Interventions into the 'Wicked' Problem of Climate Change

An interdisciplinary feminist analysis of possible interventions into the problem
of the mitigation of climate change

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Abstract

Current strategies to mitigate climate change are inadequate. Applying a feminist post-humanist and new-materialist perspective, this thesis explores how interdisciplinary feminist perspectives and interventions into the problem of climate change can provide new insights and research opportunities related to mitigation efforts. Through a consideration of ozone depletion and biodiversity campaigns and mitigation strategies it was found that environmental problems are most effectively mitigated through linking the issue to human bodies and experiences, also finding that anthropocentric approaches should be avoided. At its core, this thesis investigated a variety of recent interventions and analysed their potential for climate change mitigation. 'Trans-corporeality', as conceptualised by Stacy Alaimo, was revealed to hold potential in both its ability to link the issue to human bodies and experiences, as well as avoid anthropocentrism. The 'Anthropocene', though enabling an imaginary of the 'environmental' and human as intimately connected, was found needing to be reconsidered, as it reproduces anthropocentric world views. Finally, weathering, was found to be a problematic concept due to its passivity and the conflation of the terms 'weather' and 'climate'.

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Chapter 1: Introduction

Climate change, the term used to describe the anthropogenic warming of the planet, is one of the most important environmental issues of our time. Researchers in the field of climate science now believe that it is unlikely that global warming will be limited to the 2°C upper limit proposed by international treaties such as the Paris Agreement (see for example McGlade and Ekins, and Rogelj et al.). Furthermore, even if anthropogenic warming were limited to the 2°C threshold, extreme weather events, reduced water access, rising sea levels and poorer crop yields would still drastically change the world as we know it (Schleussner et al. 828). Climate change is often relegated to the scientific fields, with, according to Gleominne, "the need for accordant social change [thus] removed from view" (quoted in Alaimo, "Sustainable This, Sustainable That" 560). Environmental issues such as climate change need to reframed, according to Palson et al., as fundamentally "social and human challenges, rather than just environmental issues" (quoted in Neimanis et al. "Four Problems, Four Directions" 69). Bringing the issue of climate change (back) into conversation with more social fields of research that could provide insights and interventions into the socio-cultural, and other human, aspects of climate change, could thus provide critical interventions for its mitigation. In particular feminist post-human and new-materialist interventions, could provide vital new engagements with climate change, including new ontological and epistemological approaches to the issue.

This thesis thus attempts to answer the following research question: How can interdisciplinary feminist perspectives and interventions into the problem of climate change provide new insights and research opportunities related to mitigation efforts. Taking the form of an interdisciplinary literature review, this thesis analyses a variety of relevant literature, ideas, philosophies and terms in order to explore whether a feminist post-humanist and new-materialist consideration of the issue of climate change, in particular through ideas such as the 'Anthropocene', trans-corporeality and weathering, has the potential to provide valuable insights and research opportunities. After describing the methods, epistemologies and ontologies that structure the thesis, the problem of climate change, and its communication, are introduced in chapter 3. An overview of the topic of gender and the environment is provided in chapter 4 to provide a grounding in the historical and theoretical context. Chapter 5 discusses the mitigation strategies and environmental campaigns associated with ozone depletion and biodiversity conservation revealing lessons that can be learnt from other environmental

problems. The subsequent three chapters analyse three core relevant ideas (a) the 'Anthropocene', (b) trans-corporeality, and (c) weathering. Chapter 9 provides conclusions and possible future research directions.

Chapter 2: Methods

2.1 Interdisciplinary framework

At its core, this thesis undertook an interdisciplinary review of the literature on the topic of climate change. More specifically, focus was placed on the ways and means of improving mitigation efforts. Literature from the fields of climate science, science communication, ecology, the environmental humanities and gender studies fields were analysed in order to suggest new ways of tackling the issue of climate change. The feminist project was used throughout as a multivalent toolbox to highlight the perspectives, influences, vulnerabilities and responsibilities of a variety of stakeholders, focusing in particular on those excluded from traditional studies on the subject. This feminist perspective was further applied to ways of thinking about the environment and used as a tool to analyse current approaches to the issue of climate change.

The 'environment', or more-than-human world, is often compartmentalized as a space to be explored by the scientific fields. As Neimanis et al. outline, environmental issues "are made to appear as technical or managerial issues to be handled by experts and administrators" ("Four Problems, Four Directions" 75) and as such as often relegated to the more technical and scientific fields of enquiry. This leads, according to Neimanis et al., to environmental issues being framed as technocratic problems that need to be effectively managed ("Four Problems, Four Directions" 75), and conceals the potentialities of other fields to the issue. The interdisciplinary nature of this thesis responds to this call against compartmentalization by incorporating, and engaging with, a variety of fields and disciplines. It further finds its most solid grounding in the environmental humanities, a field that is often quite interdisciplinary in itself.

2.2 'Scavenger' literature review

The methodology applied in this thesis can be best described as an interdisciplinary 'scavenger' literature review. I borrow the term 'scavenger' here from Halberstam's idea of a "scavenger methodology" (13). Halberstam outlines how a scavenger methodology "uses different methods to collect and produce information on subjects who have been deliberately or accidentally excluded from traditional studies of human behaviour… [attempting] to combine methods that are often cast as beings at odd with each other, and it refuses the academic compulsion towards disciplinary coherence" (13). Unlike Haberstam's book my thesis is methodologically restricted to a study of the (academic) literature. I use the term 'scavenger'

in describing my methodology to illustrate the interdisciplinary selection of that literature, and the fact that the literature considered for the purpose of this thesis was 'scavenged' from a variety of academic disciplines (ranging from the highly empirical and scientific to the philosophical considerations of the humanities). A 'scavenger' literature review also suggests the limited scope of this thesis as topics and ideas focused on were chosen according to what I found to be most relevant; however, a range of other subjects (such as the post-political situation or the potential that lies in the arts) could have been selected. The term 'scavenger' further highlights effectively the subjective nature of the choice of this literature as it was selectively 'scavenged' from a variety of academic databases. Such an interdisciplinary approach holds potential for a rethinking of the field of climate change, as combining a variety of fields and disciplines could provide new ways of thinking about the problem.

2.3 Situatedness

My situatedness, and in particular my academic background, heavily influenced the methodology of this thesis. Most obviously, my interdisciplinary liberal arts and sciences bachelors laid the foundations for the interdisciplinary nature of this thesis. Academically I have an educational background in both specific disciplines (such as Gender Studies, History, Law and Environmental Studies) as well as interdisciplinarity (having taken interdisciplinary courses). This interdisciplinary grounding heavily influences my work, with epistemologies from various disciplines flowing through this thesis. Within these various epistemologies run certain core beliefs and influences, in particular: the belief that climate change is one of the most important issues currently affecting the earth; the belief that it is necessary to recognise both the mediated and situated nature of knowledge and research as well as the material aspects of the world (adopting a new-materialist post-humanist stance of neither realism nor social constructivism) and a belief that research should embrace diversity, difference, inclusivity and a variety of perspectives and not fall into 'innocently' disregarding truths other than my own. It is because of this last belief that a feminist perspective will inform the writing of this thesis in order to highlight the perspectives, vulnerabilities, influences and responsibilities of a variety of stakeholders.

2.4 Ontological and epistemological grounding in post-humanism and new feminist materiality

The interventions and analyses in this thesis are (largely) grounded in post-humanism and new (feminist) materialism. The post-human condition, according to Braidotti, "introduces a

qualitative shift in our thinking about what exactly is the basic unit of common reference for our species, our polity and our relationship to the other inhabitants of this planet" (1-2). Though used to describe a myriad of ideas (such as those relating to the end of humanity, questions of what 'humanity' is, and the blurring of lines between the human and technological), the most important intervention that post-humanism provides for this thesis is the post-human ethic of 'de-centring' the human. Though post-humanism as an intervention will not be explored in depth in this thesis, it nonetheless provides an ontological and epistemological grounding, in this thesis, for the analyses of ideas such as the 'Anthropocene', trans-corporeality and weathering. More specifically, the ontological questioning of the centrality of the human that is core to this thesis, finds its grounding in post-humanism.

New (feminist) materiality provides further grounding for this thesis. The contemporary linguistic turn, which offered feminism vital insights into the interconnectedness of language, power, structures, knowledge, experience and subjectivity, also relegated the material, the body and nature, to being products of discourse (Alaimo and Hekman, "Introduction" 3). Disregarding the material is, in my opinion, not *useful* and, as Donna Haraway argues, "Feminists have to insist on a better account of the world; it is not enough to show radical historical contingency and modes of construction for everything" (187). The linguistic turn thus reached a point where "the only thing that does not seem to matter anymore is matter" (Barad 801). Feminist new-materialism attempts to rectify this through "developing theories in which nature is more than a passive social construction but is, rather, an agentic force that interacts with and changes the other elements in the mix, including the human" (Alaimo and Hekman, "Introduction" 7). As new feminist materiality provides a way of considering human corporeality "that can account for how the discursive and the material interact in the constitution of bodies" (Alaimo and Hekman, "Introduction" 7) (and thus offers an intervention grounded in neither realism nor constructivism), it provides another valuable ontological and epistemological grounding for this thesis. The concepts of trans-corporeality and weathering analysed towards the end of this thesis are especially strongly grounded in new (feminist) materiality. The following chapter will introduce the problem of climate change and its communication.

