spend more time doing productive (metabolic) activities,

[70] A Marxian argument could be made more strongly: Workers in the first instance get paid for their *labour-power*, the capacity to work, which value is determined by the cost of its reproduction (which also includes "luxury" consumption, etc.) – reduced working hours do not *in principle* change the value of labour-power, only the value firms gain from using it. However, the price (and value) of labour-power is determined by struggle between workers and capitalists (see. Heinrich, 2004/2012), which then also includes determining how much "luxury" reproduction entails (that is, the standard of living in everyday language). See also chapter 5.4 above.
[71] I can also note that people generally work 8 hours a day, and not 12 or 10, and yet the necessity and centrality of employment remains.
[72] This also points to the limits of André Gorz (1980/1997)'s idea of a sphere of heteronomy (drudgery, work necessary to live and maintain society) which should be *temporally* minimised to the benefit of a sphere of autonomy (free activity of people).

organised as labour or as some other social arrangement. With only a quantitative reduction of working time, the *qualitative* problems of labour as described in part II remain.

11 Universal Basic Income (UBI)

Universal Basic Income (UBI) is a policy that has gained traction as a way to make society less work-focused (see. Hoffmann & Paulsen, 2020; Weeks, 2011; Srnicek & Williams, 2015) as well as providing both freedom and equality (Hall et al., 2019; Bidadanure, 2019). UBI achieves this by providing all citizens of a state (or some otherwise defined population) with a liveable income without any requirements for receiving it. The UBI is for example received regardless of whether the person has a job or not, (Bidadanure, 2019).[73]

UBI appears to be far from as common as WTR as a proposed strategy for reducing the environmental impacts of work, but it is treated in the degrowth-aligned literature (e.g. Alexander, 2015; Hoffmann & Paulsen, 2020) and otherwise in sustainability literature (Hall et al., 2019). Nevertheless, it is otherwise frequent in literatures critical of work. My interest, however, lies in considering what potential it has for curtailing labour's environmental problems.

As Hoffmann and Paulsen (2020) note, a UBI absolves people of the need to seek employment in order to live their lives – and so, labour and income are decoupled. In terms of changing labour, this is in principle the only thing UBI does.[74] While people would certainly be richer if they sought employment, they could also get by on the means given by the UBI. The income factor is thus weakened, though as with WTR, the curtailment of this connection between labour and income does not guarantee that people would shift *consumption* patterns in a sustainable way, either with the UBI alone or with UBI plus additional income from employment.

Since this is an income policy, UBI does not in the first instance change the other factors. However, UBI may more indirectly affect other factors: Since people can choose not to work and still live comfortably, they are at least to some extent in a position to refuse working conditions (and not just wages) they would deem unacceptable. As such, the scale factor could as a consequence be reduced to the degree that its impacts are caused by working conditions such as the intensity of the work for

[73] This is the policy in its idealised form. Concrete proposals can have restrictions on who can achieve it (e.g. people with incomes well above the average are denied access) or require some kind of social contribution (see Hall et al, 2019; Alexander, 2015; Hoynes & Rothstein, 2019).

[74] Hoffmann (2017) briefly discusses a UBI combined with an ecological cap and taxation scheme with e.g. emission limits. This would potentially incentivise (if not force) more environmentally friendly consumption, as well as technological shifts in production. Thought this would potentially affect impacts done through labour (a part of production), it is also contingent on a policy which is not UBI proper. For the problems curtailing emissions through taxation etc, see the discussion on capitalism's growth imperative in chapter 3.3.

the workers. This is given that workers are willing to oppose that work intensity even at the risk of lower wages (since productivity would go down) or not getting work at all.[75]

Furthermore, as Weeks (2011) discusses, UBI, both as an actual policy as well as a mare articulated political demand as such prompts people to consider a life beyond work – and a decentring of work. This is true, both in terms of economic opportunity, and in terms of opposing the work ethic directly. UBI entails a right to be provided for without having a job; instead of having to either conform to the work ethic or to justify why one cannot (and qualify for some conditioned income from the government, for example), one receives the means of subsistence simply by existing. The possibility to live without labour is thus posited, against a society where labour is *the* means to live.

However, UBI as a reform is also limited – even if some people could live off UBI, someone must still do all the production (which is true in any social-economic system). If the UBI comes from the state, the state needs a stream of revenue (value) from production to provide the UBI, a stream which again requires workers – not to mention that the production of goods and services as such generally requires labour. As Hoffmann and Paulsen (2020) discuss, the state, as well as other parts of society, is dependent on labour. This, ultimately, means that UBI can only give people power to reject employment to a certain extent – if too many people reject work, the state and businesses would lose their revenues, with the UBI losing its funding in the process. Consequently, UBI has a limit on how much it can impede the ecological impacts of labour, given that labour and capitalism otherwise operate as normal.

In sum, universal basic income has its limited merits. Potentially, it partly decouples income and labour, albeit the extent to which people can do this is limited both by the wider economic system and because *someone* needs to engage in metabolic activity and produce goods and services – something that is the case regardless of the social system in place. This also places limits on how much UBI can change the ecological impact of labour, even with respect to the income factor. However, it *does* open for the idea of a mode of living where labour has less centrality in life, through being less intimately connected to the means of living.

