Responsibility for Climate Crises: Tackling Claims to Certainty and Human Exceptionalism

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I hereby declare and assure that I, Julée Al-Bayaty de Ridder, have drafted this thesis independently, that no other sources and/or means other than those mentioned have been used and that the passages of which the text content or meaning originates in other works – including electronic media – have been identified and the sources clearly stated. Place: Nijmegen, The Netherlands. Date: 18th of August, 2023.

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Part I: Publishable Article

Abstract

As the dominant contemporary discourse dealing with the relations between humans, other-than-human species and environments, the Anthropocene debate features two issues that I identify, namely claims to certainty and human exceptionalism. In order to critique these issues, I probe the works of diverse authors who explore different articulations of responsibility for climate crises. While Fyodorov renders humans thoughtless by imposing an obligation on them and by claiming certainty, Haraway assumes humans ought to be fully conscientious of their actions in and entanglements with their environments, and Arendt emphasizes the spontaneity, uncertainty and unpredictability of action. I argue that exploring the uncertain space in-between thoughtlessness and conscientiousness can provide means to conceptualize novel ways of responding to climate crises that acknowledge multi-species entanglements.

Key words: responsibility, climate crises, claims to certainty, human exceptionalism, uncertainty, entanglements.

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Introduction

In recent decades, a sense of responsibility for climate crises has grown rapidly in Western societies evoking actions towards raising awareness of climate change and improving the state of the environment. Climate crises are plural in that they take multiple forms and have varying impacts on environments and societies across the globe. Differing attitudes towards other-than-human species and environments have resulted in diverse forms of action and thought.

Coined by Paul Crutzen and Eugene Stoermer in 2000, the 'Anthropocene' marks a geological era in which the 'social' and the 'natural' can no longer be thought separately because humans have become a "major geological force" transforming the Earth "rapidly and irreversibly."[1] It is said that this new geological epoch is "*dominated* by human activity"; humans are conceived as "agents with the demonstrated ability to fundamentally alter the 'normal' cycles of nature."[2] As a response to these changes of the natural environment, different contemporary Western attitudes towards the Anthropocene *as a geological era* have been formulated, thus creating an Anthropocene *debate*. The Anthropocene debate is "the most influential," "powerful" and "popular[...]" current concept in environmental studies which highlights diverse perspectives concerning the relations between humans and their environment.[3]

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[1] Jason W. Moore, "Anthropocene or Capitalocene? Nature, History, and the Crisis of Capitalism," in *Anthropocene or Capitalocene? Nature, History, and the Crisis of Capitalism*, ed. Jason W. Moore (Oakland: PM Press, 2016), 2-3; Anthony D. Barnosky et al., "Has the Earth's Sixth Mass Extinction already Started?," *Nature* 471 (2011): 52.
[2] Daniel Chernilo, "The Question of the Human in the Anthropocene Debate," *European Journal of Social Theory* 20, no. 1 (2017): 44-45.
[3] Moore, "Anthropocene or Capitalocene?," 2.

According to Crist, many individuals in the Anthropocene debate take a 'techno-optimistic' stance, meaning that they assert that technology "should be embraced as … our salvation" (with an emphasis on *human*, rather than planetary, salvation).[4] Humankind's rational capacities are understood as able to prevent risky and uncertain futures by developing technologies and by intervening in the Earth's natural systems.[5] More radical techno-optimists model the Anthropocene debate as a "Promethean self-portrait … [which] distinguish[es] itself from the background of merely-living life, rising so as to earn itself a separate name (anthropos meaning 'man,' and always implying 'not-animal')."[6] In short, techno-optimists often appropriate a human-exceptionalist stance which distinguishes humans from their other-than-human surroundings through humans' rational capacities.

By contrast, others taking part in the Anthropocene debate are more skeptical of the abilities of technologies and human rationality, mainly because such techno-optimists do not take into consideration the possible negative consequences of technologies. For instance, Hoppe is critical of techno-optimism because, instead of questioning and "rethink[ing] the role [and power] of 'the human,'" human power "is transformed into a vision of limitless feasibility."[7] Similarly, Chernilo sees 'the human' as "the Earth's greatest predator" who destroys the Earth as well as its own species.[8] Not only are these critics skeptical about possible innovative solutions for climate crises; many critics also take a pessimistic and defeatist stance, assuming that life on Earth is numbered due to the immense effect of human activity on the planet's biodiversity.

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[4] Eileen Crist, "On the Poverty of Our Nomenclature," in *Anthropocene or Capitalocene? Nature, History, and the Crisis of Capitalism*, ed. Jason W Moore (Oakland: PM Press, 2016), 17; Ibid., 15; Ibid., 21.
[5] Ibid., 15.
[6] Ibid., 16.
[7] Katharina Hoppe, "Responding as Composing: Towards a Post-Anthropocentric, Feminist Ethics for the Anthropocene," *Distinktion: Journal of Social Theory* 21, no. 2 (2020): 126.
[8] Chernilo, "The Question of the Human in the Anthropocene Debate," 50.

While these different perspectives may *claim* to sketch the truth of the Anthropocene as a geological era, the Anthropocene debate remains a "product … of the social sciences and humanities," that is, "an entrenched concept and mode of thinking."[9] Throughout this article, I focus on the Anthropocene as a conceptual and controversial subject of debate made up of multiple attitudes, and *not* as a geological era. I will explore how these attitudes generate different responses to human-induced, Anthropogenic climate crises.

This article illuminates and critiques two assumptions that are often made in the Anthropocene debate, namely the claims to certainty and the human exceptionalism that techno-optimists presuppose and maintain. I start my analysis of the relation between humans, other-than-human species and environments with Fyodorov, who radicalizes Kantian responsibility and demands that humans perfect the human condition by controlling and dominating over nature.[10] However, by demanding humans to do so, he inadvertently deems humans passive, thoughtless followers to his doctrine. While Fyodorov was writing in the 19th century, these issues are also visible in the contemporary Anthropocene debate.

Section II responds to the claims to certainty in Fydorov's responsibility and in techno-optimistic renderings of the Anthropocene debate from a Popperian perspective. Instead of radically altering society as Fyodorov proposes, Popper advocates a piecemeal approach to societal change that emphasizes the uncertainty inherent in social systems. I also analyze the work on irreversibility and uncertainty in natural systems by Prigogine and Stengers.

Section III deals with the claims to human exceptionalism inferred in Fyodorov's radical responsibility and in techno-optimistic renderings of the Anthropocene debate. Here, I turn to the posthumanist notion of 'response-ability' –

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[9] Andreas Malm and Alf Hornborg, "The Geology of Mankind? A Critique of the Anthropocene Narrative," *The Anthropocene Review* 1, no. 1 (2014): 66.

[10] Nikolai Fedorovich Fyodorov, *What was Man Created for? The Philosophy of the Common Task*, tr. and ed. Elisabeth Koutaissoff and Marilyn Minto (Honeyglen Publishing, 1990), 35.

the ability to respond – illustrated in the respective works by feminist scholars Haraway and Barad. Response-ability is a concept that emphasizes the uncertainty in responsible action and acknowledges the thick entanglements between humans, other-than-human species and environments.

While Fyodorov and techno-optimists in the Anthropocene debate often render humans thoughtless in their responses to climate change by prescribing obligations, Haraway over-demands humans to be conscientious (i.e., being hyper-aware of one's actions and wanting to carry them out correctly, as well as being governed by conscience). Thus, in section IV, I turn to Arendt's concept of *initium*, which embodies the ambiguous space in-between thoughtlessness and conscientiousness.

In order to make sense of the Anthropocene debate, I introduce three axes which highlight binary approaches to human-induced climate crises, namely: (1) thoughtlessness vs. conscientiousness; (2) techno-optimistic claims to certainty vs. posthumanist uncertainty; and (3) human exceptionalism vs. entanglements between humans, other-than-human species and environments.[11] I discuss these 'either/or' axes because they represent the prevailing and unnuanced attitudes in my chosen authors, which, furthermore, reflect prevalent contemporary Western views of climate crises in the Anthropocene debate. However, these axes are far from exhaustive and many other attitudes prevail in the Anthropocene debate, which, due to the scope of this article, I do not discuss.

These authors have been chosen because of their rather polarizing positions. Their views are even more radical when they embody and advocate multiple poles on

[11] It is worth noting that, while the last two axes are explicitly discussed in the literature, the first axis is far more implicit. Haraway makes a clear distinction between techno-optimism and posthumanist uncertainty, and Barad does this with the human exceptionalism–entanglements distinction. However, the binary between thoughtlessness and conscientiousness is more implicit in the literature, and my aim is to expose this binary.

the three axes.[12] This does not mean, however, that there *necessarily* is a logical correlation between the axes and positions.

In this article, I aim firstly to exhibit these exemplified radical positions, after which I critique them, nuance them and seek to surpass them in order to explore the possibility and value of the uncertain in-between. I attempt to show, with the help of Popper's notion of piecemeal engineering and Arendt's concept of *initium*, that the uncertain space in-between such radical positions can inspire new, spontaneous attitudes towards climate crises. The reason for encouraging the exploration of the uncertain space in-between these axes is to make explicit the claims to certainty and the radicality of the axes' poles in order to explore new ways of dealing with climate crises.

I aim to answer the following research question: How can the uncertain space in-between the extremes of thoughtlessness and conscientiousness, techno-optimistic claims to certainty and posthumanist uncertainty, and human exceptionalism and multi-species entanglements invite new, spontaneous responses to climate crises?

Throughout this article, I will respond to the claims to certainty and human exceptionalism prevalent in the Anthropocene debate by means of a case study on damaged coral reefs off the coast of Wasini Island, Kenya. Coral reefs play a tremendous part in storing carbon dioxide from the atmosphere, providing habitats for diverse life forms and protecting coasts from storms and floods.[13] However, the increase in seawater temperature due to climate change and the escalation in

[12] Of course, an author does not advocate both poles on the same axis, but rather several poles on different axes. For instance, Fyodorov embodies a radically techno-optimistic, human-exceptionalist stance and promotes thoughtless duty; Haraway expresses a conscientious view and assumes the entanglement between life forms and environments.

[13] Charles Birkeland, "Coral Reefs in the Anthropocene," in *Coral Reefs in the Anthropocene*, ed. Charles Birkeland (Dordrecht: Springer, 2015), 6; Ibid., 9.

overfishing and pollution have resulted in coral bleaching and ultimately the death of large parts of coral reefs globally.[14]

In response to these threats, Knoester et al. from REEFolution Foundation created artificial reefs made out of metal cages and concrete structures in order to foster "ecological recovery."[15] These artificial structures are placed on areas on the seabed where a substrate is lacking or is damaged by human activity.[16] Corals are then attached to these structures and can grow in a protected and monitored environment. I refer back to this project by incorporating different concepts in order to show how it exemplifies a piecemeal approach that recognizes entanglements with other life forms and initiates new, spontaneous and inventive responses to climate crises.

Section I: Claims to Certainty and Human Exceptionalism

1.1 Fyodorov's Radical Kantian Responsibility

Responsibility in the Kantian tradition is significantly determined by morality and rationality. Although an analysis of Kantian responsibility goes beyond the scope of this article, it is worth noting that, for Kant, moral duty and rationality are imperative in order to act responsibly and to be responsible for one's actions.[17] Kant's categorical imperative – that is, an action that is "*in itself* good, hence [is] necessary

[14] Ibid., 11; E.G. Knoester et al., "Community-Managed Coral Reef Restoration in Southern Kenya Initiates Reef Recovery using Various Artificial Reef Designs," *Frontiers In Marine Science* 10 (2023): 2.
[15] Ibid., 1.
[16] REEFolution Foundation, "Coral REEF Restoration," https://reefolution.org/coral-reef-restoration/.
[17] Russ Shafer-Landau, "Introduction to 'The Good Will and the Categorical Imperative,'" in *The Ethical Life: Fundamental Readings in Ethics and Moral Problems*, ed. Russ Shafer-Landau (Oxford: Oxford University Press, 2015), 87.

in a will in itself conforming to reason"[18] – displays the necessity of morality and rationality when making responsible choices. Kant's categorical imperative also discloses the *duty* implied in such choices by arguing that they must be able to be universally moral.[19]

Kant's striving for morality and rationality in responsibility is radicalized in the work of the Russian philosopher and librarian Nikolai Fyodorovich Fyodorov (1829–1903). Here, I briefly analyze what roles 'task' (i.e., moral obligation, duty) and rationality (in the form of technological innovation and the claims to certainty) play in Fyodorov's conception of responsibility. Fyodorov's radical Kantian responsibility is helpful in order to understand the shortcomings of formulating responsibility *merely* in terms of obligation and certainty.