Chapter 3: Climate Change and Climate Communication

3.1 Climate change

Climate Change, the term that describes the anthropogenic warming of the planet due to increased greenhouse gas emissions, is one of the most pressing environmental issues of our time. Attempting to address climate change, the 2015 Paris Agreement, ratified by 170 parties, quantifies for the first time the goal of "holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognising that this would significantly reduce the risks and impacts of climate change" (United Nations 3). Though the Paris Agreement was largely lauded as positive, McGlade and Ekins find that "policy makers' instincts to exploit rapidly and completely their territorial fossil fuels are, in aggregate, inconsistent with their commitments to this temperature limit" (187). Similarly, Rogelj et al. find that the current agreements are inadequate and that keeping to agreed temperature ranges would require additional national policies (632). In fact, median warming is expected to reach 2.6-3.1 degrees of warming even if all of the State pledges of the Paris Agreement are met (Rogelj et al. 631). Thus the current agreements and treaties in place are unlikely to limit global warming to 2°C.

Even if it were possible to limit warming to 2°C – an unlikely scenario under current strategies, treaties and ways of thinking (as outlined above) – the effects of climate change are still likely to have a large impact on the world. For example, Schleussner et al. find that "in a 2°C warmer world, the global occurrence probability of a pre-industrial 1-in-a-1000 day extreme temperature event is projected to be about … 27 times higher compared to pre-industrial levels and more than five times higher than today" (828). They also find that, with a 2°C rise in temperature, "changes in the water cycle may be experience by half of the world's population" and crop yields will be threatened with (for example) estimations that "global wheat production will decrease by about 6% per °C of warming" (828). Furthermore, Schleussner et al. find that sensitive ecosystems such as reefs will be greatly impacted with nearly all reefs being at risk of long-term degradation with a 2°C rise in temperature (830). The Arctic is similarly at risk, with Arctic ecosystems and traditional livelyhoods "under substantial pressure as sea-ice vanishes" (Schleussner et al. 830). As such, the problem of anthropogenic climate change is likely to have a significant impact upon global physical, social and economic structures.

The issue of climate change is often relegated to the sciences as a technical problem that needs a technical solution; however, other disciplines, in particular those not often applied to the

problem of climate change such as the humanities, gender studies and other more qualitative disciplines, hold great potential as social and political will remains one of the key challenges for climate change. Climate change is, furthermore, a 'wicked' problem; a "complex issue that defies complete definition" and which resists "all the usual attempts to resolve them" (Brown et al. 4). Wicked problems however, "are part of the society that generates them" and thus "any resolution brings with it a call for changes in that society" (Brown et al. 4). The issue of climate change cannot, as such, be easily split from the cultural and societal issues tackled by the more qualitative disciplines, especially since, the human is, as this thesis will argue, imbrued in the more-than-human world. Furthermore, environmental issues such as climate change are vitally relevant to the feminist project as they are (a) revealing of the cultures in which we live, (b) intrinsically linked to issues equality, and (c) issues that are likely to impact the vast majority of women (as well as other humans and beings) in the near future.

3.2 Communicating climate change

Climate change, though often relegated as a 'technical' or 'scientific' problem, is in fact a decidedly social and political problem, with social and political will remaining as one of the key barriers to successful mitigation. While we are well underway to finding technical solutions to the problem of climate change (such as carbon capture and renewable energy storage technologies), it is a lack of social and political will that is limiting the implementation of these technical solutions (for more information see Füssel or Brulle et al.). As such, it is of vital importance to consider how climate change is being communicated, and where potential for interventions lie.

Communicating climate change is exceptionally difficult due to a variety of challenging traits. Climate change is not visible, it is temporally removed from us, it is based on predictions and complex modelling, and there is a "temporal and often geographic distance between cause and effect" (Moser 33). Furthermore, "many of the early signs of a changing climate have been detected in regions where most people to not live – the artic, at high elevation, on coral reefs and other ecosystems not visited or continuously observed by mostly urbanized populations. Moreover, these temporally and spatially distant and disconnected issues have to compete for attention with immediately felt physical needs, professional demands, economic necessities or social obligations" (Moser 33-34). Furthermore, climate change discourse often focuses on apocalyptic weather events, temperatures rising, melting ice-caps and rising sea levels, all not easily connected to immediate human experiences and bodies, further removing it from the

daily lives of most humans. As such, effective strategies in climate communication that bring the issue 'home', and closer to human sensibilities, are vital for the mitigation of climate change.

Historically, a deficit model (where communication was seen as a transmission of information) was central to how climate change was communicated. The idea was that "ignorance is at the root of social conflict over science" and that "once citizens are brought up to speed on the science, they will be more likely to judge scientific issues as scientists do" (Nisbet and Scheufele, "What's Next For Science Communication?" 1767). The science, in other words, was believed to speak for itself and if populations were more informed, they would 'understand' the issue of climate change and what had to be done about it. In this traditional deficit model, the 'facts' are assumed to "be interpreted by all citizens in similar ways" (Nisbet, "Framing Science" 42) thus disregarding the vital differences between individuals and societies, obscuring the situatedness of knowledge. As such, the deficit model may be seen as being what Donna Haraway calls an illusionary "god-trick" (189). The scientific 'facts' that are presented to the 'laypeople' are presented as being from nowhere; a 'truth' that stands for everyone and is undebatable. Knowledge, in other words, from the point of view of the unmarked, and thus, "fantastic, distorted, and so irrational" (Haraway 193).

The pedagogical 'deficit' model is a point of contention in the scientific and communication fields, with some researchers doggedly following its core principles while others point out fundamental flaws. For example, Baruch Fischhoff argued as recently as 2013 that "the more people know about a science (e.g. physics), the easier it will be to explain the facts that matter in specific decisions" (14034). Fischhoff argues that the first two core principles of science communication are (a) finding out which scientific facts 'laypeople' need to know and (b) finding out which of "those facts are worth communicating – namely those facts that people do not know already" (14034). Though Fischhoff does recognise that the goals and circumstances of decision makers influence their decisions, he still finds that the issue in science communication lies in communicating the 'right' facts to 'laypeople' (14034).

Such approaches are critiqued by authors such as Nisbet who finds that condescending claims of 'public ignorance' only further alienate key audiences ("Framing Science" 42). As Nisbet argues: "Rhetorically speaking, whenever the relationship between science and society breaks down, science illiteracy is blamed, [and] the absence of quality science coverage is bemoaned… Of course, in the context of these controversies, such condescending claims only

risk further alienation of key audiences" ("Framing Science" 42). The deficit model not only has the potential to antagonise audiences, it also ignores the influences of socialisation and personal choice, two factors that heavily influence knowledge. As such, "people's grasp of scientific debates can improve if communicators build on the fact that cultural values influence what and whom we believe" (Kahan 296).

The manner in which knowledge is received and is acted upon, is dependent upon how it is framed and communicated as such communication builds on experiences, cultural and social values, and situations. Frames, as unconscious structures of thinking, are used in all of our knowledge and "every word is defined through the frames it neurally activates. All thinking and talking involves frames" (Lakoff 72). As such, framing plays a large role in communicating science, and thus it is important to consider which frames are being used to communicate the issue of climate change, as different frames activate different ways of understanding, and responding to, the issue.

One almost ubiquitous frame in climate communication is the 'environment frame' where the environment is seen "as separate from, and around, us" (Lakoff 76), reflecting the ubiquitous anthropocentrism of the human world. This pervasive frame perpetuates the binary between the human and non-human world, presenting the two as inhabiting two completely different spheres. For example, Medin and Bang, in 'The cultural side of science communication', find that humans are almost never included in representations of ecosystems. They "invite the reader to go online and search for images of ecosystems. In [their] experience of this exercise, human beings are almost never present and in the rare instance where humans appear they may be represented as outside the system looking in" (13625). Neimanis et al. similarly argue that we see ourselves as separate to "the imagined nature we seek to rescue… despite, or perhaps in part thanks to the simultaneous popularity of free consumerism, reasonably effective waste management… and eco-branding" ("Four Problems, Four Directions" 74). This separation, in a binary-like fashion, of the human and more-than-human world, serves to increase the intangibility of environmental issues such as climate change. The issue is removed from our daily experiences, it is part of the 'there', the 'environment', and not part of 'our lives'.

