Narrating the World Risk Society:

Globalization and Climate Risk in the Contemporary US-American Climate Change Novel

Dissertation

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List of Titles and Their Abbreviations

Carbon Dreams: CD

Flight Behavior: FB

Odds against Tomorrow: OT

New York 2140: NY

A Friend of the Earth: FE

American War: AW

Introduction

"I risk, therefore I am." With this playful variation on Descartes' iconic dictum, Ulrich Beck sets the stage for *World at Risk* (5), his final book-length publication on risk and the world risk society, and thus on one of the most productively utilized categories of analysis in the social sciences since the 1980s. Theories of risk developed by leading scholars in the fields of sociology and cultural anthropology (cf.: Ulrich Beck (*Risk Society*, *World Risk Society*, *World at Risk*), Niklas Luhmann (*Risk: A Sociological Theory*), Anthony Giddens (*The Consequences of Modernity*, *The Politics of Climate Change*), Mary Douglas and Aaron Wildavsky (*Risk and Culture*)[1]) have shown developments in the processes of risk analysis as well as remarkable shifts in both individual and collective risk perception. These developments have played influential roles in the restructuring of the individual and collective values of late modernity. Moreover, the ways in which these risks are understood and imagined have been analyzed in the field of cognitive psychology, most notably by Paul Slovic, who acknowledges the important role of feelings in the processes of risk perception and risk assessment, for instance in his 2000 work *The Perception of Risk* as well as in *The Feeling of Risk*, which followed in 2010. Interestingly, the latter collection features an essay co-written by his son, ecocritic Scott Slovic, in which the two authors explicitly emphasize the role of storytelling in this context as an important aid for understanding otherwise incomprehensibly abstract risk scenarios (80). The way risk is comprehended and constructed through the means of narration and storytelling opens up enormous potential for risk analysis in the humanities and among them, literary studies in particular, to offer an entirely new perspective on the subject.

Most research regarding risk perception and its connection to narrative has so far been carried out on nonfictional sources, mainly scientific publications, interviews and journalistic work of various kinds (cf. Russell and Babrov; Mairal, *Cultural History of Risk*, "Narratives of Risk", "Risk in the Media"; Zinn). However, the analysis of fictional texts also provides highly valuable insights, as the influence of fiction on cultural discourse cannot be underestimated (cf. Nünning). The imaginative aspect inherent to every risk is one that can perfectly well be

[1] The governmentality school founded by Michel Foucault also makes use of the concept of risk in a third way, which will only play a marginal role in this study. For an overview, see e.g. O'Malley's comprehensive survey "Governmentality and Risk". The paper comprises the development of a risk framework for governmentality by Ewald, Donzelot, Castels and others, while denoting the "almost polar opposition of Beck's work to the kinds of analysis of risk generated by the governmentality literature" (65).

explored and built upon by the means of fiction. The very nature of fictional texts as manifestations of a singular imagination allows them to provide a means of expression for very individual interpretations of the world, and thus renders them remarkably suitable objects of cultural analysis. Naturally, these texts must be understood as one means of many by which risks are mediated, but the imaginative power of fiction allows its audience a unique intellectual and emotional approach to its content, as opposed to factual texts produced in the – equally important – fields of science and journalism.

So far, despite a sharp rise in interest in working with climate change literature from various angles, there has not been a book-length study focusing exclusively on how anthropogenic climate change is engaged with as a global risk in various novels[2]. I will try to fill this gap with close readings of six North American climate change novels, namely Susan Gaines' *Carbon Dreams* (2000), Barbara Kingsolver's *Flight Behavior* (2012), Nathaniel Rich's *Odds Against Tomorrow* (2013), Kim Stanley Robinson's *New York 2140* (2017), T.C. Boyle's *A Friend of the Earth* (2000), and Omar El Akkad's *American War* (2017). The novels are analyzed with regards to how their individual narratives employ various aspects of global risk in order to create meaning within their storyworlds, and how, in turn, these narratives create different social, physical and ideological risk realities. In my risk definition, I will draw heavily on Ulrich Beck's model of the world risk society and his threefold distinction of global risks as either environmental, financial, or terrorist, all of which are understood as manifestations of the ever-growing, uncontrollable complexities of second modernity.

The study of global risk through the lens of fiction has been a field of interest within cultural studies since the mid and late 2000s. In their ecocritical studies *Writing for an Endangered World* (2001) and *From Apocalypse to Way of Life* (2004), both Lawrence and Frederick Buell draw a connection between Ulrich Beck's model of the world risk society and the role of cultural texts in its construction. In 2008, with the publication of *Sense of Place and Sense of Planet: The Environmental Imagination of the Global*, Ursula Heise was the first scholar to include the impact of global risk on environmental discourses of globality. In her monograph, as well as in several essays on the topic ("Cultures", "Toxins"), she draws heavily on Beck's

[2] Notable publications include one chapter on understanding climate change as global risk in Antonia Mehnert's 2016 study *Climate Change Fictions* and Molly Wallace's study *Risk Criticism*, also published in 2016. Wallace proclaims that a "second nuclear age" has risen in which the global threat no longer stems only from `real' nuclear technology, rather "in the 'second nuclear age', the term 'nuclear' appears to operate as a synecdoche for global environmental risk", including "climate change and emerging technologies in the life sciences" (2).

work and thus brings a new perspective to the field of literary studies. Since then, a small number of scholars have pursued this path of literary risk criticism. Most notably, Molly Wallace in her 2016 study *Risk Criticism: Precautionary Reading in an Age of Environmental Uncertainty*, which is founded on the theories of nuclear criticism from the early and mid-1980s, argues for the rise of a "second nuclear age" (2), in which the global risks of Mutually Assured Destruction (MAD) and Maximum Credible Accidents (MCAs) are joined by "other megarisks" (29) such as bio- and nanotechnology and the ozone hole. She explores the "toxic discourse[s]", as defined by Lawrence Buell (639), and the potential dangers of GMOs in the writings of authors such as Ruth Ozeki and Margaret Atwood (Wallace 97-109), and attempts to create a "literary critical version of Ulrich Beck's risk society" from the conflation of nuclear criticism and ecocritisism (4). In addition, various ecocritical publications have been "at the forefront of introducing risk theory and risk research to literary and cultural studies" (Mayer, "Environmental Risk Fiction" 147). Mayer distinguishes between two types of risk narratives – the *risk narrative of anticipation* and the *risk narrative of catastrophe* and develops this distinction in several essays and articles (cf. Mayer and v. Mossner, *Anticipation*; Mayer, "The Controversially Real", "Risk Narratives", "Science", "Ecoglobalism"). Thematically, Mayer focuses on the phenomenon of anthropogenic climate change as one of the most pressing global risks of our time, and on the growing corpus of climate change fiction to illustrate her theory. There is, furthermore, a growing number of essays that analyze other fictional texts from a risk perspective, for instance the essays in the collection *Literatur als Wagnis* edited by Monika Schmitz-Emans (2013), and several essays by Evi Zemanek ("Dirty Hero", "Unkalkulierbare Risiken"), Alexa Weik v. Mossner ("Hope", "Science Fiction", "Geological Agency", "Vulnerable Lives") and Mayer ("Oil Fiction"). Antonia Mehnert and Semsettin Tabur have also included chapters on fiction and risk in their respective monographs *Climate Change Fictions* (2016) and *Contested Spaces in Contemporary North American Novels* (2017), as has Julia Hoydis in her comprehensive study *Risk and the English Novel* (2019).

The understanding of global anthropogenic climate change as a prime example of the global risks brought forth by the "self-created future" (*World at Risk* 4) of late modernity is the focal point of this study. Humanity's development from mere inhabitants of Earth to a geological force that will leave its footprint on the planet for centuries – and potentially millennia – to come continues to increase its acceleration, and attempts at restricting it are only slowly getting up to speed. A term that has had great influence on this understanding of the human

role in the alteration of the planet is the *Anthropocene*, a term coined by biologist Eugene Stoermer, who brought it into academic discourse as a proposed geological epoch together with Nobel laureate Paul Crutzen (17-18)[3]. The term has been highly influential in the sciences and was quickly adopted into the humanities. It complements the geoscientific concept with a humanist framework that allows one to see the immense power humanity began to hold over its home planet with the onset and rapid acceleration of industrialization. Recent years have seen the *Anthropocene* receive criticism for its overgeneralizing view of humanity. Several attempts have been made to refine the concept into encompassing ideas of the massive power gaps between humans, especially between the Global North and South. The most notable impacts on this discourse came perhaps from Donna Haraway's *Chthulucene* (cf. "Anthropocene", *Staying with the Trouble*) and Jason Moore's *Capitalocene* (2016). The concept of the capitalocene will be applied as an analytical category in the third chapter of this study. Finally, one aspect that defines Beck's concept of world risk society – controversy – is substantiated by the ideas of social geographer Mike Hulme in his 2009 study *Why We Disagree about Climate Change*. Hulme lays out seven recurring reasons for controversy in discussions about climate, three of which I read as dominant over the others and as highly compatible with Ulrich Beck's own trifold categorization of global risks.

In the theoretical chapter which follows this introduction, I will develop my working definition of risk and unravel the elements of my analytical toolkit. I will explore the development of the concept of risk, from its origins in classical Arabia and post-classical Italy to the height of its perceived power upon the development of probability calculus into its reframing as an uncontrollable, all-encompassing entity in the world risk society. As the world risk society cannot be contemplated without the existence of complex global networks, a section of the theoretical chapter is devoted to globalization, cosmopolitanism, and individual responsibility in a global world, focusing on the works of Ulrich Beck, Ursula Heise and John Tomlinson. Finally, I discuss the existing literary analysis on climate fiction and the development of risk fiction as a genre by drawing upon the works of Sylvia Mayer, Alexa Weik von Mossner, Ursula Heise and Adeline Johns-Putra, who have conducted pioneering studies on the rapidly growing

[3] After 15 years of academic debate, the International Union of Geological Sciences (IUGS) rejected the Anthropocene as a geological epoch in March 2024, yet, in its statement on the vote acknowledged that "the Anthropocene as a concept will continue to be widely used not only by Earth and environmental scientists, but also by social scientists, politicians and economists, as well as by the public at large. As such, it will remain an invaluable descriptor in human-environment interactions." (IUGS 3)

corpus of literary climate change texts. This study analyzes the literary representation of climate change as a multifaceted example for fictional (re)processing of global risks; as a complex phenomenon, which is approached from many different perspectives in the individual novels. The cultural, economic, social and historical aspects that mark the staging and interpretation of risk are represented in these novels as elements of the controversy surrounding each new approach towards risk. Relations of power, hegemony and domination that surround exposure to different risks, from the perspective of individual characters as well as that of communities, peoples and nonhumans are explored, twisted and reinvented in ways that shed new light on the political and social structures in the existing world, as well as on concepts lingering in society's consciousness. I will read each novel from this perspective of risk to investigate how global risks are represented within their storyworlds. In order to achieve that, I focus on three key questions: First, which elements of the global climate change risk are featured prominently in the individual novels? Second, in which ways is the space of the storyworld influenced and altered by the different manifestations of the climate change risk? Finally, how are these existing risks perceived, staged and dealt with by individual characters, communities and the depicted societies as a whole?

The three chapters focus on two novels each and are structured thematically; they are based on Ulrich Beck's distinction of global risks as either environmental, financial, or terrorist, and they focus on the specific reasons for climate change disagreement to which Mike Hulme has drawn attention. For a second structuring element, I build upon Sylvia Mayer's distinction between climate risk narratives as either risk narratives of anticipation or of catastrophe, which I modify in two ways. Given that each narrative from my corpus contains both elements of anticipation as well as catastrophe, I develop the binary distinction into a spectrum whose boundaries are respectively marked by two theoretical risk narratives, one purely anticipatory and one purely focusing on catastrophe. Second, I propose a third category, the *risk narrative of transformation*, at the center of this spectrum. This category is characterized by the fact that the transformation from anticipating catastrophe to life in its aftermath occurs within the novel itself, either in the form of a singular transformative event, or in the form of a general tone of a changing storyworld over the entire narrative. If the key reasons for disagreement are understood as clusters around which works of literature can be grouped, then these clusters themselves can be arranged on the scale between risk narratives of anticipation and catastrophe; ultimately, they reflect an increasing loss of social order and security.

The first analytical chapter begins with the analysis of two novels, Susan M. Gaines' *Carbon Dreams* and Barbara Kingsolver's *Flight Behavior*, in which climate change is rarely felt as having direct impact on the storyworld at all. While changes in the environment might have happened, they are mainly of a symbolic nature and can still be largely ignored by society. The chapter explores the critical role of climate science and scientists and their expected role as providers of ultimate truths – and their inevitable failure in the face of global risk scenarios. The settings depicted in these novels follow the rules expected of contemporary Western democracies. They explore academic ivory towers, secluded rural communities and high-society metropolitan areas, but within each of these settings, order is maintained and the narrated space is mainly formed by the 'normal' effects of globalization. Risk narratives focusing on the scientific challenges of accurate and unbiased analysis of global risks frequently tackle issues relevant in real world science and confront their characters with problems that also hold for their real-life counterparts. These novels fulfill the criteria of a genre coined by Jennifer Rohn as 'lab lit', works that contain "realistic depictions of scientists plying their trade" ("Experimental Fiction" 239), and depict these scientist characters and their surroundings in complex fashion without relying on stereotypes. I argue that this realist approach enables a certain style of writing, in which readers from different levels of knowledge regarding a certain risk are provided with characters to relate to. The complex relationships between experts and laypeople in different parts of life are crucial elements of this type of narrative. The two lab lit novels I discuss in this chapter, *Carbon Dreams* and *Flight Behavior*, are two narratives that have much in common. Both were written by female authors with degrees in the natural sciences disciplines depicted in the stories[4], both feature female protagonists who are struggling with their role in society, and both focus on the relationship between characters from different social and educational backgrounds in the face of global risks, their anticipated effect on the planet and the consequences of staging this anticipation.