As a rather fervent follower of Kant, as well as a devout Christian, Fyodorov formulates responsibility in similar, yet more radical, terms, by further emphasizing morality and rationality in responsibility. Fyodorov was a leading figure in developing a collective sense of responsibility with the aim of improving the human condition by immortalizing humanity.[20] He names this collective responsibility humanity's 'common task' which is to be achieved by technological innovation geared towards transcending human suffering and reaching a state of perfection in the form of immortality.[21] What is more, the common task also entails having complete control of the natural environment by, for instance, "redirect[ing] a cloud" in order to fulfill agricultural human needs.[22] Humans are thus conceived as nature's

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[18] Immanuel Kant, "The Good Will and the Categorical Imperative," in *The Ethical Life: Fundamental Readings in Ethics and Moral Problems*, ed. Russ Shafer-Landau (Oxford: Oxford University Press, 2015), 93.
[19] Ibid., 94.
[20] Elisabeth Koutaissoff, "Introduction," in *What was Man Created for? The Philosophy of the Common Task*, tr. and ed. Elisabeth Koutaissoff and Marilyn Minto (Honeyglen Publishing, 1990), 11.
[21] Fyodorov, *What was Man Created for?* 35.
[22] Ibid.

"master," not only able to, but also *obliged* to manipulate both human and other-than-human nature in order to overcome its mortal 'limitations.'[23]

Following the Kantian tradition, Fyodorov formulates the common task as a categorical imperative that must be completed: if it is *possible* to strive for and achieve immortalization, then humans are morally *obliged* to strive for it.[24] As such, the *possibility* to respond entails the *responsibility* and *obligation* to do so. In this manner, Fyodorov sketches responsibility as an obligation for humans in order not only to be good Christians, but also moral beings responsible for perfecting the future of humanity.

However, the pressure to be a moral, rational and responsible human being has its consequences. Fyodorov's concept of the common task imposes itself on society by being formulated as a duty aimed to complete 'God's cause' (that is, perfecting creation). Such imposition, and the obligation to complete such a task, entails thoughtlessness in moral action, which is a denial of agency and freedom. Duty is not wrong per se, but the imposition of such duty, the obligation to complete it and the hierarchy it implies, can often render individuals as thoughtless beings in the face of an omniscient authority. If individuals are merely and thoughtlessly following rules that correspond to Fyodorov's common task, then, to what extent can they really be moral and rational beings? When responsibility is imposed on humans, so-called 'responsible' action can be understood as irrational since the individual has no reason to follow such laws, other than the 'blind' or thoughtless conformity to duty. According to Pinkard, Kant is well aware of this paradox and thus emphasizes that responsibility entails that one must be free and able to think rationally in order to act morally.[25] However, Fyodorov overlooks this paradox, meaning that his

[23] Fyodorov cited in Anastasia Gacheva, "Art as the Overcoming of Death: From Nikolai Fedorov to the Cosmists of the 1920s," *E-Flux Journal*, no. 89 (2018): 1.
[24] Anya Bernstein, *The Future of Immortality: Remaking Life and Death in Contemporary Russia* (Princeton & Oxford: Princeton University Press, 2019), 229; Kant, "The Good Will and the Categorical Imperative," 94.
[25] Terry Pinkard, *German Philosophy 1760-1860: The Legacy of Idealism* (Cambridge: Cambridge University Press, 2002), 347-348.

obligatory and coercive task renders terms like 'morality' and 'rationality' superfluous. By radicalizing the Kantian conception of responsibility, Fyodorov actually *destroys* the rational moral agency that he was aiming for.

Furthermore, Fyodorov's radical Kantian perspective on responsibility also perpetuates a hierarchy between humans and other life forms. As mentioned, by striving for human perfection, Fyodorov conceives humans as 'masters' and 'controllers' of nature. Focusing merely on the human species and its continuation, Fyodorov makes a clear distinction between what matters, and what does not. Following Kant, Fyodorov distinguishes between the means and the ends, arguing that only humans have to be treated as ends-in-themselves while other-than-human species and environments can be treated as mere means.[26] While humans are considered rational and moral, other life forms are merely useful in the extent to which humans can achieve their aims with them.[27]

As such, I identify two issues in Fyodorov's radical Kantian responsibility: (1) his claims to certainty concerning the role humans have in shaping and predicting the future; and (2) his human-exceptionalist attitude that subordinates other-than-human species and environments.

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[26] Kant, "The Good Will and the Categorical Imperative," 91; Fyodorov, *What was Man Created for?* 23.

[27] In his *Critique of Judgment*, Kant sees certain similarities between humans and nonhuman animals, and nuances this distinction. While he does not argue that nonhuman animals have reason or a sense of morality (and thus they are not equal to humans), he does state that humans and nonhuman animals "are still of the same general kind (namely, as living things)" [Immanuel Kant, *Critique of Judgment*, tr. Werner S Pluhar (Indianapolis: Hackett Publishing Company, 1987), 357]. Here, he makes sure to distinguish himself from Descartes' views on nonhuman animals, who saw them as "machines" (Ibid., 356). However, Fyodorov fails to see this nuance and instead radicalizes the distinction between rational, moral humans and irrelevant nonhuman things, thereby maintaining human exceptionalism.

1.2 Contextualizing Fyodorov's Radical Responsibility in the Anthropocene Debate

Individuals have often adopted an attitude towards contemporary climate crises that is similar to Fyodorov's radical form of responsibility and that demonstrates the same issues. In the Anthropocene debate, techno-optimists similarly make claims to certainty through technological innovation and render humans superior to other species and environments. Such innovations are called 'techno-fixes,' and are aimed to quickly 'fix' environmental issues, often without considering the source of these issues or the consequences of such actions. According to Haraway, a techno-fix mentality "look[s] away" from environmental crises, "reduce[s] the earth's urgency to an abstract system of causative destruction" and attempts to systematically 'solve' climate crises.[28] It is deemed "autopoietic" because it attempts to autonomously solve such crises without acknowledging the impact it has on other living beings: it aims to improve the state of the environment for the benefit of *humans*, instead of the environment in itself.[29] Deeming the other-than-human less important, humans detach themselves from their other-than-human surroundings and render themselves in control of the Earth.[30] I include the techno-fix case study not only because it is prevalent in the Anthropocene debate, but also because Fyodorov similarly advocated technological innovations in order to 'liberate' the human species from its 'imperfect' nature. Furthermore, the techno-fix attitude portrays the two issues that I have identified in Fyodorov's radical responsibility, namely, the claims to certainty and human exceptionalism.

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[28] Donna J. Haraway, *Staying with the Trouble: Making Kin in the Chthulucene* (Durham & London: Duke University Press, 2016), 40.
[29] Donna J. Haraway, "Staying with the Trouble: Anthropocene, Capitalocene, Chthulucene," in *Anthropocene or Capitalocene? Nature, History, and the Crisis of Capitalism*, ed. Jason W. Moore (Oakland: PM Press, 2016), 37.
[30] Haraway, *Staying with the Trouble*, 3.

To relate this to coral reef damage, Fyodorov would reject the approach by Knoester et al. because of the following reasons. Firstly, he would assume that humans could predict the consequences of implementing technology to fix the issue, and because of this certainty, he would carelessly apply such technology to *all* damaged coral reefs, thereby ignoring the specificities per context. Furthermore, because he would only focus on how humans are impacted, he would not recognize or research what impact such technology would have for other life forms in order to prevent further damage. These technologies would then solely be geared towards benefitting humans. As such, his radical approach would perhaps result in more ecosystem damage. Since techno-optimists assume such claims as well, one could expect a similar approach.

In this section, I have analyzed Fyodorov's radicalized caricature of Kantian responsibility. Whereas responsibility in the Kantian tradition is seen as conforming to rationality and moral duty, Fyodorov's radical responsibility accentuates obligation and imposition, and drives home the necessity for certainty in responsibility and human exceptionalism. I have chosen to discuss Fyodorov because the two issues I identify in his form of responsibility are also often displayed in contemporary climate action, such as the techno-fix attitude. Techno-optimists similarly assume species hierarchy and strive to predict the future through technological innovation aimed at 'fixing' trouble.

In section II, I critically reflect on and tackle the first issue concerning Fyodorov's claims to certainty by exploring uncertainty in social engineering and in natural systems.

Section II: Piecemeal Engineering: Acknowledging Uncertainty and Irreversibility in Socio-Natural Systems

2.1 Radical versus Piecemeal Approaches in Social Systems

Two forms of certainty are identified in Fyodorov's work and in the techno-optimistic view in the Anthropocene debate. Firstly, epistemic certainty assumes being able to predict and know the consequences and impacts of one's actions. Secondly, moral certainty states that individuals know for certain what they ought to do in order to achieve a better society. For Fyodorov, the former is exemplified in his assertion that humans are masters of nature and can predict and control the impact of their actions on their environment; the latter is demonstrated in his urge to develop technologies that can immortalize humans in order to complete 'God's cause.'

Here, I tackle the claims to both types of certainty in Fyodorov's radical responsibility and in the techno-fix attitude. I argue that such radical convictions of certainty can actually lead to dangerous, unpredictable and undesired outcomes. This is because claims to certainty fundamentally overlook the instability, spontaneity and irreversibility inherent in social and natural systems. I challenge these claims by examining the influential philosopher of science Karl Popper's (1902-1994) critique of utopian social engineering and analysis of piecemeal engineering. Then, I examine what it means for social and natural systems to be inherently uncertain by exploring Prigogine and Stengers' work on irreversibility.

Popper argues that a radical shift from reason to prophecy in the social sciences has occurred. Instead of reasonably, scientifically and critically dealing with present issues and with possible future scenarios, the growing pseudo-science called 'historicism' aims to "predict impending events" and "prophesy the course of

historical events."[31] Historicists' "anti-rationalis[t]" approach claims that it can bring epistemic certainty and stability into social systems by adopting sweeping convictions that administer radical action.[32] This is achieved by creating and following a prescribed, ideal blueprint. Termed 'utopian engineering,' this approach adopts "the Platonic belief in one absolute and unchanging ideal" and strives for that stable and certain ideal through radical approaches.[33]

Utopian engineers presuppose that the predicted results of their blueprint are certain to occur, and the expected impacts on citizens and institutions are guaranteed. In a blueprint of the whole of society, there is no room for uncertainty, open questions or doubts about the result: what is to be expected *will* happen. Convinced by allegedly 'certain' predictions and by the blueprint, the utopian engineer acts rather recklessly and dangerously, risking the livelihoods of citizens and the stability of institutions.[34]

However, such utopian social reconstruction requires practical knowledge and prior experience in social experiments in order to predict the consequences of actions, two skills the utopian engineer does not possess because of their large-scale, radical approach. Noting the grave consequences of re-shaping society as a whole and without sufficient knowledge and experience, Popper offers 'piecemeal social engineering' as an alternative. To reconstruct society in a piecemeal manner means not to make a blueprint for the whole of society, but rather to alter single institutions

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[31] Karl Popper, *The Open Society and its Enemies* (1945; reis., London and New York: Routledge, 2002), xli.
[32] Ibid., xliii.
[33] Ibid., 174. Note that Popper uses the term 'radical' "in order to characterize an attitude of 'going to the root of the matter,'" and thus criticizes both Plato and Marx for "dreaming of the apocalyptic revolution which will radically transfigure the whole social world" (Ibid., 178). Plato's radicalism lies in the fact that he aimed for an Ideal State, and Marx's radicalism aimed at revolutionizing the class system. Both aimed to reconstruct society as a whole and 'from the root' without first encouraging small-scale experimentation to gain practical experience. As such, their ambitions to re-make society are deemed irrational according to Popper.
[34] Ibid., 175.

and groups.[35] Such small-scale and less severe changes, which impact only a few individuals rather than the whole of society, can be implemented in order to first experiment with and learn from different methods and techniques, and then apply it once one has identified the possible consequences. A trial-and-error approach to social engineering creates space for making and learning from mistakes in order to apply this knowledge to other small-scale social projects in the future.

The piecemeal engineer is aware and takes account of the inherent uncertainty in social systems. By emphasizing the process of learning from experimentation, the piecemeal engineer acknowledges that, although one can *somewhat* know the consequences of a change in society (due to the gaining of knowledge from previous experiments), one can never know the outcomes *for sure*. To a certain extent, making predictions is possible, but this is only because knowledge has been gained concerning the outcome of previous experiments.