[75] Workers could also do this *now,* in theory, but the consequences of failure are then larger, since there is no UBI to fall back on.

12 The Problems of Labour

Both of the policies above, UBI and WTR, broadly share a similar problem: while they are not fully ineffectual environmental policies, they are by their nature limited. The policies do not change labour itself as a social structure. UBI allows for some limited decoupling of labour and income, but this does not necessarily entail a change in impacts. Additionally, the changes UBI could cause in employment are quantitatively limited, as labour (still being the dominant form of productive activity) is still needed for society and metabolic relations to operate – the prospects of *qualitative* change seem highly limited. Arguably more central is WTR, which seems to be more discussed in ecological contexts, and which seems to have more traction. Since WTR also is more clearly purely a change in quantity, it is also here that the problems of a purely quantitative policies are most apparent. WTR does change how many hours people work, the posited benefits are primarily grounded in *consumption* changes, not production changes per se. Labour remains, changed in quantity, but unchanged in its *qualitative* aspects.

This illustrates the political problem: Since the ecological problems of labour are inherent to labour, labour itself, as a social structure, must be changed.[76] Ultimately, this entails the complete transformation or abolition of labour – which falls under what has been called postwork politics (Hoffmann & Paulsen, 2020; Weeks, 2011).[77]

I will begin discussing the question of going beyond labour by looking at the political implications carried by value and all of Hoffmann and Paulsen's (2020) factors. I will return to the question of the abolition of labour *per se* in chapter 13.

12.1 Valuation

As discussed in chapter 8, value is the underlying driver of labour's ecological destructive tendencies. In being steered by value, labour is shaped to increase valorisation, with the fulfilment of needs as use-values being a secondary result. Value is a temporal form of wealth, constituted by labour time – ecology is irrelevant to it; the only purpose of value is to generate more value. Politicizing labour,

[76] I mostly have been and will gloss over the purely social problems of labour. Hoffmann (2017) provides a brief overview. Longer-form discussions of the social problems with labour are numerous, see e.g. Marx (1867/1990), Lafargue (1883), Gorz (1980/1997). More recent contributions include Weeks (2011), Frayne (2015) and Graeber (2018).

[77] Note that postwork politics is not a uniform program in which everyone agrees with my definition of the term. It might as well only mean dethroning work from its central place in society, keeping some kind of "work" intact in some form or another (Hoffmann & Paulsen, 2020).

then, does not only mean a politics of labour *time*, but politicising how production happens and why – not only the temporal frame of production, but also its content and social form.

The *how* does not (only) mean which technologies are employed, but how they are applied through the social organisation of production. When labour either must maximise value (value-constituting labour) or minimise its cost (as labour-power) in value terms (labour that does not constitute value), the techniques and technologies chosen, as well as how they are used, are shaped by the pressures of continued valorisation. The *why* means that the goal of production must change from value accumulation to realising concrete goals – something that must ultimately be subject to political discussion. Politicisation of these aspects is necessitated by the need to regulate the metabolism of humans and nature consciously, meaning politically.

The end of value as a driver of labour does not automatically entail that its other ecologically destructive factors also end their operation (as I will discuss below) – value's abolition is necessary, but insufficient. Shaping human productive activities to be sustainable does not automatically happen due to the absence of previous social drivers – activities must be actively shaped. While I emphasize labour's problem due to its *qualitative* aspects as a social structure, this does not mean that its problems are not also *quantitative* – they also regard the physical level of production.

However, explicitly regulating the quantities of production means qualitatively changing how production is regulated: Enacting necessary changes requires a regulation that *directly* addresses what to produce and how. Questions regarding how much time people would have to spend producing things would follow *from* these decisions, and not the other way around. That is, the problem is not the use of clocks to know the time, but the socially normative function of uniform and abstracted temporality.

12.2 Time and Scale

Even if the goal, value's self-valorisation, changes, production might still retain other harmful features of labour. Hoffmann and Paulsen's (2020) categories, valid for the entire category of labour, are thus also necessary to change to have a system of production that is sustainable. The abolition of value implies that production must change in both the why and the how. But this does not say much about which *hows* need to change. While they do not discuss this, Hoffmann and Paulsen's

categories do reveal certain directions for productive activity, at least in the negative – the directions the organisation of production *cannot* take.[78]

The problems caused by the time factor, the break with varied ecological temporalities, imply that a new form of productive activity cannot have the general form of continuous production, with a constant (or expanding) rate of output. Keeping the old form would entail continuing to disregard and violate the temporal rhythms of ecosystems. Rather, different productive activities' temporal rhythms would have to follow the temporalities of the relevant parts of nature – giving ecosystems time to recover and not disintegrate, allow resources to be replenished and so on. Furthermore, avoiding the time factor also means that production processes can and should *finish*. Opposite the time factor, where labour goes on forever, post-labour productive activity should stop when its task has been fulfilled.[79]

Beyond the necessity of reducing the total scale of resource and energy throughput, the scale factor implies that *efficiency*, specifically the efficiency of human productive activity (labour efficiency or productivity), should not be a goal privileged above sustainability needs. Both as a result of value's dynamics and as a socially overt goal, efficiency as a primary goal poses a problem. Instead, efficiency in terms of how much time humans must spend in production must be subordinate to sustainability. This means that convenient time-saving technologies or techniques will have to be abandoned or not put to use in the first place if their use entails ecological destruction. Conversely, ecologically harmless efficiency gains might entail reducing the time spent in production, as increasing the total *scale* of output may be unsustainable.[80]