The second chapter focuses on the commodification of risk in Nathaniel Rich's *Odds Against Tomorrow* and Kim Stanley Robinson's *New York 2140*, or, more precisely, on the economic processes involved in and derived from the highly controversial ascription of economic value to activities, assets, and resources, depending on various stagings of global risk. Extreme

[4] Almost half of the authors creating lab lit possess doctorates in the natural sciences (Rohn, "More Lab in the Library" 552)

weather phenomena, which can be related to global warming, the first incidents of climate induced migration, and increased uncertainty regarding the security of future investments characterize these novels. Despite the time gap of over 100 years between their narrative settings, both novels depict worlds that, despite major spatial transformations by climate change, still function economically in a fashion typical of the early 21st century. The hurricane-ravaged New York City in *Odds Against Tomorrow* quickly returns to its regular business, but the storm has spawned an alternative space for life in the 'Flatlands'. Roughly 125 years later, in *New York 2140*, the city has fallen into a state of permanent flooding, but its metropolitan spirit never left. The rich cruise along the channels of their 'SuperVenice' in fancy hydrojets while the working-class commutes via ferries and lives in decrepit communal skyscrapers.

In both cases, the concrete as well as the anticipated impacts of climate change constitute significant factors pressuring global markets across many sectors, of which tourism, agriculture and housing are just the first that come to mind. At the same time, insurance against such phenomena is becoming exceedingly expensive, creating both a thriving market for the insurance industry and stretching its power to near breaking point. All these factors are then connected to questions of power and social standing, so that those at the bottom of the (financial) risk hierarchy will be the first to suffer from potential consequences although the effects are technically affecting everyone. Both novels focus on the economic impacts of climate change and the rise of new financial instruments and market sectors as well as the collapse of others. Some characters pursue alternative life plans without depending on the ever-present markets, while others are making a successful living from the opportunities of the evolving risks in the financial sector. The first half of *Odds Against Tomorrow* depicts a journey through the illusion of manageable risk which ends violently when the illusion of security is blown away by a hurricane laying waste to most of New York City. *New York 2140* paints a different picture: The central setting of New York, along with many other coastal metropoles, has been flooded for many decades, yet the world has adapted to overcome this and the financial elite in SuperVenice, as it is now called, is thriving in the gigantic new skyscrapers of Uptown Manhattan. Where Rich provides a perspective on the individual evolution of risk perception and the resulting decisions, Robinson works with an ensemble of eight character focalizers, accompanied by the perspective of the "citizen." At different times within the story, this voice provides cynical commentary and background information on the world's development from the 20th to the mid-22nd century. In doing so, the complex

constellations between different social hierarchies and ideologies are built strongly into the narrative. The characters are shown within their own environment but also frequently cross those borders and interact, constructing unique takes on this anticipatory projection of a future that, despite major unfavorable climate developments, still maintains the idea of working along the same economic and social mechanisms as today.

The third chapter moves away from the maintained stability of our early 21st century Western society and focuses on the injustice of risk distribution and on processes of radicalization that link the climate risk with terrorist risk. The two novels discussed are T.C. Boyle's *A Friend of the Earth* and Omar El Akkad's *American War*. Both feature settings depicting major ecological and socioeconomic deviations from contemporary U.S. society, where social order is no longer provided by stable governments. The central idea in these narratives lies in giving voice to individual marginalized perceptions and to the sacrifices people are willing to make fighting for causes ignored by the powerful majority. *A Friend of the Earth* shows this militant activism in the flashbacks of Tyrone Tierwater, seen from a future world in which his environmental words went unheard. *American War* narrates the far more violent story of Sarat Chestnut in a similar way, when her nephew discovers and retells the journey of his deceased aunt's radicalization in the impoverished, independent American South, which ultimately culminates in her releasing a virus that ends up killing over one hundred million people. The story of this radicalization and the conflicts revealed by it provide a colorful illustration of what Hulme calls conflict of personal values, and the potential `real` conflicts sparked by it. In an unchecked spiral of escalation, political disagreements regarding global risk can evolve into political and social crises, division, marginalization and violence of tragic proportions. The worlds in these novels have tilted off balance, depicted in the collapsed ecosystem and mass extinction events in *A Friend of the Earth* as well as the political vacuum of the 'Free Southern States' in *American War*, in which the population is forced to live a life of poverty under the constant threat of hostile military action, famine and epidemics. Within these worlds, individual characters and their struggle to adapt to and fight against the unjust state of the setting represents the struggle of individual values against a system on the verge of inevitable collapse, which can only be thinly veiled – if at all – by the governing instances. Importantly, even the catastrophic circumstances and events narrated in these risk narratives of catastrophe retain the anticipatory elements of an uncertain future and forego any permanent conclusion for their respective storyworlds.

Chapter 1:

Risk, the World Risk Society and Climate Change in Literary Studies

Risk research in the last decades has shown that the significant changes societies across the globe have undergone since the Second World War can be understood as both the cause of and responses to new understandings of risk. According to Beck,

> risk represents the perceptional and cognitive schema in accordance with which a society mobilizes itself when it is confronted with the openness, uncertainties and obstructions of a self-created future." (*World at Risk* 4)

It is explicitly "*not* synonymous with catastrophe. Risk means the *anticipation* of catastrophe" (9, emphasis in original). These cognitive, anticipatory aspects of risk clearly entail the imagination and conceptualizations of this self-created future, and thus mark the concept of risk as an important category of cultural analysis, both for the study of individual risk perception and for the study of global risk discourses. Central to the category of risk is the idea that the individual perception and evaluation of risk are shaped by multiple subjective factors, which are influenced by – and influence – a multitude of different public risk discourses. These factors can be grounded in diverging personal values, or in the different perception of the threat that certain risks pose to each individual due to unequal distribution of power and information. As such, discourses of risk are pursued fiercely and are subject to manifold interpretations of individual risks. The inherent potential conflicts which are the result of these manifold interpretations have been analyzed from several perspectives. Ulrich Beck's definition of risk as the "*controversial* reality of the possible" (9, my emphasis) will serve as a more detailed entry point to sociological understandings of risk later in this chapter. For my working definition, which is anchored in the theoretical works presented in this chapter, I understand global risk as **the individually perceived (read: controversially staged) probability and importance of an anticipated, deterritiorialized catastrophe. This catastrophe is brought forth by, and requires, global cosmopolitan decision-making across and beyond territorial understandings of space**.

1.1. The Meanings of Risk

With its origins suggested in the classical Latin *risicum*, used in "Italian thirteenth century maritime documents", Gaspar Mairal (*History of Risk* 3) relates the term to the perils of seafaring and transporting goods. He, however, further traces its root to the Arabic *rizq*, which "relates with chance as it is the good luck or *baraka* given by the grace of God" (5). The term risk itself was first adapted into the English language in the middle of the 17th century, coinciding with the development of probability calculus (Arnoldi 23).

In these early instances, the emergence of the concept of risk marked a reaction to the apparently random natural phenomena that could spell doom for a trade enterprise; events, such as storms, calms or scurvy were "often attributed […] to divine providence" (Mayer and v. Mossner 8). While human agency had long been an important factor in mitigating the effects of these unpredictable calamities even in premodern times (Arnoldi 23-24, cf. also Mohun 12-20; 57-61), the discovery of probability calculus and the development of statistics, or "the separation of subjective and objective probability" (Arnoldi 30), led to the mathematization and objectification of risk. As a result, the old understanding of most accidents as unpredictable events caused by fate changed drastically. An objectively quantifiable value of potential danger brought with it the exposure of strongly diverging risk distribution across the social classes. Suddenly, administrators could be held responsible for these unequal distributions. It is here, at the birth of the idea of the welfare state, that a shift in the public understanding of risk can first be detected (32). In its early modern meaning, which today has largely receded to the field of economics, taking a risk was the inherently neutral calculation of potential loss versus potential gain. It carried danger but entailed opportunity as well. Figuratively, if risk were a coin to be tossed, each of its two sides would represent either the positive or negative possible outcomes of taking it.

As the understanding of risk, along with humanity's influence over the planet, continued to grow, however, the willingness to accept certain dangers as unavoidable, random acts of nature waned proportionally. In a first shift in meaning, the existence of risks which did not involve individual decisions by the risk-takers themselves – i.e. those that were imposed upon them by external powers – started to be increasingly perceived as unacceptable. Risks were now primarily understood as threats, problems, and sources of insecurity. At the same time though, increasing accuracy and focus on statistical calculation enabled an optimistic

perspective on the problem of risk and the uncertainty it brought. A solution to all insecurities, the figurative 'theory of everything', seemed within arm's reach, if only scientific knowledge were to advance far enough for perfect calculations to become possible. It was believed that this idea of the total calculability of risk would free humanity from the uncertainties of fate. "The ideal was to objectify and control the future (33)".

The promises of scientific and technological advancement as guarantors of security, stability and certainty were never truly fulfilled, however, and with each new technological breakthrough, the only thing that seemed to grow more certain was that absolute security was not actually obtainable at all. Alongside the undeniable, continuous technological advances modern society managed to achieve and its ever-increasing knowledge about the world, the complexity of the systems created and affected by these advances grew exponentially. With the dawn of nuclear technology, the terrible demonstration of its destructive power at the end of the Second World War, and the ensuing aftermath, humanity's global influence on the planet and the existence of unprecedented power of mutually assured destruction now lying in unpredictable human hands could no longer be denied. With this realization, the idea of total control over the future was essentially eliminated, and thus, the second important shift in the meaning of the concept of risk began to occur. The conception of global risks as the permanent byproducts of humanity's successes and as a source of permanent uncertainty about possible side effects of new breakthrough technologies, did not occur suddenly at a distinct point in time but the first successful nuclear explosion at the Trinity site in 1945 has been identified as a potential starting point for this gradual shift (cf. Beck and Jasanoff qtd. in Wallace 33).

Following this turning point, the post-war period became a time in which trust in science began to fade and the rapidly globalizing world began to understand the negative aspects of the encompassing connectivity it brought forth and rested upon. Today, the concept of risk is "associated with overwhelmingly negative connotations for most people in most contexts" (Heise, *Sense of Planet* 133). Humanity's power to consciously create disasters of catastrophic proportions had been thoroughly demonstrated by two world wars and the dropping of the atomic bombs, but the following decades also began to unveil threats hidden in the unintended side effects of what was considered peaceful technology. The public grew more and more skeptical of new developments in nuclear, biological and chemical technologies, and

in 1962 Rachel Carson's groundbreaking environmentalist publication *Silent Spring* became the voice that called for political protest against environmental destruction in the name of 'progressive' and profit-driven agriculture.

The steady growth in insecurity experienced a sudden surge in the 1980s. The period, which saw the nuclear accident at Three Mile Island and the Bhopal chemical disaster, came to realize the unexpected threats of ozone depletion, and experienced the scale-bursting MCA at the Chernobyl nuclear plant in 1986. These supraregional disasters, which vividly illustrated the negative consequences of globalization, challenged the traditional, economic understanding of risk that simply distinguishes between potential gain and loss. The failure of the traditional understanding of risk essentially left scholars of risk with one of two distinct paths to follow: On the one hand, more conservative risk theorists continued to adhere to the idea of risk as a purely economic problem and attempted to further improve their means of 'calculating the incalculable', while on the other hand, new social theories of risk were developed, placing greater emphasis on the incalculable – and sometimes unknowable – uncertainties that accompanied late modern developments in science and technology.

1.2. Late Modern Concepts of Risk

Two highly regarded publications in risk theory illustrate this development, namely Stanley Kaplan and B. John Garrick's 1981 paper "On the Quantitative Definition of Risk"[5] – which sets its goal as to provide suggestions for a "uniform conceptual/linguistic framework for quantifying and making precise the notion of risk" (11) – and Ulrich Beck's model of the world risk society, derived from his theoretical work on the concept of risk since the 1980s.

For the qualitative basis of their definition, Kaplan and Garrick start off from a (still unchanged) Merriam-Webster dictionary entry on risk which defines it as the "possibility of loss or injury" and the "degree or probability of such loss" (12). Here, importantly, they separate the concepts of hazard and risk: A hazard is a purely external "source of danger", which becomes part of a risk through the existence of a "safeguard" – any form of possible action or non-action that may be undertaken to avoid the hazard. Additionally, they acknowledge that the perception of risk always depends on the knowledge of the observer and will thus be assessed

[5] While more than 30 years after its publication the original work has certainly transcended into the realm of the 'classics', it is still considered one of the ten most important accomplishments in risk analysis between 1980 and 2010 (Greenberg et al. 774).

differently by two individuals with access to different levels of knowledge. This qualitative definition, which I would condense into 'risk is the perceived probability of future exposure to a hazard, depending on knowledge and decision', serves as a common base for both the conservative as well as the 'new' understanding of risk.

The crucial point where traditional economic risk calculus and sociological theories of risk become irreconcilable occurs in the paper's second part: Here, the authors try to expand their qualitative definition into quantifiable formulae: The "often hear[d]" definition that "'risk is probability *times* consequence'", i.e. the potential damage, is rejected (13, emphasis in original). On the grounds that a scenario with a low probability of occurring, but the potential for extremely high damage in the case of its realization, and a (mathematically equal) high-probability low-damage scenario are "clearly not the same thing at all" (ibid.), the authors instead propose the slightly less generalizing "risk is probability *and* consequence" (ibid., emphasis in original). In an interesting argumentative turn, the authors then allow a fictional, anonymous critic to interrupt their train of thought with a statement that could be read as an anticipation of one of Ulrich Beck's central arguments five years prior to their publication. The fictional critic argues:

> A risk analysis is essentially a listing of scenarios. In reality, the list is infinite. Your analysis, and any analysis, is perforce finite, hence incomplete. Therefore, no matter how thoroughly and carefully you have done your work, I am not going to trust your results. I'm not worried about the scenarios you have identified, but about those you haven't thought of. Thus, I am never going to be satisfied. (14-15)

This objection seems to acknowledge the notion that risks in complex systems can essentially never be calculated with perfect accuracy as the exclusion of theoretically possible scenarios that have either been deemed too improbable, or have not been thought of at all, is admitted to be an inevitable component of all risk calculation.