Arendt similarly emphasizes the contingency of political action and the inability to predict or know for certain what actions can lead to.[36] She notes the difference between the *fabricator of* politics (i.e., *homo faber*) and the *actor in* politics (i.e., the man of action).[37] While the former assumes that, by fabricating an ideal model, society can be made certain and stable, the latter accepts the inherent uncertainty, unpredictability and irreversibility of political actions and their consequences.[38] For Arendt, it is dangerous to assume that certainty is achievable because that implies the possibility of consensus.[39] If every human being were to agree (as is the case for the utopian blueprint of society), and if epistemic certainty were to be achieved in the political realm, then there would not be any space for

[35] Ibid., 172.
[36] I discuss Arendt's view on political action in greater detail in section IV.
[37] Hannah Arendt, *The Human Condition* (Chicago: The University of Chicago Press, 1998), 144.
[38] Ibid, 220.
[39] Ibid.

plural perspectives on political issues. As such, social engineers must be attentive to the uncertainty of social systems.

(Re)Making society – as utopian engineers like Fyodorov and the techno-optimists attempt to do – therefore implies the following: (1) the ability to invent and achieve an ideal blueprint of society; (2) the certainty that such a model is an *improvement* for society; (3) taking sweeping measures to achieve it; and (4) the possibility of consensus among all individuals concerned. In short, the utopian engineer attempts to *fabricate* society to rid it of its uncertainty and unpredictability. By contrast, the piecemeal engineer is aware of and embraces this uncertainty by assuming a trial-and-error method that makes room for and learns from mistakes – mistakes whose consequences are not as severe because of their small-scale implementation.

To respond to the reef restoration by Knoester et al., this project follows a piecemeal approach by keeping the scope local and by taking step-by-step measures to improve coral reefs. This project does not resort to techno-fixes to provide large-scale, radical and utopian 'solutions' that have not been tested before and whose consequences are unknown. Rather than "*rebuild[ing]* the entire reef," the project "intend[s] to initiate reef *recovery*"; thus, Knoester et al. take small, modest measures.[40] This is so that, if their approach yields undesired results, the impacts are not too dire for entire ecosystems. Furthermore, from the outset, Knoester et al. argue that reef managers are "unable to influence climate change," and so must find other means to "strengthen reef resilience locally to reduce impacts of large-scale disturbances beyond their control."[41] Although climate change is a global issue, reef managers realize that their efforts to deal with this issue is most effective and most realistic to implement if it is done at a local level where the impacts of artificial reefs can be studied, monitored, learned from and applied to other contexts if the outcomes are positive.

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[40] Knoester et al., "Community-Managed Coral Reef Restoration," 2 (emphasis added).
[41] Ibid.

In a climate context, one could argue (as Fyodorov and techno-optimists would do) that the piecemeal method is too slow and moderate to respond to the urgency of climate crises. However, responding radically as Fyodorov would do, and as is often done with techno-fixes, overlooks the potentially dangerous consequences of such actions and can be more harmful than was intended because of the lack in knowledge and experience.

2.2 Irreversibility in Natural Systems

While Popper's analysis pertains to social engineering, similar discussions emphasizing uncertainty are carried out in the natural sciences. Physical chemist Ilya Prigogine (1917–2003) and philosopher of science Isabelle Stengers (1949–) have worked collaboratively on ways to realize the instabilities, uncertainties and fluctuations inherent in natural systems. In response to the growing claims to certainty, their key concept, the 'arrow of time,' argues for the irreversibility of time and states that systems cannot be stabilized, simplified or reversed, because of their inherent spontaneity, uncertainty and randomness.[42] Here, I first argue why systems are often considered to be 'reversible,' after which I explore the idea of irreversibility in order to emphasize uncertainty and to critique the claims to certainty.

Prigogine and Stengers respond to the claims to certainty that are prevalent in the Newtonian natural sciences. The sciences have often been characterized by their alleged rigidity, objectivity and precision, because of the existence and development of their defined laws of nature. As such, according to Rubino, these laws are understood as being able to predict the future and supposedly govern natural systems.[43] As a result, it is assumed that changes can be made to a natural system

[42] Ilya Prigogine and Isabelle Stengers, *Order out of Chaos: Man's New Dialogue with Nature* (New York: Bantam Books, 1984), 12.
[43] Carl A. Rubino, "The Politics of Certainty: Conceptions of Science in an Age of Uncertainty," *Science and Engineering Ethics* 6 (2000): 499.

"without altering the basics of the system" because it still remains consistent to its fundamental scientific law.[44] This is what Prigogine and Stengers call the 'reversibility of time.'

However, conceiving time as reversible means overlooking the "pluralistic, complex character" of the universe and simplifying, reifying and reducing this character to a stable system governed by laws.[45] Prigogine and Stengers argue that the irreversibility of time is necessary in order to account for the actual instabilities, uncertainties and fluctuations in natural systems and their impact on other systems.[46] Natural phenomena are far more random and irreversible than consistent and stable scientific laws can account for.[47] This is because we simply cannot foster the right conditions for every phenomenon, because there are too many different and random outcomes.

Hence, Prigogine and Stengers argue for the inherent uncertainty and irreversibility of systems and their unpredictable impacts on other systems. Because natural systems shift constantly, can organize themselves in spontaneous manners and can impact other systems in unpredictable ways, chance is vital and presupposed in order to understand a system. This stands in radical opposition to the reversibility of time, which claims that certainty and stability can be achieved and which assumes that changes to a system do not fundamentally impact that system or others.

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[44] Prigogine and Stengers, *Order out of Chaos,* xix.
[45] Ibid., 9.
[46] Ibid., xxvii.
[47] It is important to note that Prigogine and Stengers distinguish artificial from natural systems, arguing that, while the former can be predictable to a certain extent, the latter cannot (Ibid., 9). Objects, technologies and events that humans have created are more predictable because we have manufactured the conditions for their results and the possible outcomes of their use.

2.3 A Piecemeal Approach to Socio-Natural Systems

This section started off by looking at Popper's analysis of *social* systems, their (re)construction and their inherent uncertainty. It then shifted towards a brief analysis of uncertainty in Prigogine and Stengers' analysis of *natural* systems. Although both Popper and Prigogine and Stengers aim to emphasize uncertainty, their fields nevertheless diverge drastically, or so it seems. Both types of systems impact each other in significant ways, and both are inherently uncertain and unpredictable; therefore, I move away from traditional attempts at separating them, but I *also* reject contemporary attempts at unifying or equating them. Here, I aim to show how the 'natural' and the 'social' interact and engage with each other as two systems fundamentally entangled with, yet distinct from, each other. I argue that the characteristic elements of Popper's piecemeal approach (an approach that is allegedly only 'social') and of Prigogine and Stengers' 'arrow of time' (a concept that seemingly only pertains to 'natural' systems) can be applied to respond to and deal with climate change and the environment (that which is considered 'natural'). I have included both Popper's and Prigogine and Stengers' accounts because climate crises impact both the social and the natural.

As mentioned above, Fyodorov and consequently techno-optimists' human-exceptionalist attitude distinguishes and privileges humans (the 'social') from supposedly 'imperfect' and 'manipulable' other-than-human species and environments (the 'natural'). However, the fact that humans are faced with climate crises already shows that the 'social' and the 'natural' cannot be understood as two isolated systems, but rather as systems that depend on and impact each other to great measures. There is growing consensus that climate crises are, to a large extent, due to human activity: the way in which humans have acted in their natural environments has resulted in dramatic changes in ecosystems and nonliving material.[48] In turn,

[48] Moore, "Anthropocene or Capitalocene?," 1.

environmental climate crises also impact humans, leading to consequences as diverse as climate migration, poverty and anxieties about the future on Earth.[49] These examples of the impact on humans and on the environment elucidate the bilateral relation between the 'social' and the 'natural': the 'social' is always-already impacted by and entangled with the 'natural,' and vice versa, and this entanglement is even more pronounced in the contemporary climate context. As such, traditional attempts at separating the 'social' from the 'natural' – as exemplified by Fyodorov and the techno-optimists – are erroneous and deceptive.

By contrast, in posthumanist scholarship (further discussed in section III), there is the tendency to equate the 'social' with the 'natural.' While this tendency supposedly aims to eradicate the binary and hierarchy between the 'social' and the 'natural,' I argue that it instead reduces their significant nuances and distinctions and renders the two terms meaningless. For instance, human agents may be influenced by natural systems; however, they are not identical to other life forms and environments.[50]

Instead of isolating the 'social' from the 'natural,' or collapsing the two systems onto each other, I propose to see them as systems continuously interacting and engaging with each other. Because both natural and social systems are inherently irreversible and their consequences unknown, humans can deal with climate crises in a piecemeal manner that is as reversible as possible. What this means is that small steps can be made in order to make space for other options and for alterations in climate action. Different strategies can be implemented at a small scale to explore possible consequences. If the consequences are undesired, then other small changes can be made in order to prevent huge changes to society. As such, piecemeal

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[49] Rebecca Gasper, Andrew Blohm and Matthias Ruth, "Social and Economic Impacts of Climate Change on the Urban Environment," *Environmental Sustainability*, no. 3 (2011): 150.

[50] I discuss this further when critiquing Barad's concept of agency in section 3.2, but for now it suffices to say that assuming that human and natural systems are equivalent renders their important distinctions meaningless.

engineering *makes small, reversible changes in otherwise irreversible socio-natural systems* in order to avoid radical results that are unwished for and to act in a way that articulates the engagement between and impact of both systems with and on each other. Due to the irreversibility and uncertainty of socio-natural systems, a piecemeal approach takes modest, cautious and local measures to first experience what consequences these have both on humans and environments. Thus, this approach rejects the claims to certainty articulated by Fyodorov and the techno-optimists in the Anthropocene debate.

Section III: Response-ability: Acknowledging Entanglements with Other-than-Human Species and Environments

3.1 Response-Ability: Living-With and Intra-Action

Proposing to look at climate crises in a socio-natural manner is a stepping stone to tackling the second issue implied both in Fyodorov's radical responsibility and in techno-optimistic perspectives in the Anthropocene debate. In what follows, I discuss the issue of human exceptionalism by bringing it into dialogue with feminist environmental scholars Donna Haraway (1944–) and Karen Barad (1956–) and their respective accounts of the posthumanist[51] notion of 'response-ability,' that is, the ability to respond. Both working in the field of environmental philosophy, their backgrounds nonetheless differ (Haraway is a trained biologist and Barad a

[51] Barad defines the term 'posthumanism' as the framework that "signal[s] the crucial recognition that nonhumans play an important role in naturalcultural practices, including everyday social practices, scientific practices, and practices that do not include humans. But also, beyond this, my use of 'posthumanism' marks a refusal to take the distinction between 'human' and 'nonhuman' for granted, and to found analyses on this presumably fixed and inherent set of categories" [Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Durham & London: Duke University Press, 2007), 32].

theoretical physicist), thus offering diverse perspectives on response-ability in the contemporary climate context.

The suffix of the original 'responsibility,' of course, already states that the term suggests the *ability* to respond. As Beausoleil states, "the notion of responsibility … [is an] ethics borne of situated response, [an] ethics enacted in the pulse and pause of attentiveness."[52] In that sense, both 'responsibility' and 'response-ability' are identical, and the posthumanist term should be deemed redundant. However, Beausoleil then states that responsibility as 'attentiveness' or 'responsiveness' "bristles against more commonly held notions of responsibility as the very opposite: to be *held* to account, to be judged according to fixed and clear terms."[53] As I have shown in Fyodorov's radical responsibility, this rigidity and fixation to laws and judgments can actually inadvertently foster "*irresponsibility*" by deeming individuals passive and thoughtless followers of a top-down responsibility.[54]

By hyphenating normative 'responsibility,' posthumanist theorists show that "responding is necessarily more than reacting by way of a formulaic or fixed calculus, and is not solely achievable through reasoned reckoning or universal principles."[55] While this 'ability' is lost, overlooked or deemed less important in normative responsibility (such as the responsibility entailed in Fyodorov's radical Kantian conception and in the techno-fix approach), response-ability's hyphen emphasizes the potentiality and contingent enabling of response.[56]

Response-ability thus marks a shift from *solely* rational, universal principles to diverse ways of knowing and experiencing the world. For Haraway, these other ways of knowing depend on the entanglements between humans and

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[52] Emily Beausoleil, "Embodying an Ethics of Response-Ability," *Borderlands* 14, no. 2 (2015): 2.
[53] Ibid. (emphasis in original).
[54] Ibid.
[55] Katrina Brown and Rachel Dilley, "Way of Knowing for 'Response-Ability' in More-Than-Human Encounters: The Role of Anticipatory Knowledges in Outdoor Access with Dogs," *Area* 44, no. 1 (2012): 38.
[56] Karen Barad and Adam Kleinman, *Intra-actions*, Mousse 34: 81.

other-than-human species and environments. Haraway is very critical of human exceptionalism because it focuses primarily on the *human* future and its survival on Earth. Haraway's concept of the 'Chthulucene' offers an alternative to human exceptionalism prevalent in the Anthropocene debate and aims to show how humans, other-than-human species and environments "require each other in unexpected collaborations and combinations."[57] The term 'Chthulucene' stems from Haraway's much-researched spider *Pimoa chthulu* that, because of its tentacular entanglement with other species and environments, engages in "tentacular thinking."[58] Inspired by the spider's ability to probe its surroundings with its tentacles, Haraway proposes that humans should, too, probe and engage with their surroundings in an exploratory, open-minded and engaged manner. While techno-optimists in the Anthropocene debate tend to separate humans from and privilege them over other-than-human species and environments, Haraway's notion of the Chthulucene conceptualizes living and nonliving things as entangled with each other, both within and between species and environments.