12.3 Income and Work-Induced Infrastructure and Mobility.

For income, the problem in the first instance lies in that the ability to consume, including the consumption needed to live, is tightly tied to labour. A perpetuation of this arrangement with labour or some new organisation of productive activity would drive people to produce because they need

[78] To the degree that the descriptive analysis is present in their work, it is perhaps fair to say that I am making explicit what may implicitly lie in their article (as well as Hoffmann, 2017). At the same time, I have also made some developments in part II that has given an analysis that is to some extent different and hence has arguably other political implications.

[79] Not all activities would have definite endpoints. Some things, like farming, have to be repeated indefinitely in order for people to subsist. See also Arendt's (1958/2018) work-labour distinction.

[80] With regards to this factor Hoffmann and Paulsen (2020) *do* make a political claim: that WTR would alleviate the scale factor. However, this is not true both because WTR policies are mostly based on productivity gains, but also because WTR does not *stop* productivity gains. Logically, at some point when the work time has reached some limit of reduction, further productivity gains will start counteracting the gains made by WTR.

an income. What the productive activity would produce, or how it would be done would be irrelevant as long as one would have to do it to live.

The individual's access to goods and services must necessarily be decoupled from their participation in productive activity.[81] A lack of decoupling may not only give a compulsion to *produce*, but also a sense of entitlement. Those who produce could feel that increased (unsustainable) consumption levels for them would be *deserved* because they have been taking the burden of a production process. At the same time, there may be productive activities necessary for society which no one (or not enough people) would want to do of their own free will. It might then be the case that some reward system (or, perhaps less ideally, a system of coercion) would need to be put in place to ensure that these productive activities are done. In that case, the decoupling of participation productive activity would not be completely decoupled from access to goods and services. However, such a system would have to be limited in scope and be sufficiently qualitatively different from the wages system so as to avoid perpetuating the income factor.

In my reconfiguration of Hoffmann and Paulsen's categories, I have placed time-scarcity and compensatory consumption under income. While these are tied to income under labour, their ultimate cause is the participation in production. Thus, even with income done away with, the system productive activity must be reconfigured so that people do not feel time-scarcity at a level that induces a demand for harmful time-saving consumption. Likewise, production should not make people so physically or mentally damaged so that they seek to alleviate their pains through ecologically harmful (levels of) consumption. As such, a certain level of social well-being must be in place in productive activities, in order to avoid ecological harm.

This is not only a question of *money* as it is known today and renumeration of labour, but also of what ethical status the individual's work or productive activity has. In placing labour as the socially useful and good activity, the work ethic (see chapter 7) not only gives a pressure to get a job, but also enables work to be the source of rewards, even those rewards one gives oneself. If one has contributed to society, done the right thing in going to work, one might feel entitled to reward oneself for that, through (unsustainable) consumption. The work ethic then reinforces compensatory consumption (see chapter 8.4.3). In this sense, at least, a post-labour society must also do away with anything equivalent to the contemporary work ethic.

[81] While Hoffmann and Paulsen (2020) note the individual's dependence on work to live, as well as positing income from labour as generating consumption in general (which I have critiqued above), they do not say anything about a *necessity* of moving beyond the wage relation.

Work-induced mobility and work-induced infrastructure give certain more concrete indications as to the content of post-labour productive activity. Both are partly dependent on the scale of production, and thus reliant on the scale factor. Mobility has, as discussed, two aspects. Travel *at work* (or while taking part in productive activity) is dependent on both the efficiency pressures of the scale factor, as well as the time factor's pressure to keep production going as temporally monotonously as possible. At the same time, travel *to* and *from* a workplace is dependent on certain pressures of efficiency as well as a kind of time-scarcity. Commuting thus also has to be shaped so it does not demand too big roads (etc.) or demand harmful speeds of transit.

Infrastructure would also have to be reduced, scale-wise. At the same time, concrete physical aspects of it would have to change – Hoffmann and Paulsen (2020) for example note the problems of the energy basis of production.[82] Since infrastructure also includes long-lasting fixtures, there might also be cause for not only stopping use at a certain sale, but actively removing infrastructures that e.g. occupy a sizeable amount of land.

[82] As part of their discussion of the scale factor.

13. The Abolition of Labour

The different factors of labour's ecological impact, as well as value, each have their own political implications, which follow from their distinct ecological effects discussed in part II. While they are intimately connected, and some function as drivers to the others, the removal of one factor is not enough to remove the rest. The driver (value) may increase the impact of a factor and be the initial impetus, but this does not entail that the disappearance of the driver necessities the disappearance of the resultant factor. For example, if the scale factor is neutralised, this does not mean that the infrastructure of labour is suddenly sustainable. Making labour sustainable thus entails its complete transformation – or, rather, its *abolition* and replacement with a different mode of production entirely. In this thesis, this is the meaning of postwork, which I will expand on in chapter 13.1.