Kaplan and Garrick offer a 'solution' to this problem, however. While the argument that the existence of unknown or unknowable side effects makes it ultimately impossible to accurately calculate risk is accepted, the conclusion that one should forego further attempts at calculation is rejected. Instead, a thought experiment is carried out: If a calculation were rejected because of an incomplete number of included scenarios, an alternative calculation would have to be devised, one including the scenarios that led to the first calculation's rejection. This revised version would then be subject to the very same foreclosing argument,

resulting in a circular pattern of rejection and subsequent revision. Since every possible calculation of risk thus includes the argument of rejection due to incompleteness, in comparison, the individual rejections cancel themselves out of the equation, precisely *due* to their universal validity. In an attempt to regain control over the admitted gap in their model, the authors then proceed to include the variable "N+1" for all *unthought or unincluded* scenarios in their new risk formula (15).

Once the uncertainty is 'included' in the formula, "we can proceed like rational people, […] ask what evidence do we have on this point", and proceed with the single information point that 'scenario N +1' has never occurred yet, because otherwise it would have been thought of, and thus included in the calculations in the first place (17). With this mathematical sleight of hand, the entirety of unknown risk is integrated in the calculation and promptly disappears from sight as an obvious target for critique. In a somewhat ironic coincidence, the practical example cited in defense of this form of "uncertainty-including risk calculation" is the U.S. Nuclear Regulatory Commission's *Reactor Safety Study* – a study on the same nuclear energy that is said to mark the turning point on the late modern perspective on risk.

Where Kaplan and Garrick set out to subtly include the incalculable aspects of new technologies in their formulae, other scholars, chief among them German sociologist Ulrich Beck with his model of the world risk society, perceived their impact on the understanding of risk – and other aspects of life – to be more drastic. His model, which was first published in German in 1986 and was continuously extended and refined by him over the following three decades, is built on the assumption that an entirely new type of global risks – in the form of environmental and financial risks, as well as a new form of globally operating terrorism (*World at Risk* 13) – has grown out of the unforeseen side effects of modernity's rapid technological advancements. According to Beck, the contemporary period has outgrown the developments of what he calls the "first modernity" of industrialization, and the growing influence of humanity over the planet is now accompanied by an overarching loss of control – and controllability – over the means of this influence, a challenge that is explicitly called "not 'postmodernity', but a second modernity" (*World Risk Society* 2).

In a crisis not brought forth by humanity's "omissions and defeats" but by its scientific and technological "*triumphs"* (*World at Risk* 8, emphasis in original), each new accomplishment bears within itself the potential for new catastrophe: Steam and combustion engines,

remarkable creations designed to rid workers of the most stupendous manual labors, brought with their invention the potential for environmental degradation and – ultimately – the overarching risk of global climate change. The rise of nuclear technology, promising a nigh emission free, reliable and readily available source of energy to counteract the environmental degradation from fossil fuels, has put the globe at permanent risk of nuclear extermination. In the most recent iteration of risk-bearing accomplishments, the emergence of neural networks and 'artificial intelligence' promises to remove the potential for human error from multitudes of mundane to highly complex tasks, but at the same time creates incalculable risks though loss of human control at unprecedented levels.

It is this continuous cycle of newly created, unforeseeable and unavoidable risks arising out of humanity's continuous technological advances that characterizes what Beck calls "reflexive modernity"; the second stage of modernity that has begun to modernize its own foundations, where "side-effects of modern Western society eventually put its touchstone ideas into question" (Beck et al. 8). This reflexive perspective is characterized by the realization that, while the unforeseen consequences of past technological advancements might be solvable via new technological advancements, such solutions can never bring true security, as they simply start the cycle anew and turn the dangers of the present into the uncertainties of the future. This sense of uncertainty is further reinforced by the increased mobility and interaction beyond regional, national and continental borders inexorably empowered by globalization, combined with the ever-increasing power – and thus reach – of new technologies. "Risk society, thought through to its conclusion, means world risk society" (*World at Risk* 81). The advent of globality, a strong sense of uncertainty and the lack of trust in society's ability to manage its self-created future turn risk into a powerful shaping force and a dominating factor in contemporary public discourse, i.e. in politics, in science and, in society as a whole.

From the perspective of the world risk society, the purely economic approach to understanding and responding to risk is no longer adequate. The highly complex interrelations in a plethora of rapidly evolving, global systems trigger multiple unforeseeable effects and feedback loops, even in areas that at first glance do not seem to be connected at all, a phenomenon that John Tomlinson has dubbed *complex connectivity* (2). In settings characterized by complex connectivity, it is no longer possible to assign a virtual monetary cost to each alternative scenario and to label the cheapest one as acceptable (Kaplan and

Garrick 23-24). Ulrich Beck has argued for this defeat of traditional risk calculus by pointing toward three "characteristic features" of risk (*World at Risk* 52):

First, the new global risks are *non-compensatable*: The potential for destruction of a malfunctioning nuclear reactor or the complete collapse of global climate can no longer be represented in "fictional dollars": if the planet has become uninhabitable, no amount of money will be able to fix the problem.

Second, this non-compensatability is accompanied by *incalculability* which defies any formulae "including" a variable for uncertainty. If the virtual cost of 'scenario N +1' is infinitely high, it becomes impossible to weigh it against any other scenario; the very nature of uncertainty makes it impossible to ascribe any reliable probability.

Third, global risks are *delocalized* in three ways: in terms of space, time, and social consequences. Due to the unprecedented interconnectivity of all globalized systems, and in combination with the tremendous power of the technologies from which the new risks emerge, their destructive potential goes far beyond any local source (if such a singular source is identifiable at all) and can thus be called *spatially* detached from its point of origin to a high degree. With the loss of spatial proximity as a requirement for the connection between the source of a risk and those falling under its influence, "global risks open up a complex moral and political space of responsibility in which the others are present and absent, near and far" and in which "[t]he meanings of proximity, reciprocity, dignity, justice and trust are transformed" (188): Nuclear fallout from the molten plants in Fukushima Daiichi, for instance, was shown in air, water, and milk samples collected across the United States just days after the accident (Thakur 1317). Moreover, the fact that radioactive residue from the disaster in Chernobyl is still the "major source of the residual [radioactive Cesium in Polish fungi]" more than 30 years after the incident (Falandysz 8218), illustrates risk's *temporal* delocalization.

Social delocalization, finally, does not directly contribute to the incalculability of global risks yet plays an important role in the concept that Beck fields to fill the vacuum left by the failure of traditional risk calculus. The fact that global risks can no longer be effectively calculated does not mean that they are not assigned probability at all. The impossibility to precisely calculate a global risk does not stop agents from assigning their personal *perception* of probability. In the world risk society, the calculations of risk mathematicians, which

supposedly lead to "'absolute' and 'objective' measures of risk, [which are] independent of the personality of the user" (Kaplan and Garrick 22), are replaced by clashing personal perceptions of risk: "[R]isks [become] social constructions and definitions based upon corresponding relations of definition" (Beck, *World at Risk* 30), in fact, "risks and the social definitions of risks are one and the same" (31). Where the definition of what constituted an acceptable risk was once determinable by mathematics, the global risks of the world risk society have turned this notion into a debate which Beck names the "staging" of risk (10), a permanent competition of different risk scenarios for the attention of policymakers to acknowledge them and act accordingly.

Naturally, the individual perception of these staging processes can differ radically from one individual to another, based not only on fact but on personal opinions, values, or even misinformation. In fact, "[t]he reality of risk is shown by its *controversial* character" (13, emphasis in original). This controversy and the resulting effects are modeled by Beck in the "staging thesis" (12), according to which the perception of the threat emanating from a particular risk depends less on the actual danger than on the construction of danger in public discourse. The countless number of 'competing' influences (or risks) forces both society as a whole and all its single members to prioritize which of them ought to be addressed first. Beck uses the German term "*Realitätsinszenierung"* [staging of reality] (10) to describe the process in which a certain interpretation of reality (namely that in which a certain risk is portrayed as the primary cause for concern) is staged as true by an interest group. Depending on these interests, numerous stagings of risk exist side by side at any given moment, both focusing on different aspects of life and interpreting the same aspects in different ways. The ongoing political debate in all modern democracies illustrates this perfectly. The diverging agendas across the entire political spectrum, from focusing on combating climate change, migration policies or economic stability each represent different stagings of risk and the policies to address whichever staging is most highly prioritized. While in the case of politics, there may not be a definitive answer as to which position is the "correct" one (otherwise the political process would presumably be acted out on a less emotional basis), even in cases where simple statistics can determine the degree of danger, the staging effect may construct reality – in the form of perceived risk – in an entirely different way. The risk of being injured in a car accident is objectively far greater than that of falling victim to a terrorist attack – yet the former danger is rarely ever mentioned in public discourse, whereas the latter dominates public security

debates and national politics. Beck explains this discrepancy between objective and perceived exposure to risk in a simple sentence: “Acceptable risks are those which are accepted” (13). In our current society, we are constantly under threat from so many different risks that we simply grow accustomed to those we encounter on a regular basis. Controversy arises only when we encounter new risks, those we formerly perceived ourselves to be safe from, such as a terrorist attack in a region formerly deemed safe, or a nuclear disaster in a highly developed country with strict security measures.

While an understanding of risk as threat can be regarded as dominant in contemporary discourse, there are still forms of deliberate risk taking in which the concept has a strongly positive connotation. Named *edge work* by renowned thrill-seeking journalist and eccentric Hunter S. Thompson, practitioners of such mandatory risk-taking thrive in sports such as rock-climbing or skydiving, or might engage in recreational substance consumption that they perceive to challenge the mind in a similar fashion as physical activity challenges the body (78). In his socio-psychological study on the subject, Stephen Lyng concludes that for an individual, partaking in edgework of any kind is an instinctive act of “self-realization, of self-determination”. Over the duration of an act of edgework (for instance a parachute jump), the individual slowly goes through three states of mind, beginning with a preliminary sense of fear, moving to an intense rush of self-awareness and, “[h]aving survived the challenge, [a feeling of being] capable of dealing with any threatening situation” (860). Combined with the noteworthy aversion of edgework practitioners to gambling and “placing themselves in [other] threatening situations involving circumstances they cannot control” (862), the active pursuit of edgework can be interpreted as the individualist’s answer to the general feeling of helpless passivity that seems overwhelming in the face of threats such as nuclear war, terrorism or climate change. When Wolfgang Güllich, the world leading free climber, was accused of being suicidal, climbing hundreds of meters above ground without any safety measures, his answer expressed just that: “No other situation lets you be this hungry for life, perceive this intensely, nowhere else do you defend your life as tenaciously against a risk that objectively exists, but which you subjectively have absolute control over” (Grünberger and Zak 110, my translation).

The diversity of meanings that the risk concept has accumulated over time is succinctly expressed by sociologist David Garland who argues that:

> Today's accounts of risk are remarkable for their multiplicity and for the variety of senses they give to the term. Risk is calculation. Risk is a commodity. Risk is a capital. Risk is a technique of government. Risk is objective and scientifically knowable. Risk is subjective and socially constructed. Risk is a problem, a threat, a source of insecurity. Risk is a pleasure, a thrill, a source of profit and freedom. Risk is the means whereby we colonize and control the future. "Risk society" is our late modern world spinning out of control. (48)

1.3. Globalization and the Rise of Cosmopolitanism

As the development of risk studies shows, risk in the second modernity is inseparably entangled with globalization. It is both the driving force behind the massive acceleration in scientific and technological advances that enabled humanity's global influence, and the network through which many of its threats overcome regional and national borders. Beck thus argues that the world risk society is a "global community of threats" (*World at Risk* 8). While there are by now various definitions of 'globalization', there is some consensus regarding its most defining aspects. Turner, for instance, lists as its characteristics "The increased volume of the exchange of commodities, people and ideas"; "The compression of time and space"; "The increased interconnectivity of human groups" and "The emergence of various forms of global consciousness", or "'cosmopolitanism'" (5).

The first aspect is the one most heavily focused upon in definitions that tend to "overstat[e] the economic nature of globalization" (10), though it remains a highly important aspect in those that attempt to draw a more well-rounded picture. The exchange and diffusion of people and ideas is a central element of modernity's rapid development, which, on the other side of the coin, led to the rise of global risk technologies in the first place. The constant movement of goods between every part of the world represents an unprecedented opportunity to experience the cultural riches of the whole globe, for the whole globe – while at the same time subjecting global communities to local dangers, such as in the case of the BSE epizootic in the 1990s. This increased exchange is at least partially made possible by the compression of time and space in the age of globalization. Naturally, this does not mean a literal change in the physical extent of the globe, but a reduction in the importance of this

extent. In the words of John Tomlinson: "Mexico City is no longer *meaningfully* 5,500 miles from Madrid: it is eleven hours' flying time away" (4, my emphasis). In this sense, the spatial distance between these two destinations is mentally transformed into a temporal one, with the airplane's interior acting as a form of "time capsule", a "non-place"[6] in which journeys across impassable mountains and oceans, through deserts and over contested political borders are measured in the timespan of movies and meals.