While techno-optimists deem the Anthropocene 'autopoietic' (as mentioned earlier), Haraway asserts that the Chthulucene is an era in which living beings are 'sympoietic' because they probe their surroundings with their 'tentacles,' metaphorically speaking. For Haraway, sympoiesis means "making-with" and "living-with" other-than-human species and environments.[59] Since it "do[es] not have self-defined spatial … boundaries," it acknowledges the rich entanglements and engagements between species and environments.[60] Haraway insists that 'Chthonic' beings are agents who are undetermined and forever entangled with each other in unexpected, unpredictable ways. She thus argues that solutions to present climate crises do not lie in techno-fix imaginaries or illusions of human exceptionalism, but

[57] Haraway, *Staying with the Trouble*, 4.
[58] Ibid., 31; Ibid., 5.
[59] Ibid., 5; Ibid., 2.
[60] Ibid., 33.

rather in (the acknowledgement of) entanglements with other-than-human species and environments.[61] By thinking tentacularly, humans dismiss convictions of human exceptionalism and can instead probe and engage with their surroundings to recognize networks of multi-species reciprocity.

Furthermore, for Barad, response-ability encompasses a shift in the way in which relationships between humans, other-than-human beings and environments are conceptualized. Traditionally, these relationships are seen as interactions where different agents influence each other but remain ontologically distinct. According to Barad, in the Kantian tradition, phenomena are conceived as "objects-in-themselves, … as perceived objects."[62] This conceptualizes agents as *a priori* separate and independent from one another.[63] However, this understanding not only underestimates the extent to which agents influence each other; it also maintains a hierarchy between different life forms: humans are conceived as agential 'objects-in-themselves,' while other life forms are mere means for humans' ends.

In response to interaction, Barad proposes 'intra-action' to emphasize the codependent, dynamic relation occurring between agents. Barad argues that agency arises not from an *a priori* ontological distinction, but rather from the entanglements between *relationally* distinct species and environments.[64] Agents are therefore not contained within a given identity or existence, nor are they detached from their living and nonliving environments; rather, they exist as phenomena in continual dialogue with other relationally distinct phenomena. Furthermore, intra-action does not only pertain to the responses and dialogues *between* species or environments, but also *within* species and environments. For instance, the intra-actions between a human and a spider are not categorically different from the intra-actions occurring between humans or between spiders. While these relations may employ different forms of

[61] Ibid., 3.
[62] Barad, *Meeting the Universe Halfway*, 128
[63] Ibid., 33.
[64] Ibid., ix.

communication, *the fact that they communicate and intra-act* is what matters in Barad's understanding of intra-action.

Understanding agency as that which arises from entanglements between and within species and environments also significantly dismantles the hierarchy that exists between humans, other-than-human beings and environments in the Kantian tradition. Agents are understood as intra-active phenomena taking part in the "ongoing reconfiguring … of the world."[65] As such, "no a priori privileged status is given to the human. … 'Humans' are emergent phenomena like all other physical systems."[66] Intra-action offers a framework to think of agency as that which arises from relationality and which shifts in structure. As such, response becomes something that always entails and takes into account other agents and their impact on each other.

In summary, Haraway and Barad aim to move past the human-exceptionalist narrative prevalent in the Anthropocene debate by acknowledging the myriad entanglements between humans, other-than-human species and environments. By hyphenating the original 'responsibility,' response-ability highlights the uncertainty and potentiality of responses and the entanglements of different responses arising from diverse agents. Haraway does this in order to shift attention from human superiority to tentacular collaboration and living-with other species and environments; Barad makes this move in order to emphasize that human and other-than-human things are not distinct from each other, but always-already actively engaging with each other in their attempt at (re)configuring the world.

To return to the reef restoration project, these artificial reefs do not only aim at recovering the reefs for the local economy (through fishing and tourism), but, importantly, aim to "restore" and "support[...]" marine ecosystems.[67] The artificial reefs are initially made by humans, but subsequently flourish by the regeneration of

[65] Ibid.
[66] Ibid., 338.
[67] Knoester et al., "Community-Managed Coral Reef Restoration," 2.

other life forms and ecosystems. As such, intra-actions take place between humans, humanmade objects and other life forms. Following Haraway, one could say that humans choose to 'live-with' coral by mimicking and monitoring its environment for its regeneration. In this sense, researchers are probing the coral with their metaphorical 'tentacles,' exploring what it requires to grow and recognizing the intra-active relations between human communities, coral reefs and their diverse inhabitants. This expresses a sympoietic relation: if reefs are restored and their populations are able to flourish again, humans in coastal areas are also more protected from natural hazards and can build a sustainable community.

3.2 Critique on Response-Ability: Too Over-Demanding of Humans

Haraway and Barad, I contend, provide a way out of the human-exceptionalist logic and the claims to certainty that are otherwise implied in Fyodorov's radical Kantian responsibility and in the techno-fix attitude. Both scholars illuminate the potential of myriad entanglements with other agents.

Nonetheless, Haraway and Barad's respective accounts of 'response-ability' face their own limitations. In this section, I identify two issues concerning response-ability: (1) Barad's extension of agency to just about everything, thereby rendering the term 'agency' meaningless (this critique substantiates section 2.3 where I neither equate nor oppose the 'natural' from the 'social'); and (2) Haraway's over-demand of humans to be hyper-aware of situations and one's response to them, and thus assuming a rigid binary between thoughtlessness and conscientiousness.

Barad's concept of intra-action carelessly extends agency to *anything*; as a result, the term 'agency' is rendered meaningless.[68] Of course, Barad makes this

[68] As noted by Malm and Hornborg, there is a prevailing tendency in the Anthropocene debate to "reconceptualize" and "interfus[e]" the 'natural' and the 'social' because the "distinction between Nature and Society" is now considered to be "obsolete" (Malm and Hornborg, "The Geology of Mankind?," 62).

move in order to avoid perpetuating the traditional human/nonhuman distinction in which the former is rendered active and agential and the latter passive and agentless. Extending agency so that it characterizes other-than-human species and material forces appears, to them, like a solution in order to avoid such distinctions. However, by arguing that humans should acknowledge multi-species entanglements, Barad unintentionally discards necessary and substantial differences between humans, other-than-human species and environments and overlooks the consequences of doing so. Responding to this, Hayles proposes to reject the human/nonhuman distinction and instead, to adopt a cognizers/noncognizers distinction in which the former are actors and the latter agents: "On one side are humans and all other biological life forms …; on the other, material processes and inanimate objects."[69] While 'cognition' is traditionally ascribed to humans and some species with higher intelligence, recent scientific studies "emphasiz[e] that *all* life forms have cognitive capabilities," thereby surpassing human exceptionalism.[70] This does not mean that the cognitive abilities of humans are exactly the same as that of, for instance, spiders; instead, it highlights that gradations of such abilities exist.

By emphasizing cognition, Hayles' distinction illustrates the fact that "cognizers can exercise choice and make decisions, [and therefore] they have special roles to play in our current environmental crises."[71] While noncognizers may possess "agential powers" and can *respond*, they are fundamentally different to cognizers in that they cannot make choices, and so are not "actors embedded in cognitive assemblages with moral and ethical implications."[72]

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[69] N. Katherine Hayles, "The Cognitive Nonconscious: Enlarging the Mind of the Humanities," *Critical Inquiry* 42 (2016): 799. Note that, for Hayles, "cognition is not an attribute … but rather a dynamic unfolding within an environment in which its activity makes a difference" (Ibid., 793).
[70] Ibid., 799.
[71] Ibid. For Hayles, 'choice' is not understood as 'free will' in the normative ethical sense, but rather as "decisions among alternative courses of action" (Ibid., 793).
[72] Ibid.

By shifting the focus from 'humanness' to cognition, Hayles shows that both actors and agents are rendered meaningful and important in the rich entanglements between living and nonliving things, without reducing all things to sameness. I think the distinction that Hayles proposes is valuable in that she offers a way to conceptualize the other-than-human not in terms of whether it is 'agential,' but in terms of its ability to choose. As such, nonliving things that are *not* able to choose are not immediately rendered passive (as the traditional category of the 'nonhuman' is understood), but are rather understood as agents able to *respond* to contexts *in their own way,*[73] yet lacking the capacity to choose *how* to respond. In this way, entanglements between humans and other-than-humans exemplified by Barad's intra-action remains, but Barad's reductionist way of conceptualizing agency is replaced by a far richer and more complex ontology of agency that recognizes distinction without implying hierarchy or exceptionalism. There *is* a difference between the cognitive abilities of a human and that of a spider, but this does *not* mean that one can be rendered active and the other passive. Instead, it means that both can entangle and respond to each other.

Furthermore, another point of critique for Barad's concept of agency arises. Agency in philosophical terms is defined along the lines of responsibility and autonomy: something is agential insofar as it can act autonomously and can be held responsible for those actions.[74] If Barad asserts the extension of agency to all life forms, how can, for instance, a tree or an environment be held responsible for an autonomous action? In the distinction between actors and agents, Hayles somewhat explores this problem by emphasizing the former's ability to choose and make decisions; however, Hayles' analysis lacks the dimension of responsibility.

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[73] For instance, the response of a spider when it is touched is different to that of a human and to that of a rock. However, the fact that these all respond in some sort of way is enough to constitute that they belong in the actor/agent ontology.

[74] Andrei Buckareff, Carlos Moya and Sergi Rosell, "Introduction," in *Agency, Freedom, and Moral Responsibility*, ed. Andrei Buckareff, Carlos Moya and Sergi Rosell (Hampshire: Palgrave Macmillan, 2015), 1.

In order to accommodate the entanglements of humans, other-than-human species and environments without inconsiderately extending agency to everything (as Barad does), I propose to distinguish between 'agency' and 'causality.' Róna asserts that, while agency pertains to "intentions" and actions, causality describes a thing's "properties and powers" to cause an effect, but also to be affected by an intended cause.[75] Thus, while causal things can affect a cause on other things because of their 'properties and powers,' they cannot actually act intentionally on their own, and thus cannot be held responsible for their effects.

However, this either/or analysis means that actors should always be acting intentionally and so can always be held morally responsible for their actions. Below, I argue more thoroughly why this is unrealistic and unrepresentative of agential beings; now, it suffices to say that it is implausible that actors can act intentionally and conscientiously *at every given moment*. Instead, they fluctuate between agency and causality, between intentional, conscientious action and non-intentional, passive effect. A middle ground is conceptualized between Barad's extension of agency to everything and the Kantian tradition that solely ascribes agency and intentionality to humans. Actors (in the Haylesian sense) *can, at times,* act autonomously and be held responsible for their actions, but can *also, at other times,* merely cause an effect on others. Barad does not substantiate this nuance; thus, their theory of agency remains radical and unrealistic.