What I furthermore will discuss in this chapter is a *direction* of the politics of abolition. Chapter 13.2 discusses aspects of what abolition entails, while chapter 13.3 provides a highly preliminary discussion of political change in the direction of the abolition of labour. Much as in the discussion on the specific factors of labour in chapter 12 above, the discussion here will not give much in the way of positive statements of what will happen at any high level of specificity, but rather I will discuss what kind of principles an ecologically sustainable regulation of production should adhere to. Giving much in the way of concrete policies concerning the abolition of labour would be beyond the capacities of this thesis. This discussion will thus not give blueprints for putting postwork politics into concrete practice, but hopefully it will be a step on the way to a fuller understanding of what a process of abolition and replacement of labour needs to entail.

13.1 The Meanings of Abolition and Postwork

The abolition of labour (or work) is the end of labour, as I have defined it, as an extant social structure and conceptualisation of productive activity.[83] This is also what I mean by postwork. My use of the term can be contrasted with how postwork is discussed by some other authors, where postwork is more construed as decentring work, reducing its place in society, reducing how much time it takes up or as making certain reforms to it (Weeks, 2011; Frayne 2015; Hoffmann & Paulsen, 2020). My use of postwork is stricter: It entails fully going beyond labour, it is abolition.

As discussed above (chapter 8.2), labour both regulates the relations of humans to nature and between humans and humans. Combined with the dominant position labour has in society,

[83] It does not mean the abolition of work in the sense of the abolition of drudgery or necessary human productive activities (see e.g. Srnicek & Williams (2015), for such a conception).

abolishing labour thus entails categorically, qualitatively, changing not only human-nature relations, but also the web of relations between humans. As Weeks (2011) discusses, fundamentally changing society requires destruction – transformation implies the end of what is and the introduction of something new, including aspects of one's self (since people are shaped by and shape societies). In the context of ecology, this really means that to preserve desirable ecological conditions that form the basis for the flourishing of current societies and their social relations, those social relations (and societies) must be destroyed and replaced. Abolition of labour, due to this dual role, thus does not only mean a change in (destruction and replacement of) the form of metabolic activities, but also in the relations of *humans* and thus of humans themselves (as our relations shape us).

Postwork politics as abolition is as mentioned different from that of other authors, who tend to focus on decentring. In Weeks (2011) the terms postwork and antiwork, are all different components of a process towards a society beyond work (which still seems to not imply actual abolition).[84] Hoffmann and Paulsen (2020) treat postwork both as a critical attitude to work itself and as containing "the potential for an emancipatory transformation of industrial society" not necessarily entailing "abolishing work *tout-court*" (p. 348, emphasis in original). In my analysis, quantitative reductions (both in terms of work time, work's ethical importance and how much space it takes up in society) are insufficient. Labour, having the qualities and dynamics it has, must abolished in its entirety – its individual components cannot be singled out and replaced piecemeal, they must instead all be done away with, ending labour as a social form of organisation in the process.

I am here using my particular definition of labour, which is, as discussed, different from those of others (e.g. Hoffmann & Paulsen, 2020; Weeks, 2011; Postone, 1993). When Hoffmann and Paulsen (2020) discuss the need to change the "organisation of work" (p. 349), for example, this can be seen as part of the political direction I am advocating. Postone's (1993) discussion of the necessity of abolishing *capitalist* labour (as opposed to just labour, as I am saying) must be understood as close to the scope of what I am advocating, though in a somewhat different context.[85] The fundamental point of agreement with Postone is that the shift is *qualitative* and concerns labour in its entirety.

Postone can be contrasted to other ecologically oriented Marxist approaches. Burkett (1999/2014) emphasizes the necessity of abolishing value but leaves labour relatively unexamined. Similarly, Stoner and Melathopoulos (2018) discuss the approaches of both Moore (e.g. Moore 2015) and

[84] In Weeks, antiwork is the critique of work society, while postwork imaginaries are used to "point toward a horizon of utopian possibility" (p. 30). Antiwork denotes the rejection of the current society, whereas postwork, broadly speaking, is the alternative politics.
[85] Postone's (1993) discussion is in the context of abolishing capitalist labour as opposed to *affirming* labour as something that will be liberated, or become unalienated, under socialism.

Foster (e.g. Foster 2000), critiquing both for in different ways not treating capitalist labour (or labour, in my definition) as something qualitatively different than pre- or post-capitalist forms of production.[86] Abolition of labour is not just about value as the form of wealth, but also about *specific* factors of labour that are connected to but not the same as value – hence labour cannot just continue in a slightly changed form if production is to be sustainable.

13.2 What Does Abolition Entail?

While labour makes the regulation of the metabolism of humans and nature secondary to value, a purely social form of wealth, postwork must entail a *direct* regulation of metabolic processes, as opposed to the *indirect* regulation subservient to value. By this I do not mean to imply that there is a given natural form of metabolism, but that metabolism-regulating productive activities must be consciously shaped and organised to not be ecologically harmful. Additionally, this regulation includes keeping levels of extraction of resources, for example, at sustainable levels – the ecologically relevant physical scale of throughput, or *quantity*, of productive activities still matters, even as the form has changed from that of labour.