As powerful an image this process paints, and as important its effects are for modern society, two limiting aspects need to be mentioned here: First, it must be noted that this compression (which influences the whole planet) is distributed unequally. It is limited by the power of one's passport and by the (economic) ability to purchase an airplane ticket, along with many other political and social factors. Second, as Tomlinson notes with regard to Giddens, merely having the *option* to travel to almost anywhere on the globe in less than 24 hours does not free individuals from "continu[ing] to lead local lives" (59). The connection of 'home' to a very limited place within one's personal sphere is not severed by the possibility of global travel. The influences that continuously shape this local place of 'home', however, are undoubtedly and unavoidably very global in nature, regardless of where 'home' is physically located. Supermarkets and their supplies of imported goods, foreign music playing on the local radio station, the naturalness with which spaghetti is served outside of southern Europe, are all proof of a global influence that in many cases is no longer even recognized as 'foreign' but has become part of that locale, 'placed' there "by distanciated forces" (107). This effect, which Tomlinson and others have called *deterritorialization*[7] can be ascribed not only to cultural influences, but is also a characteristic feature of global risks, which can become part of spatially distant locales in various forms, such as the use of cancerous softeners in children's toys, antibiotics in food, or infections carried by imported animals.

From these deliberations, the increased interconnectivity of human groups is merely a logical conclusion. One highly important aspect that has not yet been mentioned explicitly but which constitutes a central point of the *complex connectivity* Tomlinson puts at the heart of globalization, is the rejection of globalization as a unidirectional phenomenon (25). If the

[6] Marc Augé coined the term *non-place* to describe spatial environments which "cannot be defined as relational or historical, or concerned with identity" (78).
[7] Other terms that have been used in similar fashion are *dis-placement* (Giddens, *Consequences of Modernity*) and *delocalization* (J.B. Thompson, *Media and Modernity*)

processes of global influence are understood as results of the combined activities of individual people all over the world, the complexity reveals itself. By deciding to buy a certain piece of clothing created in a sweatshop in the Philippines, a customer in Germany contributes – however insignificantly – to the contamination of Filipino groundwater with toxic dye. At the same time, the low wages paid to the workers in that sweatshop influence the German economy as well as the labor market in other textile producing areas. Thinking of globalization in this way enables a departure from the perspective of passively being subjected to globalization (and thus, in a sense, global risks) and instead invokes the idea of a "local-global dialectic" (25). From this perspective, globalization processes are no longer understood as imposed upon the individual by abstract superentities, but as masses of individuals unconsciously creating and shaping these processes themselves.

Of course, as can already be read from the example of (Western) consumption behavior impacting the life of a Philippine sweatshop worker, while no longer unidirectional, these influencing circles are still directed along power gaps, essentially contributing to the attritional and hidden "slow violence" critically brought into discourse by Rob Nixon (2). The vulnerability of underprivileged groups in society leads to disproportionally high exposure to certain risks – slowly, indirectly and oftentimes unnoticeably imposed upon them by the powerful: Factories producing dangerous toxins are outsourced to the developing world under the cover of economic support. The global risk of climate change poses the greatest threat to small island states which contributed next to nothing to its creation. The ecosystems of marginalized regions are polluted because environmental law in developed countries prohibits environmentally harmful practices on their own territory. Understanding the complex connectivity behind these relations – and thus understanding the significance of individual behavior in its combined globality – is a critical challenge for policymakers, scholars and, ultimately, all individuals on the planet.

The difficulty, of course, lies in the miniscule contribution an individual makes to the grand scale. The simplest response to the challenges of globalization is to hide behind the mantra of not being able to individually influence anything after all. This, however, means closing one's eyes when faced with the realization that the man-made threats of globalization, "these 'manufactured risks without passports', can only be addressed by collective action. No individual government, no matter how powerful, can solve them (Beck and Sznaider 643). In

the end, it is the summation of countless local, even individual, behaviors that enables these effects in the first place. Drawing upon Turner et al. and their description of global change as either *systemic* or *cumulative* (15-17), Ursula Heise in her groundbreaking study on the environmental imagination of the global emphasizes that *cumulative risks*, despite their planet-altering effects, "tend to be perceptible [and thus counteractable] on the local scale (153). They can only be counteracted by an awareness of shared risks and shared responsibility among the general population, across national, cultural and mental boundaries. In essence, this *cumulative responsibility* (Velayos-Castelo 99) illuminates a new facet of the age-old concept of cosmopolitanism: The idea of 'global citizenship', which was first understood as the revolutionary idea of all humans as a single group, must expand in the world risk society and now includes (amongst others) "the otherness of nature" and "the otherness of the future" to form a truly global concept of the planet. In doing so, the cosmopolitan idea transcends not only the spatial boundaries of place, such as cities and nation states as Tomlinson describes it in his theory of globalization, but also overcomes the temporal boundaries of the present and the mental boundaries of different cultures – and even the human species (Beck, "Cosmopolitan Society" 18). The global risks produced by humanity these days affect the planet as a whole, with anthropogenic climate change unquestionably leading the way. Heise's final statement on the idea of a cosmopolitanism that includes this idea of a planetary whole sums up the situation precisely: "An environmentally inflected cosmopolitanism needs to combine sustained familiarity and fluency in more than one culture with a systemic understanding of global ecology […]" (*Sense of Planet* 159).

1.4. Disagreement on Cumulative Risk Responsibility: Climate Change

A study that can be read as an elaboration on Beck's argument that the controversial staging of risks must be regarded as one of the main features of the world risk society is geographer Mike Hulme's *Why We Disagree about Climate Change*. In his study, Hulme illuminates the topic of climate change from various viewpoints, beginning with a history of the term and going over its role from the perspectives of science, economy, religion and governance. The fact that each of the analyzed fields focuses on individual aspects of climate change, creating compatible, yet highly distinct discourses, allows us to read *Why We Disagree about Climate Change* as an application of Beck's concept of risk staging.

The study's ten chapters can be grouped into three sections that all point toward different kinds of "staging": The first two chapters form the introductory part. They focus on the history of changing interpretations of the climate in general and provide a historic perspective on the discovery of climate change processes, including processes of human-induced climate change. This is followed by the main section, in which Hulme lists seven reasons for climate change disagreement:

- the fact that "science is not doing the job we expect or want it to do" (74)
- different evaluations of certain economic activities, assets and resources (112)
- differing beliefs about "our duty to others, to nature and to our deities" (144)
- the existence of different risk cultures (180)
- the interpretation of the multiple, conflicting messages about climate change (214)
- different understandings of (good) development (251)
- different ideas of good governance (288)

The concluding chapter then puts the presented reasons in a broader context and carries the ideas discussed "beyond climate change" (322). In this final chapter, the global phenomenon of anthropogenic climate change is embedded in the broad concept of globalization and its significance for multiple areas of life is emphasized:

> The function of climate change I suggest, then, is not a lower-case environmental phenomenon to be solved. Solving climate change should not be the focus of our efforts any more than we should be 'solving' the idea of human rights or liberal democracy. It really is not about stopping climate chaos. Instead, we need to see how we can use the idea of climate change – the matrix of ecological functions, power relationships, cultural discourses and material flows that climate change reveals – to rethink how we take forward our political, social, economic and personal projects over the decades to come. (362)

This perspective reveals that the multiple threats of the world risk society affect regular life in similar ways. Global terrorism, the convoluted networks of international finance, climate change, and others all influence our world on multiple levels and challenge the open society's sovereignty. In my analysis, I will focus on three of the reasons for disagreement, and their central importance for the structure of my study: science, economics, and ethics.

When Hulme argues that one of the reasons for disagreement about climate change is that "science is not doing the job we expect or want it to do" (74), he is referring to its ambiguous

role in the world risk society that results from the realization that science is not able to create 'absolute' knowledge that could be the basis for ethical decision making. Hulme and Beck both emphasize the importance of science as a source of knowledge and perceived truth, and its ambiguous status in the second modernity. "Over the past two centuries, the judgement of scientists has replaced tradition in Western societies. Paradoxically, however, the more science and technology permeate and transform life on a global scale, the less this expert authority is taken as a given" (Beck, *World at Risk* 6). Hulme focuses on the loss of expert authority as one of the major reasons for disagreement on climate change. He attributes this loss to the conflict between public understanding of science as a producer of absolute truth, and the failure of modern science to provide definite, simple answers to problems characterized by complex connectivity. In addition, even in cases where such absolute, scientific solutions would be achievable, "[w]hat will in the end count as scientific knowledge for public decision making is not necessarily the same knowledge that emerged in the laboratory", as the meaning of such results can be transformed with every mediating instance (Hulme 106).

While the potential destruction stemming from the realization of any given global risk remains non-compensatable, the *measures* used to counteract or prevent these realizations are factors of great economic significance. With respect to climate change, Hulme here points to the problem that "[I]ndividuals and societies ascribe value to activities, assets, constructs and resources in many different ways", so that different "economic frameworks" (112) must be taken into consideration. Given the uncertainty inherent to global risk, this problem is not only one of conflicting economic calculations but carries far into the realm of personal values and ethical decision making. While extremely complex, the cost of shifting an entire country's energy sector to renewable energies could theoretically be calculated and ascribed an exact economic value. But even if this exact value were determined and universally accepted, the potential benefits that these costs would have to be weighed against are virtually impossible to objectively calculate. When dealing with the anticipatory phenomenon of global risk, high costs for the current population must be weighed against vague and distant benefits for generations that might not have even been born yet. These decisions have to be made on the grounds of insufficiently precise scientific predictions, while at the same time the opportunity costs include using the money to reduce human suffering in the present, or to further improve quality of life in powerful countries.

Considering the scientific uncertainty involved in the understanding of global risk, combined with the multitude of possible economic plans of action, the final reason for disagreement must conclude each chain of reasoning in the world risk society. Arguing that "we believe different things about our duty to others, to Nature and to our deities" (144), Hulme shifts attention to the issue of ethics. The difficult questions posed by global risks will always have to be discussed not only on the levels of science or economics, but also with regards to their ethical dimensions, including the perspectives of diverging religious views, various deontoloigcal or consequential ethics and, removed from such theory, the myriad variations of individual values, which are "not […] easily bridged (175). In summary, Hulme presents Atkinson's statement that

> Climate change is … opening up for us … questions about human life and destiny, about our relationship to the planet and to each other, about altruism and selfishness, about the place of a technological mind-set in our attitude to the world, about our values, hopes and goals, and about our obligations for the present and for the future. (174)

It is these three aspects – the scientific, economic and ethical perspective – that I classify as the main origins of disagreement on global risks. In essence, Hulme's four subsequent arguments can be retraced to these three 'main reasons'.

The different evaluation of risks (180) combines differences in scientific belief, direct economical endangerment and individual values with the theory of risk cultures developed by Douglas and Wildavsky, which also denies scientific objectivity in the evaluation of environmental risks (183).

The fact that "[w]e receive multiple and conflicting messages […] and we interpret them in different ways" (214) also comes as a plausible conclusion from the three key reasons. On the grounds of incomplete knowledge, economic importance and highly controversial personal beliefs and interests, debates regarding the correct plan of action are led fiercely and emotionally. Additionally, the sheer complexity of the topic guarantees that "[n]o message about climate change [can be entirely] neutral; some aspects of the story are emphasized and others are downplayed or ignored" (226). Simply put, this is another approach to Beck's staging thesis and the disagreement stemming from it happens on another layer of discourse: In addition to the 'truly' diverging positions within science, economy and culture, the mediated communication of risk provides the opportunity for conflict stemming from misinformation and misinterpretation, for deliberate manipulation and unintentionally flawed

coverage. In times of social media and algorithm-controlled online content, the concept of the *filter bubble* coined by Eli Pariser (17), also plays an important role in conflict stemming from communication, as people with utterly separated knowledge sources are likely to talk past one another and thus create conflict.

Whereas the communication of risk adds another potential source for conflict, Hulme's final two chapters explore complex cases evolving from combinations of all potentially troublesome aspects: both our different understanding of development (251) and the desire to govern in different ways (288) result in differing ideas of future societies deemed suitable for dealing with the perils of global risk. Here, the imaginative aspect of risk is again emphasized. In the real world, experiments with new government systems and alternative approaches to sustainable development are limited by the obvious boundaries of spatial and temporal reality, tradition and a tendency to strive for relative stability. It is the power of fiction that enables the breaking of those boundaries and exploration of visions for countless alternative futures in great detail, the thinking through of interesting developments to various ends, or the development of entirely new ideas. As such, again, risk fiction greatly enriches the global discourse and provides a unique 'outside' perspective on the otherwise overarchingly globalized planet.

1.5. Anthropogenic Climate Change and Climate-Fiction

"American cli-fi[8] is, almost without exception, *risk fiction*" (Weik von Mossner, *Affective Ecologies* 129). Accordingly, this overview of the state of risk-fiction research will strongly focus on climate change literature, although many of the insights provided are also applicable to narratives of other global risks, such as other anthropogenic extinction narratives, narratives of terror or those of global financial risks. In a broad sense, every work of fiction in which a situation of changing climate occurs and has an effect on the story, is climate change fiction. Focusing on the contemporary relevance of the subject, this project, along with almost

[8] For the remainder of this study, the term *cli-fi* will be used to reference all works of fiction, be they novels, films comics or other forms that topically deal with anthropogenic climate change.

all other contemporary studies of cli-fi, defines climate change fiction as forms of fictional narrative whose scenarios emerge from current global anthropogenic climate change.

The role of language, narrative patterns and metaphors in the formation and propagation of various risk perceptions is a field that has only recently begun to receive attention. Ursula Heise was among the first to argue that conceptualizations such as the human body in health and illness, images of the threatened pastoral, or concepts of 'purity' "play an important role in the selection and evaluation of risks" (*Sense of Planet* 137). The fact that such images are "far more available to the general public than scientific information" (137), while at the same time they can be "shaped, filtered and rearranged" to become tools of manipulation (138), makes the analysis of fictional representations a highly important and productive instrument for a well-rounded understanding of risk.