This leads me to my third point of critique, in which I state that Haraway similarly advocates such either/or thinking by assuming that agents must *always* be aware of and be held responsible for their actions and their consequences. As mentioned, response-ability requires a mindful attitude towards multi-species entanglements. Haraway states: "The task is to become capable … of response. … The task is to make kin in lines of inventive connection… Our task is to make

[75] Peter Róna, "Causation and Agency," in *Agency and Causal Explanation in Economics*, ed. Peter Róna and László Zsolnai (Cham: Springer Nature Switzerland AG., 2020), 75.

trouble, to stir up potent response to devastating events, as well as to settle troubled waters and rebuild quiet places."[76] However, the way in which Haraway phrases this inadvertently demands humans to be fully conscious of such entanglements and their consequences when responding in a certain manner. By assuming hyper-awareness of the troubling situation and one's responses to it, response-ability unintentionally extinguishes the moral uncertainty inherent in it, when it claims to be introducing and emphasizing uncertainty in response-able action. While Fyodorov's radical responsibility instills passivity and thoughtlessness in individuals by imposing duty onto them, Haraway's response-ability demands humans to be hyper-aware of situations, entanglements and of one's position in it. This further reinforces the thoughtlessness–conscientiousness binary: humans are seen either as completely passive in their response and compliant to top-down duty (as is the case for radical responsibility), or as completely aware of their entanglements, responses and impacts (as is the case for response-ability). The term 'conscientiousness' goes beyond mere consciousness since it not only encompasses the will to have full awareness of one's actions and to carry these out correctly, but also the quality of being governed by conscience and a strong sense of morality.

In practice, I argue that such a binary is unrepresentative of the ways in which humans respond to climate crises. While we may, occasionally, be more thoughtless in our actions, entanglements and responses, it does not follow that we are wholly thoughtless. Similarly, in some instances, we may be more conscientious, but this does not mean that we must strive for, or be able to achieve, hyper-awareness. Instead of offering a more thorough analysis of different contemporary responses to climate change, Haraway is reductivist by demanding unattainable awareness for humans and creating a thoughtlessness–conscientiousness binary from which she cannot escape. Haraway thus unintentionally claims moral certainty and radicality when she actually aimed to promote uncertainty and probing

[76] Haraway, *Staying with the Trouble*, 1.

open-endedness. I respond to Haraway's over-demand in section IV where I further investigate the binary between thoughtlessness and conscientiousness.

Section IV: *Initium* and Spontaneous Response: In-Between Thoughtlessness and Conscientiousness

4.1 Thoughtlessness and Conscientiousness

While response-ability claims to emphasize the uncertainty in response and acknowledges entanglements with other-than-human species and environments, Haraway's response-ability implicitly denies uncertainty by over-demanding humans to be conscientious. In the following, I nuance the binary between thoughtlessness and conscientiousness by introducing Hannah Arendt's (1906–1975) concept of *initium* as spontaneous action. Arendt was a German political thinker whose work primarily focuses on questions of power, evil and authority.

Arendt's notion of thoughtlessness stems from her work on the Adolf Eichmann trials in Jerusalem in 1961. Being one of the major organizers of the Shoah, Eichmann was responsible for managing the logistics of the mass deportation of millions of Jewish people and other minorities. In her work on these trials, Arendt investigates how we can make intelligible an evil criminal who otherwise conveys "extraordinary ordinariness."[77] Arendt suggests that it is not the explicit and conscienceless conception of evil that Eichmann embodies, but rather the *banality* of evil.[78] Evilness is normally understood as having an appearance of menacing monstrosity and being completely alien to the 'good' and conscientious citizen. However, Eichmann's normality and human appearance contradict overt and

[77] David Boucher, "Banal but not Benign: Arendt on Evil," in *Evil in Contemporary Political Theory*, ed. B. A. Haddock, Peri Roberts and Peter Sutch (Edinburgh: Edinburgh University Press, 2011), 207.
[78] Hannah Arendt, *The Life of the Mind: The Groundbreaking Investigation on How We Think (Book One: Thinking)* (Orlando: Harcourt, 1978), 4.

conventional signs of evilness. Arendt argues that Eichmann's crimes posit evilness as banal in that they are not motivated by evil intentions, but rather by the thoughtless following of Nazi commands, by simply doing his 'work.'[79] The banality of evil is posited as a modern reality of criminality that, because of its opacity and its radical distinction from conventional understandings of evil, is far more frightening.

The banality of evil is characterized by the thoughtless and unquestioned adherence to rules, meaning that individuals follow commands "reckless[ly]" and "complacently" without first reflecting on their impact and consequences.[80] It is the "absence of thinking" that Arendt connects to questions of good and evil, thereby stating that morality is greatly influenced by thought – or in this case, *un*thought.[81] While Western traditions assert that "virtue [can] be taught," Arendt contrarily posits that "only habits and customs can be taught."[82] As such, they can also be "unlearned and forgotten when new circumstances demand a change in manners and patterns of behavior."[83] Hence, Arendt argues that Eichmann's evilness did not stem from a lack of virtue or a miseducation in ethics, but rather from the passive, dutiful and thoughtless complacency to fascist norms and authoritative orders.

Furthermore, Arendt argues that "willed submissiveness presupposes a severe limitation of the willing capacity itself."[84] By whole-heartedly and unquestioningly complying to ideological norms imposed from above, individuals limit their agency in their decision-making and become subject to those norms. Their choices are uncritical and unreflective. They lack willing capacity by willing their own submissiveness. Thoughtlessness is precisely the absence of the will, of agency and of choosing for oneself. Complacently following rules imposed upon them by authority, individuals are unaware and thoughtless of the impact and consequences of

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[79] Ibid.; Boucher, "Banal but not Benign," 209.
[80] Boucher, "Banal but not Benign," 209.
[81] Arendt, *The Life of the Mind (Book One),* 4-5.
[82] Ibid., 5.
[83] Ibid.
[84] Hannah Arendt, *The Life of the Mind: The Groundbreaking Investigation on How We Think (Book Two: Willing)* (Orlando: Harcourt, 1978), 90-91.

such compliant behavior. Fyodorov's radical responsibility resonates with this type of behavior because of its compliance to and imposition of duty and universal laws.

Similarly, Haraway applies Arendt's concept of thoughtlessness to the Anthropocene debate. She presents Eichmann as someone who "could not entangle, … could not cultivate response-ability, could not make present to itself what it is doing, could not live in consequences or with consequence."[85] Due to his "inability to think," Haraway presents Eichmann as someone practicing "business as usual," failing to notice in what ways his actions impacted all beings and things with which he was entangled.[86] Techno-optimists in the Anthropocene debate are, just like Eichmann, thoughtless and passive in that they fail to see in what ways their actions have dire consequences for others (whether human or other-than-human). As such, Haraway's understanding of response-ability insists on radically diverging from thoughtlessness and, as noted, on over-demanding humans to embrace the fact that "[t]hese are the times we must think."[87]

Therefore, I propose that the opposite of Arendt's 'thoughtlessness' would be 'conscientiousness,' that is, being aware of one's actions and wanting to carry these out correctly, as well as being governed by a strong sense of conscience. However, more often than not, humans resort to something in-between: neither fully complacent to rules nor fully aware of one's actions, one finds oneself in the space in-between such a radical binary.

Such was also the case for Eichmann, who, rather than merely behaving thoughtlessly, actually resorted to something in-between. Critics of Arendt's account of the banality of evil have noted that she "resorted to an all-too-easy generalization of these [Nazi] killers."[88] Critics have observed that the more normative 'radical evil'

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[85] Haraway, "Staying with the Trouble," 39-40.
[86] Ibid., 40.
[87] Ibid.
[88] Devin O. Pendas, "'Eichmann in Jerusalem,' Arendt in Frankfurt: The Eichmann Trial, the Auschwitz Trial, and the Banality of Justice," *New German Critique*, no. 100 (2007): 79-80.

and Arendt's 'banal evil' actually "represent two sides of the same coin."[89] Thus, Arendt's account of Eichmann is arguably reductive and maintains the binary between thoughtlessness and conscientiousness.

While Arendt may have been right in stating that Eichmann was unable to *fully* grasp the consequences of his actions, he was not entirely *ignorant* of his actions or their consequences either.[90] In reality, Eichmann's actions lay ambiguously in the space between thoughtless obedience and ignorance of the consequences of his actions on the one hand, and conscientious action and hyper-awareness on the other. The banal and thoughtless caricature of Eichmann presented in Arendt's work may, in fact, not represent Eichmann realistically because Arendt (and Haraway) opposes it so radically to conscientiousness and the awareness of one's actions and their consequences. Although radical oppositions may seem preferable because of the *certainty* they suggest, they often create two pitfalls, while the middle ground is more *realistic* to describe actions and events.

Following these points of critique, it is important to nuance the binary between thoughtlessness and conscientiousness. I argue that the uncertain in-between space is more realistic to everyday political thought and action, and this space is embodied by Arendt's *initium*, which is neither thoughtless nor conscientious, but spontaneous and uncertain.

4.2 *Initium*, Spontaneity and Cooperation

Arendt's concept of *initium* encompasses the initiation of something new, that is, of new cooperative, creative and interactive actions. Arendt was greatly inspired by Augustine and his phrase "*initium ergo ut esset, creatus est homo*," meaning "that

[89] Ibid., 80.
[90] Ibid., 81.

there be a beginning, man was created."[91] I first examine *initium*, after which I apply it to the contemporary climate context.

Initium is associated with Arendt's concept of natality, or "the capacity of beginning something anew" which "interrupts the inexorable automatic course of daily life."[92] Arendt asserts: "The beginning is not the same as the beginning of the world; it is not the beginning of something but of somebody, who is a beginner himself."[93] In this passage, *initium* is not a passive given that will happen regardless of the circumstances, or whether one wills it or not. The 'beginning of the world' will occur anyways; one will be born into this world without a doubt. However, neither is *initium* an active and intentional choice by the individual. The "beginning of … somebody" is not guaranteed, nor can it be predicted or controlled; instead, *initium* is an ambiguous, spontaneous and emergent human capacity that fosters agency and freedom.

To Arendt, *initium* is the process by which "we insert ourselves into the human world" with "word and deed."[94] *Initium* is understood as an impulse that "set[s] something into motion" and that "prompt[s] [us] into action" by taking initiative.[95] *Initium* is not something that can be expected or deduced from previous events. Rather, Arendt states that *initium* has a "character of startling unexpectedness" that is always at odds with natural laws.[96] She states that, because humans are capable of action, the "unexpected can be expected from [them]."[97] This reveals the spontaneous nature of *initium*: rather than being prompted mindfully,

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[91] Arendt, *The Human Condition*, 177.
[92] Ibid., 9; Ibid., 246. It is important to note that 'natality' is understood in a metaphorical sense. Here, Arendt does not mean the biological process, but rather the 'coming into being' of an individual.
[93] Ibid., 177.
[94] Ibid., 176.
[95] Ibid., 177.
[96] Ibid., 178.
[97] Ibid.

intentionally or expectedly, *initium* occurs randomly and unpredictably.[98] Individuals are thus characterized by their capacity to initiate and be prompted into action.

Initium also has lasting effects on other human beings: instead of merely prompting an individual's "autonomous self-determination," Tsao notes that it is greatly dependent on the engagement with others.[99] Arendt states that *initium* "comes to the fore where people are *with* others and neither for nor against them – that is, in sheer human togetherness."[100] *Initium* is action: the expressions of different human beings become political through interaction, discussion and conflict, thus evoking further expressions by others.[101] Such political action is impossible without the cooperation of other initiating individuals as well. It is the "actualization of the human condition of plurality," thus emphasizing that spontaneous initiation both depends on a distinct individual as well as their plural relations with others.[102] As Canovan states, political action "goes on among *plural* human beings, each of whom can act and start something new. The results that emerge from such interaction are contingent and unpredictable."[103] Humans are thus understood as equal, yet distinct, beings cooperating with each other in plural political action.[104] *Initium* cannot emerge from an individual's self-affirmation, but instead depends on the contingent and unpredictable interrelationality of, communication with and mutual recognition of others.

However, according to Arendt, because *initium* pertains to action, only humans are able to initiate.[105] This is because action is expressed through verbal communication and political interaction (as mentioned, it is "[w]ith word and deed

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[98] Ibid., 231.
[99] Roy T. Tsao, "Arendt's Augustine," in Politics in Dark Times: Encounters with Hannah Arendt, ed. Seyla Benhabib (Cambridge: Cambridge University Press, 2010), 52.
[100] Arendt, *The Human Condition*, 180.
[101] Ibid., 7.
[102] Ibid., 178.
[103] Margaret Canovan, "Introduction," in *The Human Condition* (Chicago: The University of Chicago Press, 1998), iix-ix (emphasis in original).
[104] Arendt, *The Human Condition*, 175.
[105] Ibid., 178.