Such a form of metabolism-focused regulation would also entail treating different activities as *different activities*, each with their own unique social and ecological characteristics, opposite of categorising them as labour, which even as concrete labours entails treating them as being at some level equivalent in social form, regardless of metabolic context or social qualities.[87] That is, they would have some *common social quality* that would make them different from other activities as a group. This is not about linguistic categorisation, but about different activities being treated socially as equivalent processes. While activities regulating the metabolism may be given their own name, the actual matter is whether these activities are treated as unique in their concrete characteristics and ecological contexts and regulated following those, as opposed to being regulated according to some purely social common quality.

Regulation of productive activities concerns both their social and technical aspects. As discussed, technology as such does not automatically cause destruction, rather it is *which* technologies are developed, *how* they are applied and at *what* scale they are used that determines their ecologically destructive results. Socially, I do not wish to imply that the distribution of participation in production

[86] In the case of Moore, the problem is failing do distinguish what is qualitatively different about capitalist society, including labour, vs other (older) societies. In the case of Foster, the problem is an "uncritical and ahistorical affirmation of "labor"" (Stoner & Melathopoulos, 2018, p.123).
[87] On the historical specificity of concrete labour, see chapters 5.2 and 8.2.

cannot be done according to clock-hours. As Postone (1993) discusses, the problem is not the use of mechanical clock hours as such, but the *societal dominance* of abstract, invariant time. My point is rather that the determination of time spent in production must be *subordinate* to ecological sustainability, again dependent on the *specific* characteristics of activities and ecological processes. Discussions of reduction of "work"-time (see chapter 10) or of a politics of time (Frayne, 2015) are as such not necessarily problems by themselves, but pose problems as long as they presume labour's continued existence, instead of conceptualising a reduction of time spent doing productive activities within the context of – and constrained by – an ecologically sustainable, postwork system.

Furthermore, ecological postwork means that productive activities should have a different *social valuation*. This is related to the politicisation of "work" that Hoffmann and Paulsen (2020) discuss. Changing valuation concerns not only a different social form of wealth replacing value (in terms of consumption), but also a valuation of sustainability of production over labour productivity. This is not (just) about what people *think*, but about how the social processes in place, through which productive activity is regulated, valuate different aspects of production. However, as establishing new conscious social processes is a political question, how people think does also matter.

These changes must also include the equality in ethical status of different activities – both those forming part of production and those that do not.[88] The work ethic (see chapter 7) privileges labour, as specific social category of activity, with giving jobholders a certain social standing, from which non-workers are excluded. A perpetuation of the work ethic would mean that people would have to generate and participate in productive activities only to be given the social standing as a proper, independent adult that the work ethic gives. Hence the ecological impact of productive activity would become secondary to social acceptance.

With work, so too must the work ethic be abolished. This is not as such about the social valuation of *production*, but about the individuals participating or not participating in productive activities. Both the exaltation of those that produce and the material rewards that come with that ethical status (see chapter 12.3) must be done away with. Partaking in a productive activity should not come with types or levels of *societal* special benefits that would incentivise people to demand participation in that activity beyond sustainable levels.[89]

[88] That is, activities not considered productive – or labour – today, such as child-rearing, domestic upkeep, etc. Broadly speaking, the activities discussed in e.g. Barca (2020), Munro (2019) or Weeks (2011). This also entails things considered to be *leisure* or recreation (see Hoffmann & Paulsen, 2020; Weeks, 2011).

[89] Some things might still entail a specific social status – such as doing healthcare. The problem is not such phenomena as such. Instead, this is a question of being afforded a certain ethical status regardless of what it is one does (or not), as well as not locking access to material benefits behind participation in certain activities (at least insofar as that would emulate the results of the income factor – see chapter 12.3).

These points are quite broad and non-specific. However, combined with the problems of labour discussed in the previous chapter, I believe they give more clarity to what directions ecological postwork politics must take, and the degree to which these transformations of production are *fundamentally* of a different quality from labour as I have discussed it.

13.3 Labour, Abolition and Political Change

Finally, I wish to note a few things pertaining to aspects of abolishing labour in the current socio-ecological context. This is only a highly preliminary discussion which would need to be further developed, but at the same time I believe it is pertinent to note how the previous highly abstract discussion can be discussed as relating to our current moment.

The problem of what human societies are to do to achieve ecologically sustainable societies is of an *immediate* nature. At the same time, such politics must aim for changes that ultimately ensure *permanent* sustainability, and not just temporary changes in, for example, greenhouse gas emissions. Even as abolition of labour as such would be decades or more away (it is doubtful one could upturn a deep-held social practice instantaneously), that goal also matters for more short-term ecological politics of labour.

The trajectory of more immediate changes and measures must be towards that more permanently sustainable state of affairs. While I have stressed the limits of UBI and WTR, they do not necessarily conflict with the abolition of labour as an end-goal. However, the specific aspects of these policies then matter. If they for example are premised on still *qualitatively* exalting work (the work ethic), only with less *quantity* of it, they might reinforce the notion that only through *labour* can one have a good life, an idea that directly goes against any idea of abolition. Not because production (done as labour or not) cannot be fulfilling, but because positive aspects of activity are tied to labour to the exclusion of other activities.[90] How activities are or can be fulfilling or not is however something I will not discuss here. On the other hand, while I have argued that the effect is limited, UBI can serve as a conduit to more fully disconnecting participation in productive activity and subsistence. However, UBI must here be seen and evaluated as a step in the right direction, *not* as an end-goal in itself, for the reasons discussed above.