There is potential in the field of science communication to adopt new ways of framing environmental issues such as climate change. Feminist and post-human ways of thinking, that reject the binary between the human and more-than-human world, could offer valuable insights into the field. As Neimanis et al. state, addressing the intangibility of the environment "will

require an understanding of humans as intimately *part* of the environment" ("Four Problems, Four Directions" 74; italics in original). Later chapters in this thesis will delve deeper into feminist ontologies and epistemologies that break or distort the binary between the human and more-than-human worlds that hold potential for, amongst others, the field of science communication.

Chapter 4: Gender and the Environment: Historical links, ecofeminism and seminal literature

Over the years, gender and the environment have been linked in various ways in the scholarly literature. Though many of the historical links between gender and the environment have been either obfuscated or deliberately rejected, there exist a variety of links between the two that provide an important grounding for this thesis. This chapter will first consider the historical links between gender and the environment, first outlining the impacts and influences of Rachel Carson, and then moving on to an analysis of the field of ecofeminism. Subsequently, this chapter will consider and review two highly relevant, and seminal works, that outline core, more recent, links between gender and the environment, and the environmental humanities, that provide vital grounding for this thesis.

4.1 Rachel Carson and *Silent Spring*

Rachel Carson was one of the first people to suggest that we need to consider new ways of relating with the environment and as such, her book *Silent Spring* provides an apt starting point for this overview of the topic of gender and the environment. According to Norwood, Carson provided "a strong contribution to rethinking and reshaping narrow constructions of nature and human relationships with nature" in *Silent Spring* (743). Focusing on the effects that toxic pesticides have on the environment and human health, Carson challenged the way that pest control was being managed. Though not the first to suggest that pesticides and chemical fog were toxic and carcinogenic, "her prodigious feat of synthesizing a jumble of scientific and medical information into an understandable, coherent argument about health and environment was transformative" (Seager 959).

Silent Spring is widely acknowledged as launching the environmental movement but as Carson was not a self-identified feminist, the applied feminism in her personal, professional and literary life "goes almost unmentioned, overshadowed by the more visible and self-identified feminists of the 1960's" (Gaard 28). Carson's gender was also used to denigrate her findings. As Lear, for example, outlines, "male critics castigated her a 'bird and bunny lover,' and some suggested that she was just an 'hysterical female'" (36). Privately however, Lear notes, "some officials worried that Carson's message could create a constituency potentially disruptive of the pesticide status quo" (36). The environmental and feminist movements, were as such linked early on by Rachel Carson, who expressed a feminist ethic in her work that would go on to vitally influence the environmental and feminist environmental movements.

Carson's influence on the environmental, and feminist environmental, movement cannot be easily summarised. But what is clear is that her influential writings and ideas permeate both current environmentalist movements, as well as the feminist environmental movement. Her arguments for the reconsideration of the relationship between the human and more-than-human world resonates in particular with modern feminist environmentalist and post-human movements, albeit in the form of an early foremother. A speech made by Carson in accepting the Schwietzer Medal for contributions to Animal welfare exemplifies her ideas on this:

> What is important is the relation of man to all life. This has never been so tragically overlooked as in our present age, when through our technology we are waging war against the natural world. It is a valid question whether any civilization can do this and retain the right to be called civilized. By acquiescing in needless destruction and suffering, our stature as human beings is diminished. (as quoted in Lear 42)

As Lear outlines in her review of *Silent Spring;* "Carson convinced those who read the book that there was a fragile partnership between humans and nature, which once broken, could lead to the destruction of both" (40). Carson's enduring legacy, Lear finds, is her "ethic of interconnectedness" (42), an ethic that is being reaffirmed today by researchers in the environmental humanities and feminist materialist fields (see for example, Alaimo "Trans-Corporeal Feminisms and the Ethical Space of Nature", Alaimo *Bodily Natures*, Neimanis and Walker "Weathering" and Neimanis et al. "Four Problems, Four Directions").

4.2 The ecofeminist movement

The most well-known and recognisable link between environmentalism and feminism is that of ecofeminism. Continuing on with Rachel Carson's legacy, ecofeminism emerged in the late 1970's and early 1980's from the intersections of the feminist and environmentalist movements, spearheaded by such texts as Susan Griffin's *Woman and Nature* (1978) and Carolyn Merchant's *The Death of Nature* (1980). Griffin's *Woman and Nature* explored, as Gaard outlines, "the ways that the feminized status of women, animals, nature, and feminized others (children, people of color, farmers, slaves as well as the body itself, emotions and sexuality) have been conceived of as separate and inferior in order to legitimate their subordination under an elite and often violent and militarized male-dominant social order" (28). Merchant's *The Death of Nature* on the other hand, Gaard finds, "provided historical documentation for the claim that the domination of women and of nature have shared roots in the logic of science and capitalism" (28). Central to these ecofeminist views and papers, was

the belief that the domination of nature and women were fundamentally linked through gendered systems of power.

Despite the potential for revealing the structures dominating both women and 'nature', ecofeminism was heavily critiqued as being essentialising. One of the main tenets of ecofeminist writing was "a recognition and celebration of the values and activities traditionally associated with women, including childbirth and various kinds of nurturing" (Thompson 508). Such a focus on the 'female' experience and nature was heavily critiqued (alongside cultural feminism) by third-wave feminists as essentialising the experiences of women, as well as consigning women to the status of nature. As Thompson outlines: "third-wave feminisms contained explicit and implicit critiques of mind-sets that put women in a single category, calling instead for intersectional analyses that – far from celebrating the creative and caring unity of all women – showed, for example, how much reproductive and caring labor is outsourced from privileged men *and* women to women of color, immigrants, and low income women" (507). Due to this, and alongside its predominantly white and middle-class uptake, ecofeminism was seen as "irretrievably marred by essentialism about women and by regional-, class-, and ethnocentrism" (Thompson 507). Another vital influence on the rejection of ecofeminism was that ecofeminism was seen as a strand of feminism that worked with spirituality and earth goddesses, and, wanting to be taking seriously, academics distanced themselves from this 'touchy-feely', religious and reproductive strand of feminism (Thompson 507), fearing that "talk of goddesses and life forces would undermine their hard-won but precarious professional credibility" (Seager 948).

Despite the potential for ecofeminism to contribute to discussions on the systems of power that dominated both women and nature, critiques of ecofeminism as essentialist and 'touchy-feely' relegated ecofeminism to the margins of feminist and environmentalist theory. In fact, as Gaard outlines, "poststructuralist and other third-wave feminisms all portrayed ecofeminism as an exclusively essentialist equation of women with nature, discrediting ecofeminism's diversity of arguments and standpoints to such an extent that, by 2010, it was nearly impossible to find a single essay, much less a section, devoted to issues of feminism and ecology (and certainly not ecofeminism), species, or nature in most introductory anthologies used in women's studies, gender studies, or queer studies" (31). In my experience as a gender studies Master student I encountered a similar anthropocentrism. Though my masters did briefly consider issues such as animal rights, cyborgs and post-humanism (mainly through the work of Donna Haraway and Rosi Braidotti) very little attention was given to feminist environmentalism, and none to

ecofeminism. The rich potential, and history, of the ecofeminist movement has been cast aside due to (partially) unfounded fears that *all* aspects of ecofeminism necessarily essentialise the experiences of women.

Ecofeminist thought, though not often acknowledged as such, provided a vital reconsideration of the relationship between humans and the more-than-human world that resonates with recent feminist post-humanist, materialist and environmentalist ways of thinking. Moving forward, it may be useful to reclaim parts of the rich history of ecofeminist thought, in order to illustrate the rich history of environmentalist links that feminism enjoys. Ecofeminism, and in particular its insistence on the interrelatedness of systems of power and environmental issues, provided an early (foremother-like) intervention into the conceptualization of the relatedness of the human and more-than-human world. Arguments made later on in this thesis, especially those that consider the more-than-human world and our role in it, could be said to find their basis in ecofeminist thought, albeit in more embracing, inclusive and disrupting ways. Ecofeminism, specifically its consideration of how power structures influence the natural world, provides *one* basis for the reconsideration of the position of humans in the more-than-human world, but as critiques of the movement have rightly argued, it must also consider intersections other than gender and provide non-innocent representations of women and nature, including non-western conceptualizations. Thus the rich ecofeminist history of revealing structures and hierarchies that perpetuate the domination of the more-than-human world, has the potential to provide vital insights for environmentalist movements, however must be reconsidered, re-evaluated and reapplied so as to provide non-innocent and non-essentialising representations of both humans and the more-than-human world.