[that we] insert ourselves into the human world"), which are, for Arendt, abilities that are exclusively human.[106] Moreover, Arendt states that action is the "activity that goes on directly between men without the intermediary of things or matter."[107] As such, other living or nonliving things do not act, but are instead used *by* humans, and this resembles the human-exceptionalist views expressed by Fyodorov, Kant and techno-optimists. While a discussion of Arendt's anthropocentrism goes beyond the scope of this article, it suffices to say that she differentiates the human from the other-than-human because of the former's ability to act, and thus does not recognize multi-species entanglements.

Although Arendt displays some setbacks such as the seemingly fully thoughtless Eichmann caricature and an anthropocentric philosophy, I have analyzed Arendt's *initium* in order to respond to Haraway's over-demand of humans and, in turn, to respond to the prevailing thoughtlessness–conscientiousness binary. Arendt offers a shift from *response*, which is typically pensive, thoroughly thought-out and hyper-aware, to *initium*, which is spontaneous, ambiguous, collaborative and unexpected action. *Initium* offers the capacity to start something new that can occur spontaneously out of the entanglements between actors. Although she at times falls into her own trap (exemplified in the Eichmann caricature), Arendt nevertheless provides a framework to think of the ambiguous space in-between thoughtlessness and conscientiousness with her concept of *initium*. This in-between space is ambiguous because it does not embody a fixed, determined point; rather, it signifies an uncertain, shifting position along a spectrum between the two extremes.

4.3 *Initium* in the Contemporary Climate Context

How can *initium* provide a new way of acting in and dealing with contemporary climate crises? As neither a thoughtless nor a conscientious act, but an uncertain

[106] Ibid., 176.
[107] Ibid., 7.

action somewhere in-between, *initium* can offer a way to act responsibly in the face of climate crises because it embodies the capacity to respond differently and to begin something new. As I have argued, the dominant view of the relation between humans and the environment in the Western tradition is embedded in claims to certainty and human exceptionalism. The unpredictable and uncertain events of climate change require ever new, piecemeal and spontaneous reactions that acknowledge uncertainty and multi-species entanglements.

Standing ambiguously in-between thoughtlessness and conscientiousness, Arendt's *initium* shows that political action is prompted spontaneously and unexpectedly. As such, responsibility is not active, predetermined conscientiousness and awareness, nor is it the passive and thoughtless following of rules. In the contemporary climate context, *initium* would thus entail the uncertain, spontaneous start of new attitudes towards climate change that recognize uncertainties and the unpredictable nature of climate crises.

Although Arendt's *initium* only pertains to humans, and although she clearly opposes the human from the other-than-human, I nonetheless assert that her concept of *initium* can, if applied to the contemporary climate context, acknowledge entanglements between multi-species actors. As Arendt mentions, others are needed in order to initiate something new; however, in a climate context, those others cannot only be humans since other species and ecosystems are necessarily and inherently entangled with humans, human activity and human politics. In Haraway's terms, one could formulate *initium* as working-with and living-with other life forms to create spontaneous new ways of living on Earth. Arendt's human *initium* also requires a living-with attitude: one needs others to create and invent new ways of living together. In a climate context where the 'social' and the 'natural' are impossible to imagine separately, this living-with attitude necessarily requires living and collaborating with other life forms and environments.

Finally, approaching the reef restoration project from an Arendtian perspective displays the unexpectedness and inventiveness of such initiatives. Coral reef restoration is an approach that accepts the current climate context and responds to it with the limited means available in order to create new, inventive ways to deal with climate crises. As such, this approach 'makes do' with the current situation and appreciates spontaneous, creative collaborations and initiations between species in order to respond to climate crises. Instead of prescribing a fixed procedure (thus rendering members thoughtless in carrying out that procedure), or demanding humans to fully recognize their responsibility in the issue (thus rendering members overly conscientious), artificial coral reef restoration offers the possibility of starting something new and of initiating a new type of response. While the initiation of such restoration is not fully spontaneous or unexpected as Arendt's *initium* proposes – of course, rigorous scientific planning has been carried out before actually carrying out coral restoration – the result makes room for unexpected, spontaneous and creative interactions between human coastal communities, coral reefs and their diverse inhabitants. Coral restoration is an experimental, self-restorative process once the cages and structures are put in place; as such, humans collaborate together, engage with the situation and observe what unexpected and spontaneous multi-species responses arise when metal cages and concrete structures are introduced to a coral reef.

Conclusion

This article critically tackled two assumptions that often prevail in the Anthropocene debate: claims to certainty and human exceptionalism. Departing from Fyodorov, an author writing prior to any debates on or formulations of the Anthropocene, I have argued that these two assumptions have, to a large extent, been embedded in the

Western tradition as well as in contemporary conceptions of the relations between humans, other-than-human species and environments.

Claiming epistemic certainty means that humans can allegedly control their actions in their nonhuman environment and can predict the outcomes of these actions. Furthermore, moral certainty assumes that humans must respond in a distinct manner following certain rules. This not only makes humans 'masters' of nature; it also eliminates the possibility of alternative futures and unpredictable consequences, as well as rendering humans thoughtless and irresponsible for their actions. Moral certainty leads to irresponsibility because it assumes that humans do not have to be mindful of their decisions and the consequences of their actions because they simply have to follow rules in order to be moral. As such, humans are neither autonomous because rules are imposed on them, nor can they be held responsible for their actions and their consequences because they are made to follow these imposed duties. Similarly, epistemic certainty also leads to irresponsibility because it assumes that humans can be fully conscientious of the consequences of their actions; while it is necessary to consider the consequences of one's actions, it is highly improbable that all consequences can be known. Thus, I conclude that Fyodorov advocates moral and epistemic certainty, Popper, Arendt and Prigogine and Stengers support moral and epistemic uncertainty, and finally, Haraway and Barad encourage epistemic uncertainty yet claim for moral certainty.

Bringing in Popper and Prigogine and Stengers allowed me to criticize these claims to certainty and to shed light on the uncertainty inherent in socio-natural systems. Due to this uncertainty, large-scale, utopian changes to a system can result in irreversible damage, while a piecemeal approach attempts to make small, reversible changes in an otherwise irreversible system. Whereas Fyodorov and techno-optimists would aim to 'fix' climate change in one great sweep through technological innovation and for the benefit of humans, Popper would propose a far

less impactful approach because of the uncertainty in possible consequences and because of the need to first gain experience.

When tackling the second issue, that of human exceptionalism, I engaged with the posthumanist approach in order to illuminate the rich entanglements between humans, other-than-human species and environments. Response-ability functions as a framework that discloses the intra-active, sympoietic and collaborative relations between *relationally*, rather than *ontologically*, distinct agents. For Barad, these agents are considered response-able because they are emergent phenomena with the potential to reconfigure the world. For Haraway, response-ability implies the possibility of living-with other species and environments and the ability to continuously probe 'tentacularly' with one's surroundings.

Finally, I end up dismissing both Fyodorov's radical Kantian responsibility and the posthumanist response-ability as approaches to dealing with climate crises. This is because the former implies thoughtless obedience, while the latter entails stern conscientiousness and hyper-awareness. I thus turn to Arendt's *initium* which offers an approach to climate crises that lies in-between thoughtlessness and conscientiousness. This in-between position is not a fixed, inert and determined point, but rather an unsettled scale in motion that moves between the two extremes. Moreover, *initium* proposes to respond differently to a situation by starting something new. In the current climate context, since the 'natural' and the 'social' are inextricably intertwined with each other, *initium* can be extended to multi-species action and cooperation in the face of climate crises. The spontaneity inherent in *initium* can provide a means to start new paths of multi-species communication, innovative piecemeal responses to combating climate change and new modes of thinking about the future on Earth.

The coral restoration project that I examined throughout demonstrates how to acknowledge other life forms and ecosystems, and their reciprocal impact with humans. This project exemplifies how humans can respond to contemporary climate

crises: by approaching climate crises in a piecemeal and small-scale manner, humans recognize their entanglements with other life forms and ecosystems and can initiate new, spontaneous, inventive and creative responses. Such an approach responds to the current climate context by dismissing claims to certainty, rejecting thoughtless and merely obligatory behavior, and renouncing conscientious and unrealistic demands. Instead, it accepts the reality of the current climate context and 'makes do' with the limited means available in order to come up with and invent new ways of responding to and dealing with climate crises. This space in-between thoughtlessness and conscientiousness evokes a form of responsibility that is spontaneous and inventive and stimulates multi-species collaboration in order to initiate new responses to climate crises.

Thus, the space in-between thoughtlessness and conscientiousness provides a way to surpass long-standing assumptions of claims to certainty and human exceptionalism by firstly acknowledging the entanglements and collaborations between humans, other life forms and ecosystems. Furthermore, small-scale changes are made in order to learn from experience and to probe through different options of response. Finally, the action initiated by this ambiguous space in-between makes do with the present situation in order to respond differently, spontaneously and inventively to climate crises.

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Part II: PhD Proposal

The Complexity of Climate Crises: A Comparative Critical Analysis of Haraway's Concept of 'Trouble' and Butler's Concept of 'Struggle'

Summary of the Theme and Aim of the Project

In this PhD project, I first illustrate the tendency to simplify climate crises in the techno-fix attitude, after which I critique this by analyzing Haraway's 'trouble' and Butler's 'struggle' in order to argue for and emphasize the complexity of climate crises. Techno-fixes attempt to solve climate crises by over-relying on technological innovation. I identify the following issues prevalent in the techno-fix attitude: (1) assumes human exceptionalism by ignoring multi-species entanglements and by improving the state of the environment merely for the benefit of humans; (2) assumes consensus can be reached amongst individuals, thus denying antagonism in environmental-political matters. The techno-fix approach offers a reductionist view of climate crises which does not take into account the complex environmental and political aspects. Haraway's concept of 'trouble' acknowledges how climate crises involve multi-species entanglements, thus challenging human exceptionalism. Butler's concept of 'struggle' exemplifies how climate crises stimulate counter-hegemonic, material-discursive performative assemblies, thus politicizing the tendency towards consensus-seeking. Finally, I illuminate both writers' biases and reconcile both perspectives in order to emphasize the complexity of climate crises. I aim to answer the following question: How can a comparative critical analysis of Haraway's concept of 'trouble' and Butler's concept of 'struggle' contribute to a more adequate approach to the complexity of climate crises?

Introducing the PhD Project

Climate change has become an increasingly pressing environmental and political issue impacting humans, other-than-human species and environments in diverse ways. A popular response to climate crises is the development of and over-reliance on technology geared towards preventing and 'fixing' the issue.[108] Innovative 'techno-fixes' offer appealing solutions allegedly guaranteed to prevent climate crises without having to alter lifestyles.[109]

However, Schäfer et al. argue that techno-fixes and their 'fix-it' mentality "attempt[...] to solve [environmental] problems with technology by changing the circumstances, rather than addressing their root causes."[110] Such 'utopian social engineering' was already criticized by Popper because it attempts to "predict impending events" and does so by determining and pursuing an "Ideal State."[111] An absolute and unchanging "blueprint" of society is made by authority from which society may not stray and which assumes consensus among individuals.[112] However,

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[108] Alexander Ruser and Amanda Machin, "Technology can Save Us, Can't it? The Emergence of the 'Techno-fix' Narrative in Climate Politics," *Proceedings of the International Conference 'Technology + Society = Future'* (2016): 437.
[109] Ibid., 440.
[110] Stefan Schäfer, Harald Stelzer, Achim Maas and Mark G Lawrence, "Earth's Future in the Anthropocene: Technological Interventions between Piecemeal and Utopian Social Engineering," *Earth's Future* 2 (2014): 240.
[111] Karl Popper, *The Open Society and its Enemies* (1945; reis., London and New York: Routledge, 2002), xli; Ibid., 171. Note here that Popper is heavily criticizing Plato and his convictions on the 'Ideal State,' that is, a state that is fabricated beforehand and that assumes the possibility of attaining 'perfection.'
[112] Ibid. While Popper is not criticizing science as a whole and its impact on society, he is criticizing it for its "prestige" and widespread "claims to certainty" because science has "idealized … [o]ur ability to predict events," creating an illusion of human control over the future [Carl A Rubino, "The Politics of Certainty: Conceptions of Science in an Age of Uncertainty," *Science and Engineering Ethics* 6 (2000): 499]. By contrast, Popper advocates piecemeal engineering, a trial-and-error approach that emphasizes the need to develop practical experience, learn from mistakes and keep societal impacts small-scale (Popper, *The Open Society and its Enemies*, 175). Here, Popper is not rejecting science, but is critical of its claims to certainty and truth: in actuality, science offers practical and hypothetical knowledge – rather than certain and rigid laws – which can be gained through small-scale

such a blueprint infers a risky and potentially totalitarian reconstruction of society impacting many lives without the certainty that it will do any good, since unforeseen environmental and political consequences can jeopardize the whole project. Techno-fixes embody such utopian, quasi-totalitarian engineering because they attempt to alter society in one allegedly consensual sweep without acknowledging the possibility of unforeseen consequences on other beings.