Climate change fiction takes advantage of fiction's nigh unlimited repertoire of ways to depict and engage with probable or possible climate change scenarios, and it extrapolates from scientific predictions and calculations of the future and can thus provide an important, new perspective on the highly complex concept of climate change. As Mayer argues, the concept of climate change must not only be understood as an environmental phenomenon but carries significant relevance for the fields of politics, social sciences, economics, cultural identity and art ("Klimawandelroman" 234). While natural scientists strongly agree on the reality of global anthropogenic climate change, there are difficulties in conveying this message to a scientifically uninformed lay public. As some of the key challenges in communicating climate change, Moser identifies the invisibility of causes, (perceived) distance of impact, the "insulation of modern humans from their environment" (33) and the "[D]elayed or absent [g]ratification for taking action" (34). Focusing on the climate change novel as the major manifestation of climate change fiction to date, and drawing upon the work of cognitive psychologists such as Paul Slovic, Mayer concludes that fiction has the power to make these causes and impacts visible – to reach its audience not only on an intellectual, but on an emotionally-affective level. By channeling the abstract scientific data into characters, situations and worlds, works of fiction allow their readers an entirely new perspective on the problem and offer new means of comprehension and internalization ("Klimawandelroman" 234-36; see also Weik von Mossner, "Cli-Fi" and Slovic and Slovic, "Introduction").

In literature, climate change fiction is mainly realized in the form of the climate change novel, although the last decade saw the emergence of various dramas, poems and short stories on the topic (Johns-Putra 270-72). Aside from these established literary genres, climate change fiction has also been created in other media, most notably films, video games and more recent literary genres such as comics or graphic novels. While "[s]cientific studies of global warming are often said to have originated with the discoveries of the Swedish scientist Svante Arrhenius in the 1890s", "self-conscious discussions of global warming in the public realm began in the late 1980s and early 1990s" and "did not become a public concern until the 2000s" (Chakrabarty 198-99). As such, fictional engagement with anthropogenic climate change is also still a young phenomenon. The first climate change novel is generally considered to be Arthur Herzog's 1977 thriller *Heat*, which preceded later works on the topic by more than a decade. In the 1990s, the body of climate change novels started to increase notably, a trend that had grown even stronger by the 2000s and has since kept up its pace (Mayer, "Klimawandelroman" 235; Johns-Putra 268). Johns-Putra and Trexler acknowledge the aforementioned existence of a changing climate as a central thematic issue in far earlier works of fiction with texts dating back as far as the Epic of Gilgamesh from ancient Mesopotamia or the Bible's Book of Revelation, yet they emphasize the fact that human influence on global climate was not at stake in fictional texts before the late 20th century (186).

1.6. Reading Climate Change in Different Types of Risk Narratives

Reading climate change from a perspective of global risk, Sylvia Mayer proposes a binary distinction of risk narratives into (climate) risk narratives of anticipation and (climate) risk narratives of catastrophe: In the latter, the plot is set in a world which has already suffered from changing climate, often to a degree that employs features of the post-apocalyptic mode and tells the story of a protagonist who has to cope with and adapt to the challenges of a hostile environment. Survivors of the catastrophe have to deal with a situation in which political, economic, social, and cultural orders have collapsed; in terms of living conditions, they are confronted with scarce or polluted drinking water, dangerous degrees of UV-radiation, mutated wildlife, and other life-threatening obstacles. In contrast to this, the risk narrative of anticipation creates a world in which the catastrophic event has not yet happened and looms threateningly on the horizon, while climate collapse is only anticipated ("The

Controversially Real" 24). Johns-Putra points out that these narratives, in which climate change is presented as mainly a "political, ethical, or even psychological problem" (269), are comparatively small in number compared to narratives that work with post-apocalyptic scenarios (268). Nevertheless, the collection of risk narratives of anticipation is growing and provides perspectives on climate change that do not offer the buffer of "cognitive estrangement" stemming from the construction of temporal distance between narrative and current reality. In both incarnations, Weik von Mossner senses the potential of cli-fi (and thus, of risk fiction) "to *imaginatively experience* the impact of that geophysical force that is the human" (Weik von Mossner, Affective Ecologies 132, emphasis in original).

In my dissertation I pick up the genre distinction between risk narratives of anticipation and risk narratives of catastrophe in the sense that I use the respective pre-and post-collapse settings of the single climate change novels for the purpose of organizing the study's chapters. As Mayer has argued, the state of anticipation and the state of catastrophe both mark all climate change novels, "but they do so in conspicuously different ways" ("Risk Narratives" 105-06).

I add to this important distinction a third type of risk narrative, for which I propose the term risk narrative of transformation. Standing between the two established categories, the risk narrative of transformation is neither truly anticipatory nor truly catastrophic in nature. As the name suggests, its focus lies in the transformative processes that are initiated both by the partial realization of risks in the storyworld, and by characters' experiences of risks. Often, as in the novels analyzed in chapter three of this study, the realization of the climate risk takes the form of a local event such as a hurricane which in turn triggers momentum for societal change in the narrative's community of characters. Whereas the risk narrative of anticipation creates a strong sense of tension, unease and uncertainty, the risk narrative of transformation breaks that tension in a moment of transformative energy. Where the risk narrative of catastrophe depicts a world in which climate change has already run rampant, the risk narrative of transformation depicts a world on the very cusp of two possible outcomes and then showcases the process of both.

A second addendum I add to Mayer's model of risk narratives is the discovery that very few works of risk fiction exclusively display features of only one of these three categories. Most risk narratives of anticipation contain at least small amounts of transformative ideas. Most

risk narratives of transformation feature anticipatory sections from before, and catastrophic narration after, the transformative event. Many risk narratives of catastrophe employ flashbacks to the time before the earth deteriorated to its current state, or they employ anticipatory elements of an even grimmer potential future. I thus move away from Mayer's binary (or trinary, if my new category is taken into account) distinction and imagine the model as a spectrum bordered by two hypothetical risk narratives at either end, one purely anticipatory and one purely catastrophic, with a risk narrative of transformation at its center. Pre-, mid- and post-collapse settings differ considerably in the degree to which ecosystemic, socioeconomic, political and cultural transformations are anticipated and depicted. Focusing on the specific settings of the novels, it becomes clear that the distinction between risk narratives of anticipation and risk narratives of catastrophe ultimately refers to a continuum of climate change representations that ranges from a focus on late 20th/early 21st century experiences of anticipating climate collapse to near or far-future scenarios of post-collapse worlds.

Risk narratives focusing more on the anticipatory aspect of risk depict a world with a social and political order comparable to contemporary, late 20th and early 21st century Earth. The effects of the risk exist mainly as – often scientific – speculation, and observable portents do not pose direct harm to the public. Their effect on the story manifests mainly through a character's interpretations and subsequent reaction to those speculations and portents. With increasing presence of immediate danger from risk realization, narratives gradually move away from this anticipatory perspective and begin to narrate partial realizations of the catastrophe. Early manifestations of greater risks can begin to pose direct threats to certain groups of people in delimited places, and within those, reality is already transforming to some degree. Risk itself is a regular topic of conversation, not only among experts in the field, and first disruptions of the established order appear in the form of large-scale protest or rejection of the unsustainable mainstream lifestyle. At one point in this development, the manifestations of risk are no longer limited to such local places. The entire space of the storyworld is altered to a degree that the ecological, political and social equilibriums are thrown off balance. Wars break out over scarce resources and incompatible ideologies, the planet's appearance changes substantially and significant parts of the ecosystem break down, "regular" life is no longer possible for the majority of the population. Adaptation slowly becomes the character's main goal, as the idea of stopping or overcoming the risk becomes

less and less realistic. If this development is thought through to the end, the risk has manifested in disasters of such proportions that the global society as a whole has collapsed. The new risks faced by the characters revolve around daily survival, and social order is only maintained in small groups of survivors.

On a topic as sensitive as climate change, the cold, rational and complex language of science will inevitably meet with an equally (and oftentimes more) powerful discourse of emotion that it is unable to penetrate. The imaginative experience of cli-fi provides an access point into that discourse, which Weik von Mossner mentions with reference to Paul and Scott Slovic: "[W]e as a species think best when we allow numbers and narratives, abstract information and experiential discourse, to interact, to work together" (*Affective Ecologies* 132). Finding balance between a compelling narrative and an adequate contribution to public risk discourses might seem like a difficult trade-off, but, as the collection of works in this study shows, this trade-off can work at both ends of the scale. In the end, narratives are "a means for making sense of the world; not only of the imaginary world on the pages of a book or on the silver screen of a movie theater, but also of the actual world in which we live out our lives" (Weik von Mossner, "Cli-Fi" 7). The ways to tell climate change risk narratives are manifold, and they each emphasize unique aspects of this multifaceted and challenging subject.

Chapter 2

Anticipating the Unpredictable:

Science and Communication in the Risk Narrative of Anticipation

When it comes to intersections between science and values,
both public and personal, the unbridled poetry and
literary sensibility of a novelist can be as welcome as a
mountain breeze wafting through a hermetically sealed building.
(Gaines, "Sex, Love, and Science" 255)

Global, anthropogenic climate change serves as a prime example of the new type of global risk that was laid out earlier in this study. Barack Obama's famous words that "We are the first generation to feel the effect of climate change and the last generation who can do something about it" (@BarackObama) have been quoted and retweeted thousands of times and are backed by an overwhelming 99 percent of climate scientists (Lynas et al. 1). The various iterations of IPCC Climate reports, as well as international think tanks, research and media groups support them, yet a significant proportion of both the lay population and policymakers either strictly ignore or even actively oppose the position that climate change is a problem requiring immediate (and costly) action. Mike Hulme explains this significant discrepancy between scientific consensus and publicly *perceived* scientific consensus with his formulation that "science is not doing the job we expect or want it to do" (74). He establishes this claim, which I see as a central source for conflict in the novels discussed in this chapter, as caused by multiple difficulties and developments both in the field of science itself and its public perception.

2.1. Challenges for Science in the World Risk Society

Hulme's first argument targets the general motivation for scientific work. Referring back to the 1962 essay "The Republic of Science" by Michael Polanyi, he illustrates a development in the reasoning behind scientific work over the past five decades. In a link to the "fading trust in science" mentioned earlier, the promotion of scientific work for its own sake has apparently come to an end. Where Polanyi in 1962 greatly emphasized that "only a strong and united

scientific opinion imposing the intrinsic value of scientific progress on society at large" was able to "elicit the support of scientific inquiry by the general public" (61), "most scientific research" in the contemporary period is now "intended to support, advance or achieve a goal that is extrinsic to science itself", and its "funding is almost always justified in terms of the potential for achieving beneficial societal outcomes" (Sarewitz and Pielke 5). So, the first development that plays a role in science not living up to 'our' expectations can be understood as the fact that it has become harder to justify why any particular scientific project is worthwhile, and an increasing number of non-scientists are asking the question "how do we know if we are doing the right science?" (14). This question features prominently in this chapter and is illuminated from various perspectives: scientists who are attempting to obtain funding for work on their personal areas of interest, laypeople who feel ill-informed about the workings of climate change, and multinational organizations fearful of losing profits are all represented and played out against each other in multiple scenarios in the novels.

In addition to the expanded expectations regarding the *subject matter* of scientific work, the questions science is expected to answer have also expanded in depth, moving beyond the traditional idea of 'simple' knowledge gain for its intrinsic value. Confronted with the irritating uncertainty produced by the global risks of second modernity, a longing for the straightforward and exact answers science used to produce is only natural. Problems arise, however, when these precise answers – which are difficult to obtain in the first place – are sufficient and insufficient at the same time. To give an example from the first global risk posed by nuclear technology: Following the Chernobyl disaster, many scientific studies were conducted to determine the amount of radiation to which people from different parts of the world were exposed as a result of the accident. The necessary research was highly complicated but scientists were nevertheless able to provide relatively reliable information on which areas of the world had been exposed to which levels of extra radiation[9]. On an entirely different plane, however, lay another field of questions. Once the objective answers had been found to the best of researchers' abilities, the logical sequitur was to ask for the implications of these findings. Immediately, the question developed from 'How much radiation exposure carried over to Western Europe?' to 'Is that amount dangerous or acceptable?'. Scientists not only

[9] Many publications over the years have given similar results. For the sake of brevity, I will simply list "The Global Impact of the Chernobyl Reactor Incident" by Anspaugh et al., as one of the first studies conducted with a global scope.

found themselves facing questions about positive[10] statements such as 'how?' and 'why?' – each of them "hard enough questions" in themselves (Hulme 78) – but being pressed to provide normative statements as well. In times of global risk, the definition of concrete safety limits, be they the threshold for 'safe' radiation exposure , or the definition of 'acceptable' levels of climate change, are also expected to be provided with scientific accuracy, although in many cases these judgments simply do not have straightforward answers and require careful ethical consideration on top of accurate scientific information. In these cases, the discourse immediately opens up the highly controversial field of risk definition, which, in the case of complex global risks, faces the challenge of finding concrete definitions for situations that do not exist within objectively definable circumstances. The answer to the question 'how much global warming is acceptable' can either not be given at all, or the question can be answered in countless ways depending on the frame of reference, as can be seen by the multitude of varying international agreements, the existence of different climate targets such as the 1.5°C and 2°C goals and the variety and complexity of scenarios (cf. IPCC 2023, 12-13). This calls to mind Beck's theory of staging and his argument that

> [r]isks are social constructions and definitions based upon corresponding relations of definition. Their existence takes the form of (scientific and alternate scientific) knowledge. As a result, their 'reality' can be dramatized or minimized, transformed or simply denied according to the norms which decide what is known and what is not. (*World at Risk* 30)

The balancing act between maintaining a purely descriptive or observational stance in the ideal of a "disinterested" science (Hulme 75) and the need to provide scientific assistance in the interpretation of findings remains difficult. Taking a look at the Intergovernmental Panel on Climate Change (IPCC), the problem quickly becomes apparent. Formed as an advisory board in 1988, the IPCC's task is to "assess on a comprehensive, objective, open and transparent basis the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts and options for adaptation and mitigation." (IPCC, "Principles" 1), while simultaneously "not tell[ing] policymakers what actions to take" (IPCC, "Factsheet" 1).