4.3 Seminal literature review on gender and the environment: A short review of "Mapping a Research Agenda Concerning Gender and Climate Change: A Review of the Literature"

In my search for literature on the topic on gender and climate change, I found only one relevant comprehensive overview of the literature. Moosa and Tuana's 'Mapping a Research Agenda Concerning Gender and Climate Change: A review of the Literature' provides a thorough overview of the topic of, and links between, feminist philosophy and climate that is highly relevant to this thesis. The review was published as part of Hypatia's 2014 special issue on climate change, a special issue that (similarly) provided a rare example of a collection of

articles on the idea of gender and climate change[1]. Though Moosa and Tuana's primary aim of illustrating "how feminist philosophical approaches can improve the study of the gendered and power-laden causes and differential impacts of climate change" (677) differs from my aim to study how feminist philosophical approaches can provide insights and research possibilities for the communication and mitigation of climate change, their article provides a solid overview of the more recent field of feminist philosophy and climate change, and provides some key arguments very relevant to this thesis.

Moosa and Tuana highlight three thematic areas that they find are emerging in the feminist philosophical literature on climate change. In the first of these, namely "The Production and Reception of Climate Change Knowledge", they "examine how scientific, economic, and political framings of climate change have served to obfuscate the power structures that underlie our knowledge and ignorance concerning climate change" (677). In this section, they consider the value neutrality of the science and economics on climate change, look at how knowledge is created and consider the political discourse of climate change. Relevant for this thesis, Moosa and Tuana also analyse Michael Doan's article on 'Climate Change and Complacency' and outline Doan's arguments of how "complacency proliferates when the relational dynamics of climate change are masked" (Moosa and Tuana 681). Later chapters of this thesis, in particular chapters 6,7 and 8, will outline theories that hold possibilities for making more visible the connections and relational dynamics of climate change.

In their second thematic section – "Intersectional Investigation of Problems of Agency and Impacts Posed by Climate Change" – Moosa and Tuana look more closely at the stakeholders of climate change and consider, amongst others, the specific vulnerabilities of women to climate change (682). As they outline, a significant amount of research shows that vulnerable populations such as women and children, will be most affected by climate change. One of the papers they focus on, namely Neumayer and Plümper's 'The Gendered Nature of Natural Disasters', finds for example that socially constructed gender vulnerabilities have led to "relatively higher female disaster mortality rates compared to men" (Neumayer and Plümper 551). However, much of this work "focuses on the effects of climate change on impoverished women living in the developing world" and as such "some feminist scholars have been critical

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[1] The only other special collection related to gender and climate change that I found was the 2009 special edition of Women, Gender and Research (Kvinder, Køn & Forskning) on 'Gendering Climate Change'. Many of the articles of that special collection are used in this thesis, but it contained no literature review that provided an overview of the topic. For the table of contents of this special edition see http://www.ft.dk/samling/20091/almdel/EPU/bilag/98/771908.pdf

of this particular kind of gendered framing because it depicts women, especially non-white women living in less-developed nations, as primarily victims. Framing women as the impoverished victims of climate change plays into problematic portrayals of those vulnerable to climate change as passive and without agency" (Moosa and Tuana 683). Similarly, in another article that Moosa and Tuana consider, Arora-Jonsson argues that women are often described as either virtuous or vulnerable when it comes to climate change, with women in the North being represented as pro-environmental and those in the South as vulnerable to climate change. These generalizations, she argues, can "reinforce North-South biases" and "lead to an increase in women's responsibility without corresponding rewards" (Arora-Jonsson 744). Furthermore, in my experience in working at an international NGO for Gender and Energy, the issue of gender and climate change was only considered in terms of the unequal vulnerabilities of third world women, with the problematic nature of those generalizations largely ignored. As such, though it is important to recognise the unequal effects that climate change is likely to have, it is equally important for such representations to be balanced, and portray women as not only virtuous or vulnerable, but also as resilient and active agents. This thesis, though recognising the specific vulnerabilities to the effects of climate change of women, children, those living in developing regions, and other vulnerable populations, will thus not focus on the vulnerabilities of women to the issues, instead focusing on the potential that feminist philosophy holds for its mitigation.

Moosa and Tuana, through their third theme of 'Rethinking Ontology and Obligation: Feminist Challenges to Normative Frameworks for Theorizing Climate Justice and Responsibility' consider how feminist philosophical analyses provides "new frameworks for considering the normative relations and obligations at stake in climate change" (686). In this section they discuss issues of ethics and responsibility and explore the need for new feminist ontologies in climate change. Though it focuses on the causes, impacts and responsibilities related to climate change, as opposed to ways of mitigating it, this section is highly relevant to this thesis as it describes the need for new ways of thinking about the more-than-human world. Feminist philosophical analyses, Moosa and Tuana argue, have the potential to reveal "the need for new relational understandings of the self's position in the world in order to create transformative understandings of our obligations to address climate change" (686). This thesis will expand upon this idea in later chapters, arguing that changing such relationships between the human and more-than-human world holds potential for an increased engagement with the issue of climate change, and hence, and increase in the mitigation of climate change.

4.4 Seminal work on the field of the environmental humanities: Review of "Four Problems, Four Directions for Environmental Humanities: Toward Critical Posthumanities for the Anthropocene"

In their informative article on the environmental humanities, Neimanis et al. provide a rare comprehensive and wide-ranging overview of the field of the environmental humanities. They define the environmental humanities as "a term for a range of multifaceted scholarly approaches that understand environmental challenges as inextricable from social, cultural and human factors" which arose "from scholarship that has sought to complement and/or serve as a counterpoint to environmental science approaches to non-human 'nature'" ("Four Problems, Four Directions" 70, 70-71). This thesis, which takes an interdisciplinary approach to the issue of climate change mitigation, and explores in depth the social, cultural and human factors involved in this issue, as such finds itself positioned in the environmental humanities. As Neimanis et al. provide a solid overview of the environmental humanities, as well as its problems and possible directions, their overview is highly relevant to this thesis and will thus be outlined below.

Neimanis et al. structure their paper through four problems and four directions for the field[2]. Each of the four problems and four directions holds potential for the field of the environmental humanities, but this thesis responds specifically to the problems of "alienation and intangibility" and "compartmentalization of the environment from other spheres of concern" (Neimanis et al. "Four Problems, Four Directions" 69-70). Specifically, finding that mainstream science epistemologies are insufficient to tackle the issue of climate change, this thesis will investigate how post-human feminist interventions such as 'trans-corporeality' and weathering could provide valuable insights for the alienation and intangibility of climate change, as well as for the compartmentalization of the environment to other spheres of concern. Furthermore, through Stacy Alaimo's conception of trans-corporeality, as well as through a re-consideration of the application of the term 'Anthropocene', this thesis will further respond to Neimanis et al.'s suggestion that "addressing this intangibility will require an understanding of humans as intimately *part of* the environment, as through-and-through embedded in it" ("Four

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[2] The four problems being 1) alienation and intangibility, 2) the post-political situation, 3) negative framing of environmental change, and 4) compartmentalization of "the environment" from other spheres of concern (Neimanis et al. "Four Problems, Four Directions" 69-70). The four directions being: 1) attention to diverse environmental imaginaries, 2) rethinking the "green" field in terms of naturecultures and feminist posthumanisms, 3) developing environmental humanities in a specifically transdisciplinary and postdisciplinary vein, and 4) increasing efforts in developing a "citizen humanities" (Neimanis et al. "Four Problems, Four Directions" 70)

Problems, Four Directions" 74). The 'directions' that this thesis will respond to are those of the "attention to diverse environmental imaginaries", "rethinking the "green" field in terms of naturecultures and feminist posthumanisms" and "developing environmental humanities in a specifically transdisciplinary and postdisciplinary vein" (Neimanis et al. "Four Problems, Four Directions" 70). These directions are integral to this thesis as it considers ways of rethinking environmental imaginaries (especially that of the human as being separate from 'nature'), applies a feminist post-humanist perspective, and applies an inter- and trans-disciplinary perspective to the issue of climate change. Neimanis et al.'s seminal article, and the problems and directions outlined therein, thus provide a solid grounding for the issues raised in this thesis.

Chapter 5: Learning Lessons: Ozone and biodiversity conservation

It is important to consider other environmental issues that have had more mitigation success than climate change as they might provide insights into effective interventions. A study in the UK showed that environmental issues other than climate change were more likely to be cared about by the general population. It outlined how in a study of environmental concern amongst the population in England, "disposal of hazardous wastes, livestock methods/BSE, water and air pollution, loss of plants/animals in the UK, tropical forest destruction and ozone depletion are rated more concerning than climate change" (DEFRA as quoted in Lorenzonia et al. 447). Lorenzonia et al. further outline how "the low ranking of climate change reflects a widespread perception amongst the public that the issue is generally perceived to be removed in space and time. Whilst it is considered socially relevant, most individuals do not feel it poses a prominent personal threat" (447). As Jamieson argues, "scientists are telling us that the world is warming, but we do not sense it and so we do not act. This is the hardest problem to overcome" (103). Considering the low engagement with the issue of climate change, and its separation from human realms of care, it is vital that we look at more successful mitigation campaigns to look at lessons that can be learnt, and of course, why climate change is different.