While techno-fixes may seem beneficial for preventing further damage, the attitude nonetheless assumes a human-exceptionalist stance: actions are carried out to improve the environment *for humans*. Perceiving the environment merely as a means towards human ends denies the deeply entangled relations humans inherently have with their living and nonliving surroundings. Furthermore, such climate action is often imbued with the assumption that humans do not have to adapt their – often environmentally unfriendly – lifestyles.[113]

Furthermore, techno-optimists assume that consensus can be achieved in the techno-fix attitude, thus striving to establish hegemonic stability in an environmental-political issue. However, Horta et al. argue that, in a climate context, hegemony "that expresses the dominance … of one worldview" is problematic because it excuses "inaction" and hinders "social engagement and political struggle" by concentrating power in the authority.[114] Such consensus is not only problematic, but also impossible according to Mouffe, because of the "ever-present possibility of

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experimentation. While a more extensive analysis of Popper's piecemeal engineering goes beyond the scope of this PhD proposal, it will be covered in Chapter 1 of the dissertation.

[113] Ruser and Machin, "Technology can Save Us, Can't it?," 439. For instance, many airlines nowadays promote more environmentally friendly flying by stating that they have adjusted their airplane technology. By purporting to be more sustainable, they assume that flying sustainably can revert climate change. However, this curtails the fact that flying *less* is a far more environmentally responsible action than flying *sustainably*. The business-as-usual mentality (i.e., the environmentally unfriendly lifestyle) thus persists, masked with the presumption that it is 'sustainable.'

[114] Ana Horta, Anabela Carvalho and Luísa Schmidt, "The Hegemony of Global Politics: News Coverage of Climate Change in a Small Country," *Society and Natural Resources* 30, no. 10 (2017): 1256.

antagonism, … the lack of a final ground and the undecidability" in the political sphere.[115] A seemingly stable hegemony can always be "challenged by 'counter-hegemonic' practices, i.e., practices that attempt to disarticulate the existing order so as to install another form of hegemony."[116] By seeking consensus, the techno-fix attitude denies the existence of antagonistic and counter-hegemonic practices that are essential in democracy.

To sum up, I identify two concerns in the techno-fix approach to responding to climate crises: (1) this attitude is human-exceptionalist because it ignores the significant multi-species entanglements and influences, poses no limit to environmentally harmful activities and improves the state of the environment merely for the benefit of humans; and (2) it is hegemonic because it assumes consensus can be reached amongst individuals, and thus overlooks the likelihood of different and conflicting views on environmental-political matters.

In this dissertation, I argue that, when faced with climate crises, the above-mentioned concerns cannot and should not be ignored because of their tendency to simplify issues. This is because climate crises are far more complex and multifaceted, both environmentally and politically. I explore the complexity of climate crises by examining Donna Haraway's concept of 'trouble' in environmental terms and Judith Butler's concept of 'struggle' in political terms. These two remarkably different concepts are brought together to respond to and 'repair' the issues recognized in the prevailing techno-fix attitude, to consequently critique Haraway's and Butler's respective concepts, and finally to move beyond their blind spots in order to emphasize the complexity of climate crises.

Here, I aim to conceptualize and emphasize the *complexity* of climate crises by examining how Haraway and Butler respectively understand complexity in environmental and political terms. Haraway argues to 'stay with the trouble,'

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[115] Chantal Mouffe, *Chantal Mouffe: Hegemony, Radical Democracy, and the Political,* ed. James Martin (London: Routledge, 2013), 210.
[116] Ibid.

meaning that one should not avoid, simplify or 'fix' the environmental trouble, but rather engage in dedicated, situated practices that respond to the trouble. Butler argues for counter-hegemonic performativity, meaning that the political sphere is not dominated by consensus-seeking or hegemonic order, but rather is a space to performatively demonstrate antagonistic views.

In order to investigate how human exceptionalism and consensus-seeking are incompatible responses to environmental issues, this proposed research engages with Haraway's 'trouble' and Butler's 'struggle.' I aim to answer the following research question: How can a comparative critical analysis of Haraway's concept of 'trouble' and Butler's concept of 'struggle' contribute to a more adequate approach to the complexity of climate crises? After stating the scholarly and societal relevance and my methodology, I explore Haraway and Butler's respective concepts and provide an overview of this PhD project.

Scholarly and Societal Relevance

By exploring different understandings of the complexity of climate crises, this project combines environmental humanities with political philosophy to develop new philosophical perspectives on pressing climate issues. This research is relevant in the environmental-political context because it incorporates the concepts of climate change, multi-species entanglement, democracy, (counter-)hegemony and antagonism.

Methodology

I will answer my research question by way of a literature study of the core texts of Haraway and Butler and of relevant secondary resources. The way in which I will read these texts is: (a) find and analyze relevant passages; (b) map the authors'

respective concepts of 'trouble' and 'struggle'; (c) read the texts with the conjecture of possible comparability; (d) compare and contrast Haraway's 'trouble' and Butler's 'struggle'; (e) read probingly through the texts in order to encounter where the texts converge, diverge or contradict each other, where the authors' blind spots lie and how to deal with their assumptions. Tasks (a) to (c) will prevail in Parts I and II, and tasks (d) and (e) in Part III.

State of the Art and Overview of the PhD Project

Part I: Trouble and Haraway: 'Staying With' and 'Making' Trouble

In Part I, I examine Haraway's concept of 'trouble' and what it can offer when conceptualizing the complexity of climate crises. In her key text *Staying with the Trouble: Making Kin in the Chthulucene* (2016), she criticizes the "unprecedented looking away" from trouble and instead argues that humans can *stay with* the trouble of our times.[117] Rather than attempting to avoid, deny or 'fix' reality with techno-fixes, staying with the trouble urges to situate oneself in one's environment in order to respond to climate crises here-and-now.[118] Following Haraway, Ren argues that "trouble is not an issue to be overcome, but rather a condition that we are in."[119] "Such an approach does not offer simplistic, generalized 'solutions' or sweeping critique, but proceeds through research efforts … described as 'ongoing, adaptive, tinkering and open ended.'"[120] As such, 'staying with the trouble' is a situated

[117] Donna J Haraway, *Staying with the Trouble: Making Kin in the Chthulucene* (Durham and London: Duke University Press, 2016), 35.
[118] Ibid., 3; Ibid., 34.
[119] Carina Ren, "(Staying with) the Trouble with Tourism and Travel Theory?" *Tourist Studies* 21, no. 1 (2021): 135.
[120] Carina Ren, Laura James, Albina Pashkevich and Hindertje Hoarau-Heemstra, "Cruise Trouble: A Practice-Based Approach to Studying Arctic Cruise Tourism," *Tourism Management Perspectives* 40 (2021): 1.

practice and diverges from practices aimed at "solving" tensions without engaging with other-than-human species and acknowledging influences and consequences.[121]

I identify three underlying claims implied in Haraway's concept of 'staying with the trouble': (1) the hubris in humanism has led to the privileging of human survival and the overreliance in humans to solve climate change, and this must be countered in order to avoid planetary extinction; (2) humans must realize their entanglements with, responsibilities to and influences on other-than-human species and environments in order to explore new ways of dealing with climate trouble; (3) climate crises cannot be dealt with by easy, 'techno-fix' solutions, but should be understood as complex in order to enable responses.

The first claim is critical of human exceptionalism in the techno-fix attitude. As Hoppe argues, human exceptionalism "perpetuat[es] the idea that 'Man' is above and against 'nature,' … [thereby] re-enact[ing] the fantasy that 'we' will be able to fix the destruction caused by 'Man' via technological innovation."[122] The hubris in humanism originates in humans being too confident in their rationalistic and scientific power as well as their superiority over other-than-humans, which might inadvertently lead to humanity's "own extinction."[123]

The second claim responds to the first by insisting on the political inclusion of other-than-human species to surpass human exceptionalism. Barad argues that humans, other-than-human species and environments are *relationally* rather than *ontologically* distinct from each other, and thus 'intra-act' (rather than inter-act) with each other.[124] In this sense, climate crises never solely impact humans, but also influence other-than-human species.

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[121] Ibid., 2.
[122] Katharina Hoppe, "Responding as Composing: Towards a Post-Anthropocentric, Feminist Ethics for the Anthropocene," *Distinktion: Journal of Social Theory* 21, no. 2 (2020): 126.
[123] Ibid.; Charles Foster, "On Hunting: Lions and Humans as Hunters," in *Animals in Our Midst: The Challenges of Co-existing with Animals in the Anthropocene*, ed. Bernice Bovenkerk and Jozef Keulartz (Cham: Springer Nature Switzerland AG., 2021), 479.
[124] Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Durham & London: Duke University Press, 2007), ix.

The third claim rejects the techno-fix approach because of its tendency to reduce the trouble at hand and to instantly think in terms of solutions. Simplifying trouble is "less successful in … enabling responses to expressed exigencies and concerns."[125] By contrast, emphasizing the complexity of climate crises by recognizing the way in which multiple species are entangled can enable novel responses.[126] As stated above, I focus on the third claim because of the prevailing tendency to simplify or reduce climate crises, while taking the other two claims into account.

While Haraway suggests staying with the trouble, she simultaneously urges that humans have a "task" to *make* trouble: "[o]ur *task* is to make trouble, to stir up potent response to devastating events, as well as to settle troubled waters and rebuild quiet places."[127] While 'staying with the trouble' urges the awareness and acceptance of the present, 'making trouble' denies the present and actively demands to change that present.[128] Haraway's two-pronged approach may, at first sight, seem incompatible because both options deal with trouble in different ways. Upon closer

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[125] Ren, James, Pashkevich and Hoarau-Heemstra, "Cruise Trouble," 1.

[126] Ibid., 2.

[127] Haraway, *Staying with the Trouble*, 1 (emphasis added). I read 'making trouble' not as making *more of the same* trouble (i.e., quantitative), but rather as making *different types of* trouble (i.e., qualitative). If Haraway would urge us to make *more* trouble, we would need to make the same type of trouble, that is, we would need to perpetuate the trouble that we already have made. This is a business-as-usual attitude and would probably result in *more* climate crises. However, making *different* trouble means making trouble of the dichotomies and hierarchies assumed between humans, other-than-human species and environments, as well as problematizing deep-seated biases and convictions. It also means making trouble of agendas: making individuals aware of the ways in which we deal with climate crises and how we can change these methods of dealing.

[128] It is worth noting that both staying with the trouble and making trouble are active, rather than passive. It may at first seem that 'staying' is a passive acceptance of the current state while 'making' is an active revolt and subversion of the current state. However, Haraway makes clear that staying with the trouble is active as well since actors must *choose* to stay with the trouble rather than avoid it through techno-optimistic fantasies. She states that "staying with the trouble requires learning to be truly present … as mortal critters" (Ibid., 1). This approach thus requires awareness of entangled agencies and the ability and will to learn; both requirements are not passively presupposed in existence but must be actively asserted if one is to stay with the trouble.

inspection, these seemingly incompatible approaches make a mess of trouble. Instead of solving issues, Haraway suggests to further complicate and get involved in things, to get used to staying with and making trouble and to play a role in the upsurge of questions. By doing so, she shows that trouble cannot be controlled, regulated or prevented.

In Part I of the PhD project, I discuss how Haraway's two-pronged approach of 'trouble' offers a way to conceptualize the complexity of climate crises. This part poses the following questions: (1) Why does Haraway emphasize 'staying with the trouble' and 'making trouble' rather than 'fixing' the trouble? (2) How does this shift in conceptualizing 'trouble' respond to the claims of human exceptionalism implicit in the techno-fix attitude? (3) How does Haraway's view on 'trouble' and her two-pronged approach offer new ways to conceptualize the complexity of climate crises?