[10] 'Positive' here means 'asking for a descriptive statement, or the status quo', in opposition to 'normative', which is asking for a desired condition, as differentiated by Hulme in his chapter introduction (74).

Naturally, the space between these two statutory provisions – providing the broadest possible catalogue of options to international policymakers, while simultaneously limiting these to methods that seem feasible – opens many doors for potential criticism. In addition to the aforementioned difficulty of determining at what point a method is 'feasible', Hulme mentions as further sources of potential conflict the "validity of consensus, the legitimacy of experts and the neutrality of advice" (96). Each of these points is addressed in the novels, and several central conflicts arise around the question of science's role in policymaking – ranging all the way from the disinterested positions of an isolated "republic of science" to the expectation that scientists directly influence policymaking for the benefit of humanity as a whole.

The complexity of the subject, the different understandings of science's role in the governance of risk and the resulting disappointment in "science not doing its job" have understandably led to skepticism regarding climate science, and in some cases, disbelief in the existence of anthropogenic climate change as a whole. While "climate change skeptics" can definitely be seen as 'misguided' in the face of overwhelming scientific consensus, they are often too quickly written off as ill-meaning agitators, with whom all future communication is futile and even potentially dangerous.

It cannot be denied that the fossil fuel industry, closely connected right-wing lobby organizations and finance institutions possess the necessary power and influence, as well as a significant interest in maintaining the status quo of unchecked carbon emissions. Many examples exist of manipulated 'scientific' studies that have been designed to make dangerous products and phenomena such as "tobacco, DDT, acid rain, CFCs and stratospheric ozone, or climate change" look harmless, or which exaggerate uncertainty regarding the evidence, or grant disproportionate attention to doubters (Incropera 201). These studies have deliberately created a "public perception of a lack of scientific consensus and greater uncertainty about the extent and causes of modern climate change" (Moser 35) and thus constitute a significant challenge to those who attempt to persuade the public while adhering to the criteria of good science and abstaining from populist manipulations. Thus, the usual answer to these manipulative skeptic strategies is to publicly expose their manipulations, with subsequent hostility towards climate change skeptics in general. The construction of all skeptics as harmful manipulators then allows the creation of easily identifiable, convenient and powerful bogeymen, which help explain the 'success' of climate change skepticism. Moreover, it turns

the ecological movement into a figurative David opposing the Goliaths of finance, industry and right-wing ideology.

However, while this strategy can prove successful, and is certainly understandable given the unequal positions of the arguing parties, the resulting hostility with which every climate change skeptic is met can also lead to climate change activists themselves compromising their legitimate arguments with the same populist strategies they reproach their opponents for. However appropriate the avoidance of communication between skeptics and believers in climate change may seem, it adds to the difficulty of providing a comprehensive view on the problem. While the scientific consensus on the reality of global anthropogenic climate change is indeed undisputable (Mehnert 222), those who believe most adamantly in it often struggle to accept that there actually are great difficulties in accepting the scientifically accurate position on climate change. The problems laypeople face when dealing with the concept of climate change are therefore manifold.

First and foremost, climate change in general, and anthropogenic climate change in particular, are highly complex phenomena that the average layperson has little to no understanding of. While the acceptance of anthropogenic climate change as a real and problematic phenomenon has steadily risen over the last decades to the degree where even in the notoriously skeptical USA the percentage of "anthropogenic global warming acceptance" has risen to 81% (Ranney and Clark 51), only 12% of the lay population were found to understand even the very basic reactions central to the greenhouse effect (53-54). The failure to understand the basics of a complex topic naturally leads to an inability to determine the validity of contrasting positions. As such, the potential for public misconceptions is not only influenced by the existence of the aforementioned agitators, but also by their audience's lack of knowledge. Additionally, this lack of knowledge challenges the actual experts who might *want* to educate the lay public, but fail to adequately adjust their communication and end up talking over their heads, while the manipulators do not have to compromise their scientific integrity for simple communication.

The lack of "mechanistic understanding" (51) of anthropogenic climate change (i.e. the failure to understand the basic, physical processes behind the greenhouse effect responsible for global warming) is also an important factor in several other problems that have been analyzed by Moser. She lists, first, the invisibility of causes as a major challenge. "The primary cause —

the greenhouse gases emitted from fossil-fuel use or during land-use conversation [sic; conversion] — is literally invisible and does not have direct and immediate health implications. In this way, the pollutants causing the problem are very different from many other air or water pollution problems" (33) and thus manage to evade the toxic discourse in many ways. This invisibility of causes makes understanding the phenomenon of climate change both more complex, and for those who do not understand the mechanical basics behind the phenomenon, harder to accept:

> For the communication of climate change to lay audiences—be they policy-makers or individuals far from the levers of national and global decision-making—uncertainties in this global, complex, invisible problem have to compete with the certainty of the near-and-dear challenges involved in feeding one's family, getting an education, maintaining a job, or retaining one's health (and health care). (Moser 35)

Secondly, Moser points toward the temporal distance of the potential impact that has long been – and still is – an important problem, despite the fact that the first symptoms have by now become directly noticeable. Gradual atmospheric warming, appreciable by a look at the climate statistics, is still easily perceived as marginal when compared to the "'noise' of more immediately felt and conspicuous day-to-day, seasonal, and interannual variability in the state of the weather, climate, and the environment" (33). Given the amplitude of temperature we experience in a single year, ranging from below minus 15°C in winter to over 30°C in summer in Germany, even a global change of 4.5 or more degrees Celsius – which would put almost 50% of the species in globally significant biodiversity conservation areas at risk of extirpation (Warren et al. 401) – seems easily negligible when compared to the 45°C 'natural' amplitude the average German sees over a single year.

Thus, aside from the great challenge of attempting to predict the essentially incalculable future of the planetary climate with maximum possible precision, climate scientists are faced with the equally demanding task of communicating this inconvenient truth to a public that is inclined not to believe them, via media inclined to misinterpret their statements against powerfully manipulative opponents. At the same time, the lay public is sometimes overwhelmed with conflicting information in what it perceives as highly complex professional jargon, in which one side promotes the existence of an invisible problem that requires significant personal sacrifice from every individual. Additionally, this personal sacrifice is required only for the benefit of people that can easily be constructed as being 'far away'.

Neither the islands threatened by climate change today, nor people that will not be born for several generations evoke strong emotions of responsibility when compared to immediate relatives. The very human, narrow-minded perspective of perceiving only what directly affects our immediate surroundings is summed up perfectly in one sentence: "People observe daily weather changes, but they do not perceive climate […] which would require no less of them than to perceive the world as a whole" (Schneider 82, translated by Mehnert 54).

The concerns mentioned in this section have played a role in climate change fiction from the genre's earliest examples onwards: In Arthur Herzog's pioneering climate change novel *Heat*, the inhabitants of an area likely to be hit by hurricanes in the future repeatedly voice their opinions in this way. They address both the invisible causes: "No, I wouldn't believe in your prediction of coming disaster. *Show* me and maybe I'd feel different" (147, emphasis in original), and they express the conflicting interests of sacrificing personal well-being for the sake of distant future generations: "Would I sacrifice now for the sake of future generations? Well, I don't know them, do I? […] I want the best there is for my wife, my kids and me *now*" (148-49, emphasis in original).

Heat was the first novel to deal with this important element of climate change discourse. Yet, it only does so in short sections in what is otherwise a traditional spy novel with science fiction elements. The novels I analyze here, however, center their plot around climate change as a cultural concept that shapes many aspects of life in the world risk society. These risk narratives of anticipation rely less on the anticipatory depiction of potential future catastrophe, but instead construct their stories within the environment of a world that has changed from a collection of separated locales and groups into an interconnected, globalized entity. Their world is not yet characterized by the *results* of human alteration to the planet but by its *potential effects* and by the uncertainty these potential effects project onto the future. Centered around the different ways with which to make sense of and act (or refuse to act) within this new kind of world and its challenges to traditional understandings of knowledge and globality, the novels reveal what Ursula Heise calls the "dark side" of her concept of eco-cosmopolitanism: the "inescapable component" (121) that risk awareness has become to the everyday life of the world risk society's inhabitants. The novels discussed in this chapter, Susan Gaines' *Carbon Dreams* and Barbara Kingsolver's *Flight Behavior*, are set at the onset of second modernity's conceptualization, in the former due to its temporal setting in the early

1980s, and in the latter due to its spatial setting in a secluded, rural, and socio-politically excluded town in Tennessee. Confronted with the dawn of this new age, the characters undergo significant development which is forced upon them by the challenges of the world risk society, but also enables them to take the opportunities it provides.

2.2. Leaving the Ivory Tower: Science Communication in *Carbon Dreams*

Dr. (Chris)Tina Arenas is an exceptional person. At the age of 28, the daughter of a deceased German mother and a Uruguayan father is doing state-of-the-art geochemical research at the renowned BIO-institute in northern California. Susan Gaines' 2000 novel *Carbon Dreams*, in which Tina is the sole focalizer, is a pioneering work of lab lit and provides an ideal point of entry for the analysis of the risk narrative of anticipation. Set at a time in which the existence and significance of human greenhouse gas emissions was still a fiercely debated topic in the scientific world and had just begun to enter public discourse, the novel lays out the multiple perspectives leading the discourse and provides an overview of the challenges posed by this multiplicity.

In this risk narrative of anticipation, the global risk of climate change is still on the verge of discovery and no clear scientific consensus exists. Thus, the novel does not provide any instances of physical transformation due to the risk's impact, such as extreme weather events, crop failures or other catastrophes. As Mayer argues, "[l]arge-scale catastrophe is envisioned, if at all, only as a possibility" ("The Controversially Real" 26). On a second level of speculation *within* the narrative, however, the novel's characters do create speculative visions of possible planetary transformation. The possible future catastrophe is first envisioned by Chip, when confronted with the fact that climate change in its early stages is an invisible phenomenon (*CD* 133). In his vision of the future,

> It's not just a bit of pristine farmland being lost, or some obscure species of frog losing its habitat, the life and soul being drained out of the planet drip by drip. [He speculates] that in a mere twenty or thirty years whole cities will be flooded and crops fried, [mankind is] actually making the planet uninhabitable. (134)

This short hint at an extinction narrative is picked up by Tina in the final pages of the novel. Perceiving the sublime imagery of "huge, churned up" (348) waves, black clouds, sudden

darkness and experiencing absolute solitude and the thrill of a "spectacular Atlantic storm" (351), she speculates on the possible results of the fate-tempting, "useless" experiment that is global warming, beginning with "[g]reater storms, bigger hurricanes, ever more erratic weather" (350), continuing with a halt in the largest sea currents and the dangers of species extinction, life retreating to the deep sea, and finally arriving at the existential question of human survival itself:

> Life wouldn't end with this. She didn't believe that. But Homo sapiens? Would they thrive in new agricultural climes, migrate to Canada and Siberia, new promised lands? Was there any decent soil up there? Or would they race along with their technology, adapting to the changes they'd wrought, keeping in step with their ludicrous, out-of-control experiment. That was, apparently, what they were going to try to do, and perhaps they would succeed – though Tina didn't have such blind faith in technology to think it could happen without a lot of death and mayhem. (350)

The metaphor of global CO_2 emissions and the resulting anthropogenic climate change as a global experiment of unprecedented proportions is used repeatedly in the novel (169, 349), a narrative transformation of the whole planet into a makeshift laboratory that may well be one of the most picturesque readings of the world risk society. This 'experiment', which is far too large to be conducted within the simplified and controllable conditions of a lab, can only be partially understood and studied – with the exception of the singular iteration currently underway on a global scale. The metaphor of Planet Earth as a global laboratory for global risks is also employed by Beck (*World at Risk* 36), who relates it to the thoughts of German nuclear physicist Wolf Häfele. Häfele, a leading figure in reactor design, pointed out the impossibility of "the interplay between theory and experiment" with regards to comprehensive simulations of potential nuclear catastrophe and other "new technologies" back in 1974 (313). He criticizes attempts to break such complex problems down into smaller "sub-problems", which could then be simulated under controlled circumstances, as the results of these smaller studies could never be applied to the overarching whole. On this scale, the conventional path towards truth in the traditional sense is no longer possible.

2.2.1. Scientific Isolationism: Tina's Detachment from her Environment

From the novel's first page onwards, Tina is characterized as a stereotypical inhabitant of the proverbial academic ivory tower. Having received her PhD at the young age of 25, her entire

life revolves around her academic career. She lives alone in a scarcely furnished apartment, works long hours and even regularly sleeps in the comfortable chair in her lab. Aside from her father, whom she sees once a year, all her social and romantic contacts are academics and she virtually does not "go anywhere but the Institute" (*CD* 111). Despite constantly having to fight for additional research grants and earning only an average salary, she has never even considered the various opportunities for tenure track teaching positions due to their lack of personal research opportunities (7). Upon closer inspection, even the 'career' aspect of her academic work regularly has to take a back seat to Tina's inherent curiosity, "philandering intellect" (6), and drive to find and solve, "simple, straightforward mysteries" (1). To her, science should not be motivated by money, power, and industrial applicability, but be appreciated for its own merit – an attitude that is reflected in the imagined conversation with her recently deceased and treasured colleague Garrett Thomas, where she ponders "the value of science and the value of art, the value of science as art" (330).