5.1 Ozone depletion and the Montreal Protocol

One of the most relevant examples of the successful mitigation of an environmental problem, is that of ozone depletion and the Montreal Protocol. In 1985 scientists from the British Antarctic Survey found that the concentration of ozone gas over Antarctica had decreased by almost 50% between the 1960's and 1980's (Farman et al. 208). Just two years later in 1987, the Montreal Protocol entered into force. This Protocol restricted the use of CFC's (Chlorofluorocarbons) and bromocarbons which contributed to ozone depletion. The Montreal Protocol is largely seen as a success story with evidence starting to show that the ozone layer is recovering (see for example Kuttippurath et al.).

While the problem of ozone depletion is in many ways different from the issue of climate change, the two issues also share remarkable similarities. For example, "both social problems are portrayed as global environmental threats pertaining to the atmosphere. Both are claimed to result from anthropogenic emissions. Both are 'invisible' as such, and can *only* be detected through assembling scientific research and claims. Both are slow-onset problems whose *main* predicted risk is in the future" (Ungar, "Bringing the Issue Back In" 516; italics in original). These similarities, considered in conjunction with a reflection on the vital differences between

the two issues (as outlined below), provide fundamental lessons and insights for the mitigation of climate change.

The success of the Montreal Protocol in addressing ozone depletion can be attributed partly to a variety of communication strategies, luck and the ways in which the problem of ozone was linked to socio-cultural values and power systems. Firstly, the problem of ozone depletion was described as a 'hole' in our 'protective shield', which was "an exaggeration or metaphor and that satellite pictures were doctored and colored to make them more graphic" (Ungar, "Bringing the Issue Back In" 519). As opposed to phrasing it as an issue of 'depletion', the issue was framed as being that of a 'hole' in the 'shield' of the ozone layer, something seen as "an aberration, something that should not be there" (Ungar, "Bringing the Issue Back In" 523). Furthermore, this 'hole' in the 'shield' was "tied to skin cancer, especially melanoma, its most deadly form. The dread potential of cancer is clear" (Ungar, "Bringing the Issue Back In" 523). The simplicity of this imagery, especially when tied to human health in such an affective way as cancer, made it relatively easy to understand and respond to. Comparatively, 'the greenhouse effect' is a phenomenon that sounds relatively harmless and benign, and hides the human fingerprint amongst highly variable, and technical, natural process (Ungar, "Bringing the Issue Back In" 523). The timing of the discovery of the 'hole' in the ozone was further fortuitous in that President Reagan had skin cancers removed in 1985 and 1987, strengthening the link between ozone depletion and human health in the imaginary of the U.S. Adopting a similar campaign for climate change is however, not plausible, as the issue of climate change is not as easily tied to bodies. While with the issue of Ozone depletion the sun's rays could be 'felt' as well as "tans and sunburns [affording] palpable evidence of their (now dangerous) effects" (Ungar, "Knowledge, ignorance and the popular culture" 307), climate change cannot be linked to human bodies and human health as easily with more vague and future oriented threats such as increased incidences of heat stroke and spread of disease cited (for more information see McMichael et al.)

An intersectional consideration of the successes of the ozone campaign also suggests integral racial and geographical influences, power structures and vulnerabilities that impacted the success of the ozone depletion campaign. For example, though "scientists concerned with the impact of ozone depletion generally hold that the most serious potential impacts of increased ultraviolet radiation are on the human immune system, plant life, and aquatic ecosystems", these impacts made little impression in public arenas (Ungar, "Knowledge, ignorance and the popular culture" 306). Instead, the issue of ozone depletion was "framed in terms of skin

cancer", an issue which resonated most with pale skinned Caucasians who happened to spend a lot of time in the sun (Ungar, "Bringing the Issue Back In" 523). It would be wrong, I believe, to here innocently assume that the fact that ozone depletion was being framed as an issue affecting mostly white Caucasian people did not influence the success of the Montreal protocol. Climate change on the other hand, is expected to reflect prevailing patterns of global privilege and vulnerability, and thus most heavily affect those in developing countries (see for example Gunaratnam and Clark). This creates a level of separation between those with the most power and responsibility for climate change (the western, developed world) and those that feel/will feel more of the immediate effects of climate change. In other words, while a majority of the power to mitigate climate change is held by wealthy developed nations, its effects will be experienced most heavily in developing, more vulnerable, countries and regions.

The issue of ozone, furthermore, only required a relatively 'easy fix', in other words, the issue could be mitigated without needing to change/break the socio-economic and cultural values, and ontological systems, of capitalist development. The issue of ozone depletion required no drastic changes in the lives of people as it was linked to "secondary chemicals and societal processes" (Ungar, "Bringing the Issue Back In" 519). Chlorofluorocarbons were present mainly in aerosol cans, fridges and air-conditioning and while substitutes were not immediately available, the onus for change lay in companies and industries finding technical solutions (i.e. replacement chemicals). These replacements were subsequently relatively easily found. Climate change on the other hand, is linked to the pervasive fossil fuel economy where "a significant portion of greenhouse gas emissions is caused by the behaviour and perceived 'needs' of individuals (road transport, energy industries)" (Lucas and McMichael 231) and deeply linked to capitalist development. Furthermore, the reduction of emissions would require "behavioural change by individuals… perhaps without obvious benefits but with increased costs" (Lucas and McMichael 231). Climate change requires societies to adapt to sustainable energy systems and thus necessitates ample political and social will, as well as financial investment, since existing infrastructure would have to be retrofitted, energy structures adapted, and individual behaviours changed. The problem of climate change is, as such, more ingrained in our socio-cultural values and behaviours and will require changes in our ways of thinking in order to galvanise enough support to mitigate its worst effects.

The issue of ozone depletion, and its relatively successful mitigation via the Montreal Protocol, is able to reveal the potential that lies in connecting issues to human bodies. Linking environmental issues in such an affective way has the ability to provide a more tangible link to

the problem and provide extra motivation for change. Feminist interventions, which are often grounded in a strong history of making links to the human body, have the potential to be utilized in making such connections in the case of climate change. This will be explored further in chapters 7 and 8, where the potentialities of 'trans-corporeality' and weathering are explored. It is also important to note that due to the fact that climate change is more engrained in our socio-cultural values and behaviours, more radical ontological shifts in thinking may be required to (partially) mitigate the problem of climate change.

5.2 Biodiversity conservation

It is argued that human manipulation and alteration of Earth's ecosystems has "triggered the sixth major extinction event in the history of life and caused widespread changes in the global distribution of organisms" (Chapin III et al. 234). Scientists trying to tackle this problem use a variety of techniques and strategies to prioritise certain species for conservation (as the conservation of all species would be unfeasible) by designating keystone species, umbrella species, indicator species, and so on, through which, scientists and policymakers decide what to 'save' and what to disregard. As Sitas et al. outline, "Conservation efforts involving threatened endemic, restricted-range species, flagship, ladscape, keystone or umbrella species, and species that are 'indicators' or culturally/economically important have all been proposed as short-cuts in setting conservation priorities" (231). But as Sitas et al. question, what have we chosen to prioritize? And, I would add, why have we made these choices and what does it reveal about our environmental strategies and societies as a whole? For example, focus is often placed on the conservation of charismatic species, and in particular, large-bodied mammals that are evolutionarily distinct, in decline, well-studied and well-known (Sitas et al. 233). An exemplary illustration of this focus on charismatic species and mammals, is found in the WWF's 'Five of the greatest success stories for wildlife' which focused around wild tigers, pandas, pangolins, elephants, rhinos, dolphins, and marine turtles[3]. This list shows the WWF's focus (at least their public one) on what could definitely be called charismatic species. The success of conservation efforts based around such charismatic species is largely due to their affective nature; as Sitas et al. outline, "the general public favours species they consider endearing or valuable" (234). Animals species that are large, emotive and garner a response in

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[3] "Five of the greatest success stories for Wildlife: Wild tiger numbers increase for the first time in conservation history; Pandas are no longer classified as 'endangered'; All trade in the world's most trafficked mammal, the pangolin, is now illegal; Saving World Heritage sites – home to iconic species including elephants, rhinos dolphins and marine turtles; China, home to the world's largest legal ivory trade market announces closure by end of 2017" (WWF Global)

the public, are thus most likely to be part of the anthropocentric conservation projects that permeate biodiversity efforts.

The other main trend in conservation science is that of 'ecosystem services' which calculates the economic value of services and capital held in the 'natural' world in order to prioritise key ecosystems. It is lauded by researchers who find that more 'scientific' and 'objective' approaches to conservation are necessary. Ecosystem services further connects ecosystems to human wellbeing and maps 'nature' according to the services that it provides humans (see for example Costanza et al.). Classifying the more-than-human world according to the 'ecosystem services' that it provides is, however, highly anthropocentric as it values the 'natural' world according to the services (direct or indirect) that it provides humanity. Using ecosystem services to assess what should be part of conservation strategies thus considers only what systems, organisms or species provide for humanity, and disregards other, less anthropocentric, ways of considering the value of the more-than-human world. Furthermore, as McCauley outlines, "the logic of ecosystem-service-based conservation rests on the implicit assumption that the biosphere is benevolent – that it provides us with useful services and protects us from malevolent abiotic forces such as hurricanes, floods and rising temperatures" (27).