[90] There is a certain truth to the idea that work is fulfilling. Forced idleness can be a form of torture. That is, people do want to do things, things that are by themselves enjoyable or which they deem socially useful (though the activity itself may not be enjoyable), but those things are often not labour at all, or are done in ways deemed not profitable (Graeber, 2018). Abolishing labour also means recognising this.

Furthermore, the abolition of labour must be a globally just one, simply meaning that the abolition of labour, and of specific activities (e.g. coal mining), must be done in a way that ensures that people are not left destitute, but with the means to live comfortably. This also has a global dimension – just as abolition cannot mean one class freed from labour while another still is bound to it, it cannot mean that the rich global north abolishes labour while maintaining the current exploitative, colonial relations with the global south (see Brand & Wissen, 2012; Clark & Foster, 2009; Barca, 2020).

I also wish to note some aspects regarding what parts of society would be interested in effectuating the abolition of labour. While I cannot provide strategies for change as such, it can still be useful to show potentials of ecological postwork to groupings today that may have an interest in overturning labour. This also gives an opportunity to show some convergence with the political comments made in some of the literature used. At the same time, these should be seen as early-stage comments which would need much fuller treatment than I can give here to be more directly applicable out in the world.

The state poses a problem and is not necessarily a source for support for any movement towards abolition or postwork practice. The state is itself dependent on income generated through work, as Hoffmann and Paulsen (2020) discuss. Value still remains the form of social wealth, and hence labour must continue to take place for the state to finance its services. Additionally, even if the state can be changed to serve other ends, this would still require a non-state movement to come in and change the state. As such the impetus for change must come from outside the state, from some kind of political movement (Frayne, 2015).

According to Frayne (2015), no such movement exists. At the same time, complaints about work and the surrounding culture are gaining more foothold in public discourse. Furthermore, new types of productive relations have some growing interest (Hoffmann & Paulsen, 2020). Yet, these things do not make a movement as such. In discussions of movements and politics against work, different strata of society are emphasised as sources for practice and action. Frayne (2015) emphasizes those disparate groups which end up on the margins of current work-centred society. Weeks (2011) stresses (specifically with regards to UBI and WTR) the importance of postwork for those who are unemployed or precariously employed, as well as this type of politics as a feminist project. Achieving a more equitable distribution of domestic burdens could be helped by the end of labour's privileged status, as well as the access to income (or access to consumption) without needing to work – which could also give more freedom from typical family relations.

While she does not have a postwork approach per se, Barca (2019, 2020) discusses the possibility of an alliance between workers and "meta-industrial" workers – those who grant "the conditions of

production" (2020, p. 32) (who are not workers in my definition. See chapter 8). This alliance would be founded on a common interest in not doing irreparable damage to the biosphere, achieved by changing practices of production and reproduction. In a similar vein, Hofmann and Paulsen (2020) highlight that since work historically originates in the colonial north, other forms of production in the global south form sites of struggle against work as anticolonial resistance and postcolonial thought.

Together these (somewhat overlapping) groups in principle encompass most of the world's population. These groups can and do have competing interests, but Barca (2019) is correct in pointing out that even so, there *is* a common interest in maintaining a stable biosphere, which one can define as staying within planetary boundaries. However, this common interest exists only in principle, and does not automatically become an active political force.

How articulation of a potential common cause is to be done is its own issue, which cannot be investigated in full here. I will, however, note the following: What is probably the biggest hurdle in alliance formation is that between the workers themselves and the rest. Barca (2019) notes the opposition between transformative ecological politics and the mainstream labour movement's jobs-based strategies, firmly rooted in keeping labour fundamentally as it presently is, and those disparate movements opposed to regular capitalist development as well as those in the "meta-industrial" sphere excised from being part of labour.[91]

The current mainstream struggles of the labour movement for e.g. better jobs, wages or working conditions are internal to the system (Heinrich, 2004/2012; Postone, 1993; O'Kane, 2018) – they are not opposed to the existence of labour but are predicated on it existing. However, this does not mean that it has to be so – labour movements could also decide to oppose labour (and capitalism) (O'Kane, 2018), but this requires different political goals. One alternative goal could be the common ecological interest. Another could be equalising the different forms of activity, which means dethroning work's privileged place, such as it is in the work ethic – though this coal does not necessarily entail the full abolition of labour. Both of these entail labourers, just as everyone else, deciding to pursue different political goals than the currently dominant ones.

It should not be surprising that a fundamental shift in the organisation of society would require changes in views that remain quite deep-seated and would require massive efforts to overturn (Frayne, 2015). How to effect such a change is beyond this thesis. However, it stands to reason that one would not change one's views if there is no problem with the current one. Hopefully this

[91] Barca's (2020) solution to this is in part "broadening the semantic sphere of labour towards the inclusion of both industrial and meta-industrial work" (p. 60) – one which I disagree with, on account of my arguments against labour as such.

contribution to developing an ecological critique of work helps to reveal the opposition between labour and a sustainable civilisation.