These qualities make Tina a model inhabitant of Michael Polanyi's figural *Republic of Science*, in which scientists are free to pursue their personal research, not directed in any way by the interests of policymakers or other influence groups. The Republic of Science is described by Polanyi as

> a Society of Explorers. [A society that] strives towards an unknown future, which it believes to be accessible and worth achieving. In the case of scientists, the explorers strive towards a hidden reality, for the sake of intellectual satisfaction. And as they satisfy themselves, they enlighten all men and are thus helping society to fulfil its obligation towards intellectual self-improvement. (72)

It is this sense of intellectual satisfaction, the sense of defeating the nagging "little buzz" (*CD* 17) raised by an intuition of potential knowledge gain that motivates Tina to pursue her mysteries and makes her an excellent scientist.

Tina's ideal of self-motivated basic research is challenged, however, when the National Science Foundation refuses her proposal for basic research on the paleoclimate, despite the approach being both original and promising, the science behind it solid, and the technique of potential use for other academic fields. The program director responsible for the rejection is revealed to be a mineralogist specializing in petrol and oil maturation – a field of significant economic importance – who "doesn't see paleoclimatology as a big funding priority" (68). Powerless to appeal against the rejection, Tina is forced to go out of her way and apply for

another grant from the “petroleum research fund”, compromising her work by trying to sell her true interests as mere byproducts of a new method for locating oil deposits (72). Eventually, she manages to keep her new patrons satisfied while still primarily pursuing her original idea, but the challenges of obtaining funding for foundational research without having to depend on the favor of industrial lobby organizations become apparent in this section of the novel’s plot.

The results of Tina’s paleoclimatic research, born from sheer curiosity, are presented as having created “a whole new paradigm” (321) for the fledgling research on contemporary climate change in the novel’s final chapters, a paradigm that would not have been found had she followed the path directly expected by her industry-funded research project. The danger of losing out on important and valuable research information from the shortsighted and profit-oriented science policy that plays a significant role in modern society thus reflects strongly in Tina’s character and the challenges she has to meet.

Important to note here is the fact that the new paradigm for climate research is not at all an expected result upon the research project’s conception. The “nagging intuition” (17) of discovering an interesting technique from further analysis of an intriguing sample is what ends up bringing new insight into 1980s climate research. A field of work that Tina has only a very limited understanding of and interest in when she begins work on her project benefits from the free, interdisciplinary flow of ideas. The intuitional character of her findings is further accentuated by eight dream sequences spread throughout the entire novel. Tina’s experiences in her dream world of personified picoplankton and hydrocarbons lead to new insight, and new lines of experiments, further accentuating the notion of free, non-targeted research.

Despite her great intellectual capacity and academic reputation, Tina’s natural understanding of complex coherences does not translate at all into comparable insight in the ‘real world’. She is not politically informed, did not vote in the 1980 election, and does not read newspapers. Though she admits to liking novels, and even to having been a poet in high school, she no longer finds time for cultural leisure activities – she “can’t even keep up with the scientific literature” (202). This seclusion from non-academic reality is challenged, however, when Tina enters into a friendly, soon to become romantic relationship with Chip, an organic farmer and land sculptor who takes a layman's interest in local and environmental politics.

When her new landlords decide to remodel their property and hire Chip for the task, the landscaper quickly befriends the young scientist and promptly invites her over to dinner at his house. This idyllic location in the hills above Brayton is both home to someone equally dedicated to and absorbed in his passion as Tina, and at the same time represents the polar opposite of Tina's sterile apartment. Chip and two close friends collectively cultivate the soil around an old farmhouse in the midst of "the wooded hills they had resisted clearing, the pasture they had reseeded in native grasses, [and a] healthy, mature orchard by the creek" (282). Within this pastoral setting, the global risk of anthropogenic climate change enters the narrative for the first time.

In a scene in which it seems as if Chip has "been saving a topic for their dinner-table conversation" (89), he reveals that he recently learned about the "controversial" Greenhouse Effect from a newspaper article. He expresses his concern and appears to be expecting a sophisticated, well-rounded answer. Chip is puzzled when Tina calmly explains the phenomenon as having been "known for almost a century" (89). The reserved reaction of the scientist and Chip's emotional layman's perspective seem incompatible: For the farmer, the fact that human activity has been known to be "[t]ampering with the *climate*" (89, emphasis in original) is alarming news, while Tina blows off his concerns by stating atmospheric CO_2 to be "just one factor in a whole slew of intertwined cause and effect that determines climate" (90). When Chip asks for her personal assessment of the situation, she quickly points to her lack of adequate knowledge of atmospheric physics to authorize her to judge the quality and accuracy of the actual experts' models (91).

2.2.2. Different Knowledges: Chip's Non-Academic Understanding

Even though he never acts as a focalizer, Chip's emotional connection to Tina and their frequent debates about aspects of personal, political and academic life reveal his character in great detail. Chip can be regarded as the second main character, so he and Tina are presented as polar opposites, much like their respective homes. In addition to his massive physical presence, towering over the tiny scientist, Chip did not finish college and moved out of his home age 17 after falling out with his father. He spent his youth in Mexico, "penniless and stoned most of the time" (114), working there together with his childhood friend Jorge and

Jorge's wife. While working as cheap laborers, the trio always dreamt of one day owning an organic farm, a counterpart to Chip's father's "'piece of agro-industrial wasteland'" (114).

Despite his lack of formal education, Chip is presented as a highly capable character, both with regards to his career and his personal life. Due to the initially insufficient profits from the farm produce, he runs a successful landscaping enterprise which generates enough income to subsidize the entire farm. Over a timespan of one year, he manages to turn the farm's organic delicacies into a sustainable business, delivering to both high class restaurants in Brayton and produce markets in San Francisco. While he dedicates his life to the farm in a similar way to which Tina devotes herself to her work, Chip still manages to keep up with local and global news and still finds the time for political activism, as reflected in his frequent letters to the editor on various ecological topics and his voluntary work for a Californian rail transit committee (111).

While his social background bars Chip from participating directly in scientific discourse, he stays well informed from a layman's perspective. He regularly reads various newspapers (including their science columns), the specialist magazine *Organic Gardening and Farming*, and, in a noteworthy intertextual reference, mentions Rachel Carson's *Silent Spring* as a positive example of impactful popular science that "everyone could understand" (289).

In addition, his substantial experience of both landscaping and farming make Chip a reliable source of knowledge regarding the weather and other topics of ecological importance that is not generated by scientific education but by his experience as a farmer, thus providing an equally important "indigenous [way] of understanding the natural world and climate change" (Hulme 82). The significance of this type of understanding, and its distinction from scientific knowledge, surfaces several times in the novel. When Tina visits Garrett at his home, he introduces her to a new gourmet store discovery of his, arugula salad – which, as she does not reveal, is grown on Chip's farm in large quantities, and which he initially introduced to the store's proprietor (*CD* 144). Despite his outstanding intellect and lifelong passion for cooking, the Nobel Laureate is revealed to be lacking in local knowledge about the origins of his culinary ingredients. Chip – or any other competent farmer, for that matter – possesses experiential knowledge about this subject and is thus able to sell produce that grows like weeds on his property as an exotic delicacy. The most verbal description of the different forms of knowledge produced by academia and experience, and the problems in bringing them

together in productive fashion occurs when Tina struggles to explain to the equally brilliant scientist Brian Maitland her reluctance to accept a tenure track research position in New York:

> He thought that BIO had offered her something comparable. Brian Maitland was a brilliant man, but he wouldn't know about farmers. How they built their soil, year by year. How they took root in their land, like the trees they planted, how they could not even pick up and move across a valley, or a hill, let alone the other side of the continent. To a place where they didn't know the weather. Or the soil. Or the slant of light on a hilltop. Where the birds were foreign. The sunset all wrong. (341)

Both examples showcase the difficulties two highly gifted scientists have in understanding the existence and relevance of local, indigenous knowledge. The discrepancy and non-communication between different knowledges goes both ways. In similar fashion to renowned scientists lacking the experiential knowledge that Chip possesses as a farmer, he himself has a fraudulent impression of academic work. Despite Chip's competence, his knowledge of the academic world is as limited as Brian Maitland's knowledge of farming or Tina's understanding of political discourse: "You don't look like a chemist. […] I think of a chemist, […] I think of someone in a little white coat in a laboratory concocting chemicals – insecticides or cleaners" (64).

Bridging this communication gap, Tina and Chip frequently engage in debates regarding climate research and the quality and implications of recent findings. These discussions and arguments are usually ignited by Chip having read a provoking news article on climate change, which he then passes to Tina in hope of clarification. In these debates both characters act as personifications of their respective backgrounds, effectively acting out important aspects of public discourse during a romantic dinner, accentuating the gap between the expectation and reality of science in global risk discourses.

In Chip's eyes, as a paleoclimatologist, Tina is extremely qualified to provide accurate answers to complex questions and precisely interpret climate models. To him, she is "the one who's supposed to know" (191). This unspecified expectation of knowledge, formulated as a response to Tina's many unanswered questions arising from a news article, strongly emphasizes the fact that for the new type of global risk, there cannot exist 'a single expert', as the risk simply spans too many fields of expertise to be completely understandable by a singular mind. When Chip turns to Tina as a source of clarification and expert understanding – which, in comparison to him, she is – Tina sees herself confronted with the classical Socratic

phenomenon of knowing just enough to 'consciously know nothing'. She feels "like she ought to jump up from the table and go read the last five years of *Science* and *Nature* and *Geochimica et Cosmochimica*, issue by issue, page by page" (91), essentially embodying Beck's thesis that "when it comes to hazards, no one is an expert – especially not the experts" (*World at Risk* 33). These two oppositional understandings of expert knowledge – one from an internal, the other from an outside perspective – perfectly illustrate the public perception of "science […] not doing the job we expect or want it to do" (Hulme 74). In addition, it unveils an important phenomenon which strongly relates to Beck's "hierarchy of knowledge" (ibid.), and which I analogously call 'hierarchy of non-knowledge'.

While both expert and layperson deem themselves insufficiently qualified to profoundly assess the phenomenon, their 'incompetence' lies on two entirely different levels. Tina may not be able to precisely predict future scenarios or determine the validity of any concrete model, but her lack of information rests on a solid foundation of background knowledge. When she is confronted with outright bizarre theories like sunspot cooling, she is able to instantly dismiss them, unlike Chip, who has to take every presented theory at face value, without being able to weigh them up against each other. While Tina is aware that "nobody buys that theory about sunspots", Chip has to believe that "some scientists" say that there is an actual cooling trend because of "these spots on the sun or something" (*CD* 91).

The category of risk precludes absolute knowledge by definition. Upon closer inspection, however, the young couple's debates demonstrate several levels of scientific knowledge, ranging from complete ignorance to limited scientific knowledge to the status of 'expert'. As an expert, Tina possesses an excessive amount of scientific knowledge, which enables her to intelligently answer some of Chip's questions, but – due to the nature of global risk – is still insufficient to produce absolute certainty. Chip, despite his lack of formal education, possesses a certain amount of knowledge himself, while still being able to relate to Tina's father Alfredo, who is completely ignorant about any scientific work whatsoever. The order of non-knowledge differentiates sharply between complete and utter ignorance (such as that represented by Alfredo), informed ignorance that can lead to dangerous fallacies (as in the case of Chip falsely equating pseudo-scientific hypotheses of sunspot cooling with actual, solid science), and the lack of precise knowledge that even the most competent experts cannot avoid due to the inherent uncertainties of global risk.

Distinguishing between these levels of non-knowledge proves to be a difficult task, and can lead to severe miscommunication, as experts might assume the insecurities of an information-seeking layperson to be at the same level as their own and thus not provide any further information; respectively, laypeople coming to experts to obtain solid answers to their questions might disappointedly believe the expert's restraint concerning clear answers to be on the same level as their own ignorance. In addition, communication based on these different layers of non-knowledge becomes increasingly difficult, the farther away they are from each other. While Tina and Chip argue on different levels of non-knowledge, and Chip sometimes wonders whether they even "speak the same language" (223), communication between them is hard but possible and fruitful. Likewise, when Tina's father visits the couple, it is Chip who explains his daughter's profession to Alfredo, who seems interested and nods understandingly. When Tina tries to elaborate upon realizing her father's interest, however, the knowledge gaps between the two become too large to warrant successful communication: "she noticed that her father's head no longer bobbed encouragingly. He was smiling at her with an expression of awe and incomprehension on his face. 'You lost me,' he said. 'Never could keep up with her,' he said to Chip" (204).

On the one hand, experts assume that what to them is the 'obviously' nonsensical speculation of lobbyists is recognized by all participants in the discourse. They are aware of their uncertainty from this position of elevated scientific knowledge and do not want to dignify obvious nonsense with a reaction. On the other hand, laypeople are searching for a definitive assessment, and can quickly get frustrated by experts' vague and reserved statements – or lack thereof. This frustration can then ironically lead them straight towards the apparently straightforward, clear-cut, and 'easy answers' that the true experts reject for their low quality. The repeated misunderstandings and manipulations which are laid out in detail over the entirety of the novel strongly emphasize this dilemma and, given the continuous disappointments and setbacks Tina faces in her attempts to state her point even in the novel's final moments, strongly emphasize the communicational divide in society as a major challenge of second modernity.

2.2.3. A Technocratic Paradise? The *Explorer*'s Expedition

The societal divide that leads to this communicational divide is made visible by the different interest groups who act within and attempt to exert influence over the world risk society. The main actors within *Carbon Dreams*' storyworld belong to the fields of science, and representatives of industry, the media and the government.