The idea of ecosystem services also quantifies (and monetises) ecosystems in a way that negates that the economic value of ecosystem services is mutable and always in flux. One example of this, as outlined by McCauley, is that of the case of a former coffee plantation in Santa Fe. The pollination services of the native bees in the forests adjacent to the coffee plantation were valued at US\$60,000 a year, and thus the conservation of the bees "was hailed as an example of how conservation can yield 'double benefits' for biodiversity and agriculture" (McCauley 28). After a dip in coffee prices however, the plantation cleared its coffee plants and decided to plant pineapple instead. As pollinators are not needed for pineapple production, "simple logic suggests that… the monetary value of the pollinators in the forest fragments around Finca Santa Fe dropped from US\$60,000 per year to zero" (McCauley 28). Such a sudden devaluation of nature shows the arbitrary character of conservation strategies such as ecosystem services, as well as revealing the deep anthropocentrism imbedded in the idea that pollinators are only worth what they provide for arbitrary (human) standards. As Donna Haraway states, "the codes of the world are not still, waiting only to be read. The world is not raw material for humanization" (198). We cannot calculate the 'value' of the more-than-human world, as our calculations are no more than situated judgements in flux.

It is clear that current conservation trends such as focusing on charismatic species or valuing the more-than-human world according to 'ecosystem services' are problematic, however, such conversation strategies also provide lessons for other future environmental campaigns. Anthropocentric focuses can be found in most (if not all) conservation and biodiversity strategies, and, though it is often the anthropocentric aspects of these conservation projects that makes them affective and successful, they also reinforce anthropocentric ontologies. In other words, a consideration of conservation and biodiversity strategies and campaigns, reveals that while linking environmental issues to human concerns may make it more affective, such strategies also reinforce anthropocentric ways of thinking that are, overall, detrimental to the more-than-human world. Conservation strategies further reveal that climate change mitigation strategies should employ ways of thinking that that take into account a changing and agential more-than-human world.

Chapter 6: The 'Anthropocene'

6.1 Definition of 'Anthropocene'

The term 'Anthropocene' "describes an Earth's surface so transformed by human activities that the biophysical conditions of the Holocene epoch (roughly the last 11,000 years) have become compromised" (Castree 234). It was first introduced in 2000 by Nobel Prize winner Paul J. Crutzen and Eugene F. Stoermer in the Global Change Newsletter of the International Geosphere-Biosphere Programme. Crutzen and Stoermer argued that considering the "major and still growing impacts of human activities on earth and atmosphere, and at all, including global scales" it seemed "more than appropriate to emphasize the central role of mankind in geology and ecology by proposing to use the term 'Anthropocene' for the current geological epoch" ("The 'Anthropocene'" 17). This chapter will begin by outlining the potential of the 'Anthropocene' to break the binary between the human and more-than-human world and will conclude with a discussion of the problems inherent in the term the 'Anthropocene'.

6.2 The 'Anthropocene' and breaking the binary between the human and more-than-human world

Since its introduction, scholars from various fields have weighed in on the debate surrounding the term 'Anthropocene'. The 'Anthropocene', as a construct, holds much potential in its ability to help break the binary between the human and more-than-human world. The idea of the Anthropocene requires thinking of the human and more-than-human world as being intimately connected. In other words: "if in the Anthropocene humans have become a force of nature, changing the functioning of the Earth system as volcanism and glacial cycles do, then it means the end of the idea of nature as no more than the inert backdrop to the drama of human affairs" (Hamilton et al. i). In the 'Anthropocene', the human and more-than-human worlds are intimately connected and the human has an undeniable impact on the earth. The idea of the 'Anthropocene' may, as such, offer interesting conceptions of the relationship between the human and more-than-human world. Furthermore, as Neimanis et al. argue; it may offer a "vital moment of contemplation and critique of how such understandings and Imaginings might be shifting" ("Four Problems, Four Directions" 80).

6.3 The 'Anthropocene' and anthropocentrism

Labelling the current epoch as the 'Anthropocene' has also been critiqued as reiterating anthropocentric world views. The 'Anthropocene', though showing the ingrained connections

between humans and the more-than-human world, also reiterates the imagined centrality and importance of human beings. The idea of the 'Anthropocene' places Man "again in the center of the world as a prime mover" (Neimanis et al. "Four Problems, Four Directions" 84) and echoes the anthropocentrism present in most human thinking. As Stacy Alaimo argues: "To think of the human species as having had a colossal impact, an impact that will have been unthinkably vast in duration, on something we externalize as 'the planet' removes us form the scene and ignores the extent to which human agencies are entangled with those of nonhuman creatures and inhuman substances and systems" ("Your Shell on Acid" 90). To summarise, though the idea of the Anthropocene enables a view of the world that breaks the binary between the human and more-than-human world, it also places the human at the centre of the world, reiterating anthropocentric ways of thinking.

6.4 The 'Anthropocene' and essentialisation

The idea of the 'Anthropocene' is also critiqued for its insinuation of the equally shared responsibility for environmental changes among all human populations. The idea of humans, or 'anthro-', as having such a profound effect on the earth that a new geological time scale is required, also prompts the question of *which* humans the 'Anthropocene' refers to. The changes in the earth that have led to the conception of the 'Anthropocene', were not produced uniformly and equally by all human beings, rather, they were caused by specific peoples, cultures and industries. Chris Cuomo, in his article 'Climate Change, Vulnerability and Responsibility' outlines for example how "Climate change was manufactured in a crucible of inequality" (693). The product of the industrial and fossil-fuel eras, nations have built fortunes on "decades of unchecked development and energy consumption", endangering everyone "including those who have contributed little or nothing at all to the industrial greenhouse effect: the 'least developed' nations, the natural world, and future generations" (Cuomo 693). In such a 'crucible of inequality' is it possible to attribute the global changes to the earth uniformly to the entirety of the human race? As Cuomo outlines: "no other animals are directly responsible for the industrial greenhouse effect, and industrial greenhouse gases are indeed generated by humans, but the implication that humans as a species have cause climate change is also misleading. Particular people and particular cultures, nations, industries and economic systems have caused and contributed to the pollution that created the industrial greenhouse effect, and we need not take those actors to be representative of the entire human species" (696). The idea of the 'Anthropocene' thus risks overwriting the vital differences between individuals, cultures and societies, and "covering over uneven power distributions both in terms of responsibility for and

vulnerability in the face of environmental problems" (Neimanis et al. "Four Problems, Four Directions" 68).

6.5 Geologist critiques of the 'Anthropocene'

Geologists have debated whether using the 'Anthropocene' to define a geologic epoch is appropriate. While Crutzen, one of the creators of the term, argues that "because human activities have also grown to become significant geological forces, for instance through land use changes, deforestation and fossil fuel burning, it is justified to assign the term 'Anthropocene' to the current geological epoch" ("The 'Anthropocene'" 13), other geologists question the naming and suitability of the term. Schneiderman, for example outlines how "critics of a formalized Anthropocene epoch in the geologic time scale argue that it cannot be defined stratigraphically across the globe; that human activity is already a consideration in other geologic time periods; that it is better to view the Anthropocene culturally than geologically; and finally, that the word *Anthropocene* is semantically troubling for science" (171).

The semantic issues surrounding the 'Anthropocene' are particularly interesting for a feminist consideration of the term. Firstly, the term 'Anthropocene', with 'anthro-' (Humans) as its prefix, assumes the equal and shared responsibility of all humans for the global environmental changes. Of course, as mentioned earlier, not all humans, societies and cultures share an equal responsibility for these changes. Thus as Schneiderman argues: "the choice of that particular name does not do justice to the true causes of the epochal change. The Anthropocene does not acknowledge that some groups of human beings have had greater effects on the planet than others" (175). Secondly, as Schneiderman crucially asks: What do we obscure [in choosing anthro-] and what do we privilege with such a choice?" (176). The prefix anthro- homogenises humanity, erasing vital differences between populations, and further attributes the responsibility for change on *humanity* rather than certain cultures, peoples, economic structures and industries.