14. Conclusions

In this thesis, I have argued that labour, by dint of being a specific social structure is ecologically problematic and must necessarily be abolished if ecological sustainability is to be achieved. Reforms only touching on individual aspects or quantities of labour are thus insufficient. This ecological critique of labour complements and builds upon earlier social and ecological critiques of labour, as well as giving an impetus to furthering such critiques beyond policies that I have argued to be insufficient for solving the present ecological crises. I have made my developments along three main lines, corresponding to my three research questions:

First, I have developed the analysis that explains why labour as a social structure – as a social form of productive activity – is an ecological problem. I have done this by combining Marxist analysis, including the theory of value, with my revision of the framework from the one other work on labour as an ecological problem, Hoffmann and Paulsen (2020). I have amended their framework to improve its internal logical rigour, as well as provided value as a driver for why the factors of labour's ecological impact come to be and propagate, while also maintaining that these factors could have a life of their own without value now that they are well-established.

Using these approaches, this thesis explains how labour, down to its very core, is in opposition to the environment; labour is ignorant of the consequences of uniform, linear time against the variegated temporalities of ecosystems. It ignores any limits to matter and energy throughput. People are forced to do labour – as opposed to any other type of activity – to gain an income necessary to live, and the damage it does to them drives consumption. Both inside and outside production proper, labour forces unsustainable scales of infrastructure and unsustainable modes of transport. Labour's purpose is, indirectly or directly, valorisation of a purely social form of wealth, value. This form of wealth is entirely a-ecological – while it in reality needs a throughput of materials and energy in order to create exchangeable use values, ecology is not part of its internal logic. Since ecology is irrelevant to value, and expanding value is the purpose of labour, ecology becomes irrelevant to labour, too.

Furthering this understanding has required understanding labour and creating my own new definition of it, where labour is human activity done for payment within the context of capitalism, the payment is for one's capacity to work (labour-power), and the payment is for a given period of time. (see chapter 8.1 for the full definition). The definition demarcates labour as historically specific, and from other types of activities, as well as from being defined as identical with the metabolism of humans and nature.

I have also discussed why this state of affairs, labour, continues. Not only is it due to labour's own aspects, but also how they relate to the rest of society. Since societies are on the whole capitalist, this means that wealth is based on abstract labour time, which means that there is a compulsion to perpetuate labour for the expansion of value. This includes what Hoffmann and Paulsen (2020) call the dependencies on labour (though they do use a value analysis). The state depends on labour to finance its proceedings, as social wealth – value – stems from abstract labour time. The individual is dependent labour as it needs to work, sell labour-power, for a living. Actors in capitalist society support labour not because they want to (though some may), but because they *have* to. At the same time, the work ethic gives more socially overt reasons for desiring labour. Employment is the means to not just an income, but also, as Frayne (2015) notes, to be evaluated and accepted as a full, independent, member of society. The work ethic privileges labour itself over other activities. Within this ethic, any concrete aspect of a labour is irrelevant – including ecology. The work ethic socially reinforces ecology as being something external to and irrelevant for labour.

Second, I have discussed why what I have termed *quantitative* reforms will be insufficient for solving these problems. While they may have limited effects, approaches such as work time reduction (WTR), ultimately does not abolish the aspects of labour giving its harmful effects, though WTR might impede them. Similarly, this is the case with universal basic income (UBI), where most people would still have to work for a living for production to happen, if all else is equal in society. This problem also holds for attempts at changing what tasks are done, what jobs are available, within the confines of the social structure of labour – such approaches could give some alleviation, but again, simply do not change labour *per se*. Even technologies and practices that are more sustainable than what is presently the case can become unsustainable if is driven to scales beyond what the biosphere can handle, for example by being part of labour.

Third, I have discussed what these problems of labour mean politically. From the two points above, it becomes clear that the necessary condition for sustainability of production is the *abolition of labour*, meaning the end of this particular social structure for organising and executing productive tasks, and its replacement with something different. A different social structure of productive activity would need to actively regulate the human metabolic interchange with nature, which entails the end of value, the current form of social wealth, as well as shaping productive activities to not perpetuate the other factors of labour creating ecological degradation. All the harmful mechanisms currently constituted by labour must be done away with, it is not enough to do away with one of them, such as value. Abolition must both change the *why* and the *how* – production cannot be done for value's sake, and it cannot reproduce the mechanisms of the factors of labour.

I have also discussed aspects of what *direction* organisation of productive activity beyond labour could take. They are not concrete institutional proposals, but rather general inferences from the problems I have identified. Production must correspond to the temporal rhythms of ecosystems, and improvements in the productivity of productive activities cannot happen to the detriment of ecological integrity. This means no abstract time, nor any socially overt ambitions of uniform temporality of production, which would be incompatible with the varied and non-linear temporalities of ecosystems.

Abolition also entails the end of the work ethic, meaning that a particular organisation of activity, or specific types of activities cannot societally be too morally privileged, nor carry material benefits – at least to the degree this would incentivise doing the activity not for its end-result, but for the benefit given from doing it. Anything like the wages system cannot be present, or the incentive to produce may override ecological sustainability and the goals of production. Changing the *why* means that production should have different goals, ones conductive to both ecological sustainability and global social sustainability and justice. Finally, this all results in that treating all productive activities as the same type of thing, whether that is under the term labour or some other, is not tenable. Different activities must be *different* activities – no category of activity should be privileged like labour and risk becoming desirable for itself above its goals and sustainability, and different activities should be tailored to the different relevant ecological rhythms and conditions.