Part II: Struggle and Butler: Material-Discursive Performativity in Political Assemblies

In Part II, I examine Butler's concept of 'struggle' and what it can offer when emphasizing the complexity of climate crises. Their key text *Notes Toward a Performative Theory of Assembly* (2015) identifies struggle as a material-discursive, performative act that takes place at public assemblies (i.e., demonstrations aimed at subverting and delegitimizing norms of privilege and at making discrimination visible). Struggle occurs when seemingly 'natural' norms conflict with each other because they in fact discriminate against certain individuals.[129] According to Mouffe, norms are deemed "temporary," "precarious" and "contingent" because they can be, and are, "challenged by 'counter-hegemonic' practices."[130] Such practices challenge

[129] Judith Butler, *Notes Toward a Performative Theory of Assembly* (Cambridge: Harvard University Press, 2015), 14.
[130] Mouffe, *Chantal Mouffe*, 210.

existing norms and attempt to set new norms. While Butler does not mention the environment or climate crises, I argue that their thoughts on counter-hegemonic enactments of struggle offer new insights into conceptualizing the complexity of climate crises because they provide a way out of the apolitical and consensual sentiments commonly expressed in attitudes that simplify climate crises.

Following Butler, Koegler emphasizes how performativity is linked both to enacting norms and challenging those norms. She states that minorities "are marginalized … in and through performative … normativities."[131] By assembling, these minorities "seek to lay claim to the very process of establishing what counts as the norm."[132] Struggling performatively means questioning the legitimacy of norms by enacting counter-hegemonic claims in assemblies.[133]

As such, struggles are not only discursive in the pronunciation of political claims, but are also material in the way in which assembling bodies perform their subversion and occupy space. When bodies assemble, they are "exercising a plural and performative right to appear, one that asserts and instates the body in the midst of the political field."[134] The space that these bodies occupy – and the fact *that* they occupy space – matters. These bodies are, "by virtue of occupying and persisting in that space without protection, posing their challenge in corporeal terms."[135] Although just momentarily, that occupied space belongs to the assembling bodies and their subversive claims. By physically and materially occupying space and by discursively changing the meaning of that space, these bodies challenge the authority's legitimacy and the hegemonic order, thereby asserting the instability and changeability of democracy.

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[131] Caroline Koegler, "Precarious Urbanity: 'The Jungle' (Calais) and the Politics of Performing the Urban," *Postcolonial Text* 12, no. 3 & 4 (2017): 2.
[132] Ibid.
[133] Iris Laner, "Performing Criticism: (Post)Phenomenological Considerations of Contending Bodies," in *Phenomenology as Performative Exercise*, ed. Lucilla Guidi and Thomas Rentsch (Leiden: Brill, 2020), 143; Ibid., 155.
[134] Butler, *Notes Toward a Performative Theory of Assembly*, 11.
[135] Ibid., 83.

In Part II, I illustrate how struggling assemblies are material-discursive performativities aimed at challenging hegemonic order and questioning consensus-seeking. This part poses the following questions: (1) Why does Butler emphasize struggle as material-discursive performativity rather than hegemonic order and political stability? (2) How does this shift in conceptualizing the political sphere contrast to the claims of consensus-seeking implicit in the techno-fix attitude? (3) How does Butler's view on 'struggle' offer new ways to conceptualize the complexity of environmental-political issues?

Part III: Limitations in Haraway and Butler

In Part III, I problematize Haraway's views on 'trouble' and Butler's views on 'struggle' by identifying their blind spots. In her endeavor to reconceptualize prevailing attitudes towards climate trouble, Haraway overlooks the certainty of political antagonisms: her rather apolitical and 'harmonious' stance assumes that individuals can simply – and are *willing* to – shift their attitude, when in reality, conflicts in opinion reign and define the political sphere, especially in debates about the environment.

While Butler's emphasis on performativity and democratic struggle assumes that politics is inherently antagonistic, their account of 'struggle' is steadfastly anthropocentric. *Humans* assemble, revolt and struggle against hegemony; *humans* occupy space and use natural resources[136]; the living and nonliving environment do

[136] Butler's emphasis on materiality and the spatiality of assemblies ironically does not include the environment. For instance, they speak of public parks (like the demonstrations occurring in the Gezi Park in Istanbul in 2013) as well as how the lack of natural resources deems one precarious. Yet, they fail to address the deeply environmental aspect of parks and natural resources, thus merely focusing on the social (i.e., the *human*) issues: the parks are seen as places that humans can use to occupy and to subvert the legitimacy of hegemony; natural resources are either available (i.e., deeming one privileged and indispensable) or lacking (i.e., deeming one precarious and dispensable).

not play a role in this struggle. For Butler, politics is a human endeavor, thus maintaining an anthropocentric view.

While Haraway confronts human exceptionalism, and while Butler challenges the consensus-seeking implied in the techno-fix attitude, neither are capable of capturing and encompassing the complexity of climate crises due to their blind spots. Part III challenges their convictions by politicizing Haraway's 'trouble' and proposing an environmental reading of Butler's 'struggle.' I do this by: (1) showing how both accounts tend towards simplifying environmental-political issues; (2) moving beyond their overlooked assumptions and often deep-seated biases; (3) complementing and reconciling both perspectives in order to conceptualize and emphasize the complexity of climate crises.

Chapter Overview of the PhD Project

Introduction

Part I:

- **Chapter 1: Human-Exceptionalism and the Techno-Fix Attitude**
    - Utopian engineering and Popper's piecemeal engineering
    - Business-as-usual attitude
    - Overlooking multi-species entanglements
- **Chapter 2: Staying with and Making Trouble**
    - Material-discursive analysis of Haraway's key terms when discussing trouble:
        - "Stirring up," "to make cloudy," "entangled," "tentacular thinking," "muddle"[137]
    - Two-pronged approach:

[137] Haraway, *Staying with the Trouble*, 1; Ibid.; Ibid., 4; Ibid., 5; Ibid., 31.

        - Coalescing the seemingly incompatible approaches of ‘staying with’ and ‘making’ trouble
        - Making qualitatively *different* trouble
- **Chapter 3: Haraway’s view on ‘Trouble’ and the Complexity of Climate Crises**
    - Acknowledging multi-species entanglements
    - Avoiding simplistic narratives that overlook environmental consequences of human-induced climate crises

Part II:

- **Chapter 4: Consensus-Seeking and the Techno-Fix Attitude**
    - Hegemonic order; one worldview
    - Overlooking antagonistic views and the instability and changeability of democracy
- **Chapter 5: Material-Discursive Performativity in Assemblies**
    - Antagonistic, counter-hegemonic practices
    - Struggle as spatial legitimation and occupation
    - Questioning the legitimacy of norms
- **Chapter 6: Butler’s view on ‘Struggle’ and the Complexity of Environmental-Political Crises**
    - Acknowledging counter-hegemonic, material-discursive performative practices aimed at questioning norms, the authority and consensus
    - Avoiding simplistic narratives that seek consensus and that overlook the inevitability of political struggle

Part III:

- **Chapter 7: Limitations in Haraway and Butler**

    - Limitation in Haraway: ‘harmonious’ view of environmental politics; denial of antagonism in politics; assuming individuals’ *willingness* to change their attitude to the environment
    - Limitation in Butler: anthropocentric view of politics; ignoring the significant role other-than-human species and environments have in politics
- **Chapter 8: Complexity of Climate Crises**
    - Making trouble as a necessary act in climate action
    - Subverting norms of human exceptionalism and anthropocentrism
    - Complementing and reconciling both perspectives.

Conclusion

Key words

Trouble, struggle, Donna Haraway, Judith Butler, environmental-political philosophy.

Timetable

Duration per chapter: 2-2.5 months (this includes reading and writing)

Year	Tasks and Actions	Output
1	(a) Reread *Staying with the Trouble* and other relevant literature in Haraway’s field such as Barad (b) Present the first and second chapters of Part I at the ‘Radboud Conference on Earth System Governance,’ Nijmegen, 24-26 October, 2023	(a) All chapters in Part I (b) Revise and edit Part I

	(c) A course on teaching (d) Teach a (Research Master) seminar on Haraway's work and the writers in her field. Topics to be discussed: - Staying with the trouble and making trouble - Response-ability - Intra-active relationality (Barad) - Relations with other-than-human species and environments (e) Tentative: Visiting Scholar at University of California, Santa Cruz to work together with Haraway (f) Present findings of Part I at a conference in Environmental Humanities at the end of the academic year	
2	(a) Reread *Notes Toward a Performative Theory of Assembly* and other relevant literature in Butler's field such as Mouffe (b) Teach a (Research Master) seminar on Butler's work and the writers in their field. Topics to be discussed: - Democratic struggle - Performativity and struggle - Struggle as material-discursive subversion and resistance to normative hegemony - Antagonism and counter-hegemony	(a) All chapters in Part II (b) Revise and edit Part II

	(Mouffe) (c) Present findings of Part II at a conference in Political Philosophy at the end of the academic year	
3	(a) Organize an inter-disciplinary conference for undergraduate and graduate students at the faculties of philosophy, arts, humanities and political science titled ‘The Complexity of Climate Crises: Environmental and Political Perspectives’ (b) Organize and mediate a reading group with other PhD candidates working on Haraway and/or Butler or in similar fields (this can be online with candidates overseas) (c) Present findings of Part III at a conference in Environmental-Political Humanities at the end of the academic year	(a) All chapters in Part III (b) Revise and edit Part III
4	(a) Join the ‘PhD Writing Retreat’ organized by OZSW	(a) Introduction (b) Conclusion (c) Revise full dissertation (d) Complete dissertation.

Summary for Non-Specialists

Climate change has become an increasingly pressing environmental and political issue impacting humans, other-than-human species and environments in diverse ways. Societies often respond to climate crises by developing new technology geared towards preventing further issues.[138] While this so-called 'techno-fix' approach may seem beneficial for countering climate crises, I nonetheless identify two issues. Firstly, by merely providing a solution to climate crises that is geared towards benefiting humans, the techno-fix approach does not recognize multi-species entanglements and interdependencies, nor does it acknowledge the consequences of such a response on the environment. As such, it privileges humans from other-than-human species and environments, thus assuming a human-exceptionalist stance. Secondly, by assuming consensus can be reached about the method of responding to climate crises, the techno-fix attitude overlooks the likelihood of different and conflicting perspectives on environmental-political matters in the political sphere. As such, counter-hegemonic practices (i.e., practices that challenge the legitimacy of established norms and that attempt to install a new dominant or hegemonic order) that can provide alternative perspectives in democracy are denied.[139]

Due to the above-mentioned issues, the techno-fix approach offers a reductionist and simplified view of climate crises which does not take into account the complex environmental and political aspects. For this reason, I provide a comparative critical analysis of Donna Haraway's concept of 'trouble' and Judith Butler's concept of 'struggle' in order to challenge the tendencies to simplify climate crises through human exceptionalism and consensus-seeking, and to conceptualize and emphasize the complexity of climate crises.

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[138] Ruser and Machin, "Technology can Save Us, Can't it?," 437.
[139] Mouffe, *Chantal Mouffe*, 210.

Haraway argues to ‘stay with the trouble’ instead of preventing or ‘solving’ the trouble (as techno-optimists advocating the techno-fix attitude tend to do). By situating themselves in and engaging with their environment, humans can acknowledge the effects of human activity on the environment and can recognize their interdependencies with other-than-human species. As a result, Haraway challenges established hierarchies between humans and other-than-human species. In order to challenge consensus-seeking, Butler argues for political struggle in the form of counter-hegemonic and material-discursive performativity. This means that assembling individuals in a democracy attempt to subvert societal norms and the dominant order. This occurs both discursively by articulating alternative political claims, and materially by performing those political claims in the form of occupying public space.

Finally, I critique the biases and blind spots of both authors: (1) while Haraway acknowledges multi-species entanglements, she assumes an apolitical stance by inferring that individuals are willing to change their view on climate crises, thus denying the antagonism inherent in political issues; (2) while Butler’s project is deeply political and presupposes such inherent antagonism, their work remains anthropocentric by arguing that politics is solely a human affair. I challenge these convictions by politicizing Haraway’s ‘trouble’ and proposing an environmental reading of Butler’s ‘struggle’ in order to conceptualize and emphasize the complexity of climate crises. I aim to answer the following question: How can a comparative critical analysis of Haraway’s concept of ‘trouble’ and Butler’s concept of ‘struggle’ contribute to a more adequate approach to the complexity of climate crises?

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Curriculum Vitae

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Education

09/2021 – present	MA Historical, Literary and Cultural Studies (research), Radboud University Specialization: Art & Visual Culture
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09/2019 – 12/2019	BA Exchange semester, University College Dublin
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