The choice of how something is named further has the potential to have a great impact on how we think about the word and our relationship to it. For example, Schneiderman questions the naming of mammals after mammae when "the milk-producing mammae function only in half of these animals (the females), and then only for part of the time when they are lactating", rather than for example hair, or hollow ears, other features which all mammals share (175). In naming mammals after mammae, in a time when breastfeeding was revered, Linnaues, the

original author of the word, "paved the way for thinking about females solely in terms of sexuality and underscored eighteenth-century women's position as nurturing caretakers" (Schneiderman 175). Similarly, the choice of the prefix 'anthro-', has the potential to attribute the blame and responsibility for climate change simpliciter on *humanity* rather than certain aspects of humanity. For example, the term 'Anthropocene' would have very different implications if it had been named the 'Capitalistocene', 'Fossil-fuelocene' or 'Industriocene'. As such, the 'Anthropocene' is problematic as a term as it places the responsibility for climate change on humanity as a whole, instead of recognising that climate change was caused in a crucible of inequality by certain people, societies and systems.

6.6 Potential for the 'Anthropocene'

There lies potential in the fact that the 'Anthropocene' could conceptualize the idea of responsibility for climate change, but for it to be able to be used effectively, the idea of the Anthropocene must be reconceptualised in a non-anthropocentric and homogenising way. One way in which the 'Anthropocene' may be reconsidered and adapted, is provided by Stacy Alaimo through her call for the contemplation of Anthropocene seas. Through a consideration of the seas, and specifically how ocean acidification is dissolving the shells of sea creatures, Alaimo argues that the seas provide a way for us to engage with the idea of the Anthropocene in a way that resists anthropocentrism. Finding that "the predominant sense of the Anthropocene subject… is that of a safely abstracted force", she calls for a "fleshy posthumanist vulnerability that denies the possibility of any living creature existing in a state of separation from its environs" ("Your Shell on Acid" 113). A consideration of the 'Anthropocene' seas, Alaimo argues, resists anthropocentricism. She finds that "to begin to glimpse the seas, one must descend rather than transcend, be immersed in highly mediated environments that suggest the entanglements of knowledge, science, economics and power" ("Your Shell on Acid" 107-108). Such a way of thinking holds potential for the idea of the 'Anthropocene', as it presents the 'Anthropocene' subject as immersed in the world rather than looking at it from above. Such an enmeshed and immersed perception of the 'Anthropocene' subject, echoes Stacy Alaimo's idea of trans-corporeality, the focus of the next chapter.

Chapter 7: Trans-corporeality

7.1 Trans-corporeality and its potential for the intangibility of climate change

The idea of trans-corporeality, as conceived by Stacy Alaimo, could provide vital interventions into the problem of climate change, specifically into the problem of intangibility, affectivity and engagement as well as providing a feminist, inclusive and non-innocent structure through which to investigate the issue. One of the major problems with finding solutions for the mitigation of climate change is the binary separation between humans and the more-than-human world. As Neimanis et al. outline: "all bodies have their own temporality and spatial extension, and humans, particularly those embedded in Western cosmologies, organize their dominant imaginaries, practices, and politics around a human-scaled existence. As such, humans can find it difficult to relate to environmental issues that are predominantly sensible at other scales" ("Four Problems, Four Directions" 73). This intangibility, as outlined in the earlier section on climate communication, leads to alienation "whereby human stakeholders do not feel invested in environmental issues" (Neimanis et al. "Four Problems, Four Directions" 74).

The first way in which trans-corporeality holds potential for the mitigation of climate change is through addressing this issue of intangibility. Building on the post-human ethic of de-centring the human, Stacy Alaimo defines her idea of trans-corporeality as "the time space where human corporeality, in all its material fleshiness, is inseparable from "nature" or "environment" ("Trans-Corporeal Feminisms and the Ethical Space of Nature" 238). She explains:

> Imagining human corporeality as trans-corporeality, in which the human is always intermeshed with the more-than-human world, underlines the extent to which the corporeal substance of the human is ultimately inseparable from "the environment". It makes it difficult to pose nature as a mere background for the exploits of the human, since nature is always as close as one's own skin. Indeed, thinking across bodies may catalyse the recognition that the "environment" which is too often imagined as inert, empty space or as a "resource" for human use, is, in fact, a world of fleshy beings, with their own needs, claims and actions. By emphasizing the movement across bodies, trans-corporeality opens up an epistemological "space" that acknowledges the often unpredictable and unwanted actions of human bodies, non-human creatures, ecological

systems, chemical agents, and other actors. (Alaimo, "Trans-Corporeal Feminisms and the Ethical Space of Nature" 238)

As such, trans-corporeality holds potential for the reconfiguration of our relationship with the more-than-human world in ways that provide an understanding of humans as being intimately part of 'nature' and 'the environment', which, as Neimanis et al. argue, is vital to addressing the intangibility of environmental problems ("Four Problems, Four Directions" 74)

7.2 Trans-corporeality and non-innocent interactions and relationships

A 'digestible' example (as Alaimo puts it) of trans-corporeal movement is that of food "whereby plants or animals become the substance of the human" (Alaimo, "Trans-Corporeal Feminisms and the Ethical Space of Nature" 253). Through food (amongst a myriad of other things) humans are in constant interchange with the more-than-human world. Through what we eat we are in direct material exchange with the more-than-human world, but social, biological, cultural, geographical, socio-economic, racial and gendered system and processes are also at play, influencing what we are eating, and in what way we are interacting with the food. This to me is where trans-corporeality holds a great amount of potential. It can illuminate the non-innocent, material and socially constructed interactions between humans and more-than-human world. As Alaimo states in her book *Bodily Natures*: "As the material self cannot be disentangled from networks that are simultaneously economic, political, cultural, scientific, and substantial, what was once the ostensibly bounded human subject finds herself in in a swirling landscape of uncertainty where practices and actions that were once not even remotely ethical or political matters suddenly become the very stuff of the crises at hand" (*Bodily Natures* 20).

Another tangible example of trans-corporeality is provided by the issue of toxicity. Alaimo states that "although trans-corporeality as the transit between body and environment is exceedingly local, tracing a toxic substance from production to consumption often reveals global networks of social injustice, lax regulations, and environmental degradation" (*Bodily Natures* 15). This type of thinking could be vital in revealing the structures that are in play in the issue of climate change. Furthermore, like "the traffic in toxins may render it nearly impossible for humans to imagine that our own well-being is disconnected from that of the rest of the planet or to imagine that it is possible to protect 'nature' by merely creating separate, distinct areas in which it is "preserved" (Alaimo, *Bodily Natures* 18), trans-corporeality holds the potential to build important affective bridges between humans and the more-than-human

world. In particular, if trans-corporeality were employed to show the movements and interactions related to climate change between humans and the more-than-human world, the issue of climate change would become less removed from the human experience and thus plausibly more affective.

7.3 Trans-corporeality and climate change

Though Stacy Alaimo has explored in depth how trans-corporeality can be employed to consider environmental issues such as toxicity and Multiple Chemical Sensitivity, I believe it is vital for more research to be done into the possibility of employing trans-corporeality to investigate the issue of climate change. Trans-corporeality recognises both the mutability of our relationship with the more-than-human world as well as our material situatedness. It has the potential to break the binary of 'human' and 'nature' through showing how the human is fundamentally enmeshed in the more-than-human world. Trans-corporeality, "which has been constituted, simultaneously, by the forces of evolution, natural and human history, political inequalities, cultural contestations, biological and chemical processes, and other factors too numerous to list, renders rigid distinctions between "mind" and "matter" impossibly simplistic" (Alaimo, "Trans-Corporeal Feminisms and the Ethical Space of Nature" 257). Thus it further has the potential to show the movements and interactions involved in the creation of a problem like climate change in such a way that recognises the complexity of the connections and contradictions between the material and non-material (e.g. social, cultural, political etc.). Stacy Alaimo does mention climate change in her book *Bodily Natures* a handful of times, but omits any in-depth application or consideration of trans-corporeality to the issue of climate change, somewhere where I believe the concept might be very valuable.

More research is needed into how trans-corporeality could be applied to climate change; however, it holds much potential in regards to the mitigation of climate change. Harold Fromm, in what Alaimo describes as an arresting image of trans-corporeality, describes how "the 'environment,' as we now apprehend it, runs right through us in endless waves, and if we were to watch ourselves via some ideal microscopic time-lapse video, we would see water, air, food, microbes, toxins entering our bodies as we shed, excrete, and exhale our processes materials back out" (quoted in Alaimo, *Bodily Natures* 11). Considering climate change and its interactions with human bodies in a similar way, could provide the affective, linked to bodies, and yet not anthropocentric, approach that this thesis argues for. If such an ideal microscopic time-lapse video were to show atoms of carbon dioxide or methane (or any other GHG or

process involved in climate change) and their co-constitutions and interactions with our bodies, technologies, systems, futures, climatic events, and other aspects of the more-than-human world, the issue of climate change would become simultaneously less anthropocentric as well as brought into our everyday lives and experiences. As such, Stacy Alaimo's idea of trans-corporeality provides an interesting starting point for future research on the issue of climate change.