The problem of labour is *both* one of *quality* and *quantity*. It is a quantitative problem, since labour shapes the metabolism of humans and nature to give forms of material and energy throughput that exceeds certain quantitative limits, for example the planetary boundaries, that would result in qualitative change – both in terms of biosphere operation, and in the living conditions of humans. It is a qualitative problem, as what causes having labour to have these effects is its *qualities* as a social structure, and as part of capitalist society. A politics that only attacks the quantitative but not the qualitative will not succeed in the long run. The benefits from a quantitative policy such as WTR would be temporary, as the factors of labour would still operate as tendencies, as underlying mechanisms. At some point the effects of these factors would quantitively overtake the effects of WTR. Likewise, a politics that attacks the qualitative, abolishing labour, but not also the quantitative aspects of production, will fail as well.

This thesis has certain limits. To return to critical realism, the ecological critique of labour that I have developed is one on the level of the *real* and the *actual* and is limited in its immediate applicability at more concrete levels, including for empirical research. Doing so would, I believe, require a further connection of the rather abstract factors discussed with more surface-level social structures of

material throughput. While I have discussed political and institutional implications, these too concern the generative mechanisms of labour as they exist on the levels of the real and actual, and not the empirical. Therefore, they only take the shape of directions for the abolition of labour and rough descriptions of aspects of future organisations of production, as opposed to a fuller description of what a future beyond labour would mean. Furthermore, describing the changes for organisation of and technical aspects of specific productive activities is also beyond this thesis. As discussed, different activities must be addressed as different activities, which means that giving wholesale, sweeping solutions is not as easy as with labour.

While I have discussed the limits of quantitative policies, the proposals I make are all fundamentally *qualitative*. As a politics of production must both be qualitative *and quantitative*, this also limits the immediate utility of this thesis. Further research options regarding these goals include both refining the qualitative analyses, as well as bringing in the empirical properly, both in terms of quality and quantity. Currently we seem locked in labour, with little room for escape; there is a need for developments of pathways for going beyond labour at all. To actually change things, some positive alternatives (in the plural) should be developed, so as to give options for different futures. Abolition may be far off, but since it is necessary if ecological sustainability is to be achieved, and since the task itself is enormous, there is no time like the present for the critique of labour.

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Appendix: Glossary

This glossary gives brief explanations of a selection of the terms used throughout the thesis. Each entry also includes a reference to the chapters that give more in-depth information on the term in question.

Abstract labour Is a social function of commodity-producing labour in capitalism, where the specific characteristics of different labours are abstracted away from and made into a homogenised category. (chapter 5.1, chapter 8)

Abstract time is time as a normative standard *for* tasks done as commodity-producing labour. A unit of abstract time is determined by what the social standard of productivity is. (chapter 5.3)

Commodity-producing labour is labour producing goods as services that are to be sold as commodities on the market. (chapter 5)

Concrete labour is the various intentional activities, the specific tasks, that are categorised as labour. (chapter 5.1)

Domestic activities (or "work") are those activities that take place in the household and cannot be categorised as labour. (chapter 6)

Factors are the different dynamics of labour causing its ecological impact. They are Time, Scale, Income and Work-induced mobility, infrastructure (and income, in Hoffmann and Paulsen). (chapter 4.2, 8.4)

Labour (synonymous with **work**) has two slightly different versions. The first is the looser preliminary definition, where labour is waged purposive renumerated activity under capitalism (see introduction to part II). The second is my own specific definition of labour, where it is defined as human activity done for payment within specific historical and social conditions (capitalism). One is paid for one's labour-power, usually for a given time period. (see chapter 8.1)

The first definition is in use up until chapter 8, from where the second takes over and is used for the rest of the thesis.

Labour-Power is a person's capacity to do productive activity, as opposed to actually doing those activities. (chapter 5.4)

Meta-industrial activities (or "labour") are activities that are not labour and broadly conceived produce conditions that allow production to happen. (chapter 6)

Postwork is the politics of going beyond work/labour. In my use this means the abolition of labour, other uses may imply reducing the place work has in society. (chapter 13.1)

Productive activities are human activities done to produce something (goods and services) in the most minimal, general and transhistorical sense. Compared to labour, this term does not itself denote any historically or socially specific conditions. (chapter 8.1)

Socially necessary labour time (**SNLT)** is the societal standard for the (abstract) time it takes to produce a given commodity. (chapter 5.3)

Value is a purely social, temporal, form of wealth, its substance is objectified abstract labour time. (chapter 5.4)

Value-constituting labour is commodity-producing labour that successfully conforms to socially necessary labour time, and then constitutes value as abstract labour time. (chapter 5.4)

Work see labour.

The **Work Ethic** is a social ethic that places high value on having a job, that is, being someone who does labour. This exaltation of labour happens regardless of what the labour consists of. (chapter 7)

Norges miljø- og biovitenskapelige universitet
Noregs miljø- og biovitskapelege universitet
Norwegian University of Life Sciences

Postboks 5003
NO-1432 Ås
Norway