Chapter 8: Weathering

8.1 Weathering and its potentialities for the issue of climate change

In their article "*Weathering*: Climate Change and the 'Thick Time' of Transcorporeality", Neimanis and Walker propose the idea of "weathering bodies", an understanding of bodies as connected and inseparable from their environments that builds on the idea of trans-corporeality. Using feminist materialist and post-humanist theories, such as those by Karen Barad, Clare Colebrook and Stacy Alaimo, they aim to "bridge the distance of abstraction by bringing climate change *home*" (Neimanis and Walker, "Weathering" 559; italics in original). The work of Neimanis and Walker holds great potential for the issue of climate change, in particular through their application of feminist materialist theories to making the issue of climate change more personal, and as such, the first half of this chapter will focus on these potentialities. Their idea of weathering however, poses some difficulty, both in the naming of the idea, and its application. The second half of this chapter will focus on these problematic aspects of weathering.

Building on Stacy Alaimo's idea of trans-corporeality, Neimanis and Walker "propose that if we can reimagine 'climate change' as the fleshy, damp immediacy of our own embodied existences as intimately imbricated, and begin to understand that the weather and the climate are not phenomena "in" which we live at all – where climate would be some natural backdrop to our separate human dramas – but rather of us, in us, through us…" we could ignite the intensity that would make the issue of climate change affective ("Weathering" 559). Such a re-configuration of human relations to the more-than-human world, holds potential in that it could show how environmental issues are not, as they are often portrayed, distant from everyday human lives. Neimanis and Walker draw on Alaimo's idea of trans-corporeality "to counter the fallacy of a bifurcated understanding of 'nature' and 'culture'" (Neimanis and Walker "Weathering" 560). Building on this, they further incorporate feminist new materialist and post-human approaches, in order to "understand climate change and human bodies as partaking in a common space, a conjoined time, a mutual worlding that we call *weathering*" ("Weathering" 560). Such an approach, countering the abstract nature of climate change, has the potential to make the issue more affective and relatable.

One of the other theories that Neimanis and Walker apply is Karan Barad's theory of 'intra-action' which they use to describe weathering is an intra-active process of mutual becoming (Neimanis and Walker, "Weathering" 560). Intra-action, Neimanis and Walker argue, "refers

to a fundamental entanglement whereby individual entities cannot be said to exist as things-in-themselves and instead find meaning or expression only through their co-creative relations with other entities" ("Weathering" 565). Intra-action, as a way of considering how "relata do not precede relations" (Neimanis and Walker, "Weathering" 560), is rightly included by the authors as a theory that holds potential for the rethinking of our relationship with the more-than-human world, as it shows how environmental issues such as climate change do not exist outside of the multiple relationships and situations that co-created it. Embracing Barad's theory, Neimanis and Walker eloquently outline how environmental phenomena do not simply breach the borders of autonomous bodies, rather, the conditions of possibility that create environmental issues, rely on "its entanglement with a dynamic system of forces and flows" ("Weathering" 565). Such a consideration of climate change, in which the intra-active relationships that co-create it are made evident, could make clear the bodies, systems and experiences within which climate change exists and is understood.

Unlike many of the papers analysed for the purpose of this thesis, Neimanis and Walker emphasise the importance of temporality to the issue of climate change. Commenting on Alaimo's theory of trans-corporeality, they argue that in order for it "to be a meaningful theory for understanding climate change… more careful attention to the temporalities that are an inextricable part of these relations is required" ("Weathering" 560). As the issue of climate change is thoroughly temporal, a consideration of temporality is a vital point of possible expansion and extension for the idea of trans-corporeality. Current temporalities used to describe climate change, which continue "to call for present actions that will temper the coming future, human interventions into a global timeline" (Neimanis and Walker, "Weathering" 567) are inadequate and exacerbate anthropocentric conceptualizations of the issue. As such, future research could benefit from providing alternative temporalities through which to consider the issue of climate change.

8.2 Problematic application and use of the term weathering

Although Neimanis and Walker highlight some vital starting points for interventions into the issue of climate change, their idea of weathering contains some problematic aspects. Weathering is, as they put it, "a logic, a way of being/becoming, or a mode of affecting and differentiating that brings humans into relation with more-than-human weather" ("Weathering" 560). Though this is an admirable attempt to build on trans-corporeality in a way which could be applied to climate change this section will outline how weathering simplifies and conflates

the climatic and weather worlds. This section will also explore the passive positionality to climate change mitigation that is implied by weathering and argue that this is unhelpful to mitigation attempts.

Neimanis and Walker attempt to use the term weathering to bring home climate change to "our weather bodies" ("Weathering" 572). Weathering however, and the way in which it is applied, is problematic as it simplifies the relationship between climate and weather and makes links between the two that are misleading. Though recognising that "in both scientific and common discourse, one will not find the easy flow between and interchange of the phenomena of 'weather' and 'climate'", Neimanis and Walker argue that "such distinctions promote a spatialized view of climate time" and thus "hope to show that these distinctions between climate and weather are tenuous" ("Weathering" 562). In order to "reduce the distance between the enormity of climate change and the immediacy of our own flesh", Neimanis and Walker argue that the loosening of the distinction between climate change and weather is required ("Weathering" 562). Though reducing the distance between climate change and human realms of experience is an admirable aim, I would argue that weather and climate should not be conflated in such a way as it obfuscates the complex nature of the two terms. As Cuomo states, "an increase in average global temperatures does affect weather, but not in a simple one-dimensional fashion, and its ripple effects extend far beyond the weather. Earth's climate is a massive multidimensional pool of elements and factors, including air and soil temperatures, water systems, aerosols, currents, clouds, plant respirations, farm-animal flatulence, volcanic eruptions, human influences, solar impacts, and more" (692). Though Neimanis and Walker provide a useful image of a trans-corporeal weathering as "rain [that] might extend into our arthritic joints, sun [that] might literally color our skin, and the chill of the wind [that] might echo through the hidden hallways of our eardrums" ("Weathering" 560), it should not be conflated, and connected, in such a simplistic way with climate change as this (a) suggests links between weather and climate that are either exaggerated or do not exist and (b) obfuscates the complexity of the two terms and how they interrelate.

Neimanis and Walker also use their term weathering as a verb, as in to *weather* the change that is to come. Looking at how we will "weather" the "losses" of climate change, they state that "the idea of weathering also involves a certain perdurance – a getting on with, a getting by, a getting through" ("Weathering" 560). Describing involvement with the issue of climate change as weathering, suggests a passive response. In my opinion, the engagement that a feminist ethos of responsivity requires for such an issue as climate change, is not one of passivity.

Conceptualizing climate change as an issue to 'weather', does not create an imaginary that provides room for engagement and intervention in a meaningful way. As such, though Neimanis and Walker further the idea of trans-corporeality through applying the idea of intra-action and calling for a more temporal approach, their idea of weathering conflates climate and weather in a problematic way and presents a flawed, passive, way of describing engagements with climate change.

Chapter 9: Conclusions and Future Directions

Current approaches to the issue of climate change are inadequate. As this thesis has shown, feminist post-humanist and new-materialist approaches to the topic of climate change such as trans-corporeality and weathering, provide novel and important interventions into the issue. From Rachel Carson and ecofeminism, to more recent feminist interventions into environmental issues such as those by the environmental humanities and feminist environmentalists, there exists strong links between the environmental and feminist movements. Though the rich historical links between gender and the environment have become concealed and disregarded over the years, this thesis brought the two back into conversation. Through literature 'scavenged' from a variety of fields, this thesis brought together relevant disciplines, researchers and ideas that are relevant to the topic of climate change, applying a feminist perspective throughout. Current responses to climate change and other environmental problems were further analysed and reviewed, revealing potential areas of intervention into the issue.

An investigation of environmental issues such as ozone depletion and biodiversity conservation revealed that linking the issue to human bodies and experience made it more affective. At the same time, such environmental campaigns often reiterated anthropocentric ways of thinking, thus leading to the conclusion that future environmental campaigns and interventions should attempt to both link the issue to human bodies and experiences as well as avoiding anthropocentrism. Trans-corporeality, "the time space where human corporeality, in all its material fleshiness, is inseparable from "nature" or "environment" (Alaimo, "Trans-Corporeal Feminisms and the Ethical Space of Nature" 238), this thesis showed, has the potential to intervene in the issue of climate change in a similar way. The idea of trans-corporeality rejects an anthropocentric focus, as well as the binary split of the human and more-than-human world through its insistence on the co-constitution, movements and interactions between the human and more-than-human worlds. Such an approach to climate change offers new ways of presenting and engaging with the environment, and thus holds potential for fields such as that of climate communication, which was historically dominated by inadequate communication strategies such as the deficit model. Though their idea of weathering is problematic to the issue of climate change, Neimanis and Walker, further the idea of trans-corporeality through their arguments for the consideration of Karan Barad's idea of 'intra-action' and the importance of temporality. As the idea of trans-corporeality has not been applied to the issue of climate

change in depth (with the exception of the idea of weathering), this is an area for possible further research.

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