As a lab lit novel with a single scientist focalizer, *Carbon Dreams* presents the scientific community as by far the largest group. Before meeting Chip, Tina's entire social environment consists of researchers at BIO, and with the exception of Chip and Alfredo, non-scientist characters rarely appear in more than one chapter. This community of scientists is depicted as existing in a microcosm, with rules, hierarchies and traditions of its own, only rarely – and even more rarely successfully – interacting with the outside world. This seclusion is most obviously shown for Tina, but is also emphasized for the other members of the scientific community. Renowned scientists like Harper Gibson, Sylvia Orloff, and even Nobel Laureate Garett Thomas are treated like celebrities within the community yet virtually unknown in the real world, despite the latter being "in everyone's biology textbook" (131). This isolation is also coupled with a certain helplessness when dealing with non-scientists, as is shown by Harper Gibson's interaction with his secretary, or Tina's inability to successfully get her messages across when talking to journalists.

The barriers between academia and the rest of the world are already illustrated by the proceedings at BIO, but the most comprehensive representation of the two worlds' segregation can be found in the *Explorer*'s six-week research cruise. Cruising the Pacific Ocean from Guam to New Zealand, an elite group of international researchers is analyzing sediment cores from the deep ocean floor to gain geological insights into the Cretaceous period. In the same way that their research is temporally detached from modern times by one hundred million years, the researchers on the ship are also as isolated from the rest of the world as one could imagine, with the nigh-invisible ship's crew the only – silent – observers of this intellectual gathering.

In this refuge, the scientists organize every step of their work for themselves and initially cooperate in a climate of friendly, respectful collegiality: "[I]t was amazing how well this interdisciplinary mélange of scientists was working together. […] [I]t was truly a group

production, with everyone eagerly exchanging samples and raw data and equally raw ideas, as if their egos had all gone off on sabbatical at the same time" (158). Within the setting of the *Explorer* and its hand-picked passenger list, no outside influence, competition for funding, troublesome journalists or fraudulent pseudo-scientists hold any influence, and the experts are free to pursue their passion – or at least follow the plans of Sylvia Orloff, a leading scientist who is also a highly respected expert in the field of paleoclimatology. Truly, "[i]t was as though the ship were a land and culture all its own with different rules and mores than real life" (166).

The secluded, self-governed space of the *Explorer* can be read as a textbook example of the technocratic model of science policy, which Mike Hulme names as one of three possible attempts to meet the challenges of the global climate risk. In opposition to a decisionist model, in which science is purely the means to reach the goals set by policymakers, the technocratic model places the entire process of policymaking in the hands of scientists. Following this model, the responsibility for decision-making shifts away from the policymakers, who are effectively reduced to executing policies that pursue scientifically defined goals through scientifically defined measures. While Hulme assesses this model as being "widely accepted today by the public, politicians and scientists", at the same time, he admits it is based on two central assumptions, namely the existence of "discoverable and objective scientific 'facts', which are socially and politically neutral", and the "belief that all relevant facts can be revealed by science" (103).

Both of these assumptions are essentially irreconcilable with the concept of global risk, and as such, the technocratic model remains a useful alternative for 'traditional' problems in which an objectively correct solution is determinable by scientific inquiry but fails when applied to the challenges of the world risk society. Accordingly, in the scene in which Tina and Katherine finally have an actual conversation with the famously brilliant but notoriously arrogant Harper Gibson, he is arguing with his colleague Conroy Decker about their conflicting interpretations regarding their current CO_2 model. Unable to reach a conclusion, Gibson and Decker formulate the idea of massive anthropogenic carbon emissions as a global "Great Experiment" (169), openly relating the concept to real-world climate science pioneer Roger Revelle. While Revelle postulated that the unprecedented – and unrepeatable – experiment, "if adequately documented, may yield a far-reaching insight into the processes determining weather and

climate" (19-20), his fictional counterparts are less optimistic about its success and reasonability, effectively disagreeing about whether it is "working" at all (169).

Despite these drawbacks, their initial time on the cruise is a roaring success, as cooperation between the scientists flourishes and everyone is ecstatic at taking part in the prestigious enterprise. Romance develops, festivities are held, and genuine spirits are high, representing the promising idea of a technocratic society. When the cruise enters into its fifth week, however, the situation becomes far less pleasant. The scientists' detachment from the real world begins taking a toll on the atmosphere. Tina starts to feel lonely and isolated and gains a new perspective on "[a]ll these scientists masquerading as people", "the ship floating in the sea, separate and alien from its water and life" (178). This limit to the success of isolated scientific undertakings is reinforced by the more experienced passengers, who share Tina's experience and thereby reveal the "incontrovertible fact" (182) that during the fifth week of isolation the cooperative spirit and friendly atmosphere was doomed to fade, as everyone "retreat[s] into the isolation of their singular minds and projects" (182).

2.2.4. Profit from Disinformation: Representatives of the Petrol Industry

A second highly important group of characters in *Carbon Dreams* consists of the representatives and employees of the petroleum industry who represent all the sectors interested in the continuation of unrestricted carbon emissions. They are unanimously characterized in a negative manner, and the mindset they represent clearly serves as the overall villain in the narrative. The industry itself is described as a faceless entity of corporations standing behind the obscuring, manipulative pseudo-science used to create 'disagreeing opinions' within public discourse. Whereas the academic community is constantly described as struggling financially – be it because of "Reagan's demolition crew [going] to work on the national science foundation" (24) and its federal budget, the most respected researchers "vying […] for a slice of a shrinking basic research pie" (73), or, in Tina's case, having to hop from one research grant to another without any job security – the well-paying industry acts as a constant temptation, even for the 'good' scientists. At some point, Tina remarks: "If [petroleum geochemistry was] what I wanted I sure wouldn't be here begging

NSF for grant money to buy a new HPLC. I'd be working for Exxon or Chevron with whatever fancy instruments I wanted. And making $60,000 a year to boot" (72).

While the majority of scientists are revolted by the thought of working on industry-funded projects, the two characters who do so are scientists who actively and openly take part in the manipulations of industry-funded pseudoscience. The first 'face' of the villainous industry enters Tina's lab with an appointment regarding her research for the Petroleum Research Award, a grant she had to apply for because her original application to NSF had been denied. Dr. Gilderslee is a man in his forties, dressed in an expensive dark blue suit and "obviously not from BIO or the university" (213). He shows a strong interest in the applicability of Tina's research for the assessment of potential oil-drilling sites, but more than anything, his attitude clearly conveys an understanding of science as an instrument, a tool for economic success. Additionally, his most prominent character traits include a sleazy attitude and blatant sexism, literally looking Tina up and down before shaking her hand and accepting she is the Dr. Arenas he was looking for. During the tour of Tina's lab, Gilderslee ends up talking more to her male technician Michael, and it is Michael who ends up working for Petron at the end of the novel, in a job that helps him support his twin children (237) and which emphasizes once more the permanent temptation for the scientific community.

A more prominent character in the novel who acts as the industry's main representative is Dr. William Cox, a botanist who appears to be involved in every scientific publication objecting to the scientific mainstream. He enters the narrative through *The New York Times* science section, where he falsely refers to Tina's research as "invalidat[ing] the models used by scientists to predict future levels of atmospheric carbon dioxide" (240). In a pattern that continues across the science sections of mainstream media, Cox is "in all of the articles", representing the "'dissenting opinion'" (292). While she is surprised by his bold statements, Tina, aware of the significant gaps in her own knowledge, initially gives Cox and his claims of certain knowledge the benefit of the doubt. However, when she looks further into his work, she realizes that, buried under many layers of self- and cross-referencing, all his theses, from a dubious calculation of global "Temperature Sensitivity" (247) to his claims that an increase in CO_2 would benefit agriculture and feed the world's hungry (348), are based on faulty science and simply geared to staging climate change as a matter of no concern. His works are often criticized by the scientific community and Harper Gibson graphically describes Cox as a

"jackass" (248) whose funding he would give anything to know about. Despite his infamous reputation among his colleagues, Cox responds to public criticism in an evasive, "studiedly collegiate" tone (249), and never openly antagonizes his colleagues. In adopting this well-mannered and self-secure behavior, he manages to construct himself as "a perfectly legitimate voice in the scientific debate" in the press, despite "the consensus in the scientific community [being] that the guy's work is a crock of shit" (292).

2.2.5. Overcharged Responsibility: The Role of the Media

Cox's successful medial self-construction leads to a situation in which he and an unnamed colleague represent the "'dissenting opinion'" but "seem to get more press than the majority opinion" (292). This discrepancy points to the final group of actors that contribute to climate change communication in *Carbon Dreams*, the mass media, mainly embodied by the press. Newspaper articles act both as a medium of information for laypeople and as the arena in which the different stagings of climate risk are pitted against each other. While they are constantly part of discourse within the narrative and their influence on their audience's meaning-making process is reflected in every one of Chip and Tina's arguments, journalist characters receive even less space in the novel than those from industry. The only characters mentioned are James Walker from *The New York Times* and the unnamed *Chronicle* science writer who conducts Tina's first press interview after her big talk. Reinforcing the reproductive nature of their métier, neither journalist is given any lines of direct speech, instead they only exist in the recounting of Tina's experience talking to them. Nevertheless, the products and context of journalistic work are frequently referred to by other characters, creating a discourse on the role and responsibilities of the media within the narrative.

At first, it is mainly Chip who introduces this discourse. He frequently mentions his irritation at Tina's ignorance of mainstream media and attempts to get her to "try reading the paper now and then. Broaden [her] horizons. At least to the city limits of Brayton" (148). For other scientists, the popular press is simply something that sensation hungry, foolish scientists run to with their "hogwash" of unfinished, speculative research (104). With the introduction of William Cox and his unsolicited misquote of Tina's work and Chip's constant pressure regarding it, the press becomes a more important agent in Tina's perspective as well. Chip

actually manages to convince her to write a corrective letter to the editor and, following her talk, overcomes her reluctance to talk to the press herself.

Despite her best efforts though, "what she was quoted as saying never sounded at all like what she'd thought she'd said. She [doesn`t] know *how* to talk to the press. It wasn't taught in graduate school – how to translate her work into words they could not misconstrue, or exaggerate, or twist". The controversy inherent in the new challenges of the world risk society is perfectly encapsulated in the inability of the media to create satisfying coverage from the expert's results. Tina's resignation and her acceptance that "they would never get it right", is immediately countered by Chip, who asks the question permeating not only the novel, but in a sense, the whole discourse of global risk: "How can they get it right? […] When you're always pointing out that there's no 'right' to get? You have to simplify it more". This perfectly understandable plea for simplification seems almost laughably ironic, given the unprecedentedly complex systems it is targeted at. "[I]t's not simple" (336).

While it would be easy to read the role of the media in a villainous way due to the constant construction of misleading, exaggerated, or blatantly wrong claims in their articles, they are also presented as victims themselves. When Tina tries to argue that it is "kind of irresponsible of the press not to have figured out that [Cox] doesn't know what he's talking about" (292), Chip immediately ripostes that at the same time, all the scientists who "won't talk to the press and enlighten them" carry at least equal responsibility.

Caught between the unsatisfying – and thus unpublishable – vagueness of the 'good' scientists' statements, and the alluring, simple and positive claims of the 'evil' industry, the task of creating stories that satisfy a lay audience without in any way compromising the uncertain truth appears barely achievable, especially in fields requiring as broad an expertise to understand them as the global climate. And yet, even in the case of James Walker, the only named journalist character in the novel, and a well-informed interview partner to whom Tina actually enjoys talking (337), not all is well. A sudden drop in temperature in New York leads to the article being postponed indefinitely, as global warming loses its public appeal faced with local cooling weather events (338).

The controversial debate expressed in the different stagings of risk is not only fought in the media. The conflict that is built up between the three groups of scientists, lay public and

industry culminates in a congress hearing which is attended by representatives of science and industry. The lay public is present only indirectly through Tina's remembrance of old debates with Chip, which help her better structure her arguments, as she realizes "how right he'd been. How much he'd known, her farmer" (346). The congress hearing heralds the novel's pessimistic open ending. Despite being outnumbered, William Cox and his unnamed colleague manage to derail and unravel the hearing. They succeed in manipulating and twisting the statements of probability made by the other scientists, using uncertainty "to cover up what was more certain, what was unknown […] to deny what was known" (346). In this debate, Beck's theory of risk staging is prominently illustrated: Since the successful staging of a certain type of risk directly influences its public acceptance, the arguments – and the connected narratives – that each side is able to construct are invaluable tools of persuasion. Within the narrative, this is depicted in the narrative of fear and destruction promoted by Chip – "Strike fear into their hearts. […] It's the only thing that will move them to do anything" (347) – and the carefree, optimist techno-utopian narrative promoted by Cox and his accomplices, who manage to derail the congress hearing about global warming onto the beneficial effects of "picoplankton farms" and super-engineered agricultural crops benefitting from high concentrations of CO_2 to feed the world's hungry (348). In the face of these two powerful, competing narratives, the uninformed policymakers in the senate hearing have to turn to the expert advocates for a decision, and in this scenario, scientific correctness is no longer a deciding factor. In the uncertainties of the world risk society, expertise is difficult to grasp, and powerful narratives of the future take the role of carefully weighed predictions. The promise of safety and comfort wins over the possibility of disaster:

> Absolute. Tina had not been absolute at the Congressional hearing. She had not compromised the truth of what wasn't known. […] Only William Cox had done that, and one other scientist, a physicist she'd never heard of before. Those two had gone all out, claimed absolute faith in conclusions that no one else in the scientific community could verify or support. (348)

Suddenly envying her late colleague and friend Garrett for the "pure irrelevance" of his origin-of-life research, Tina "could feel her colleagues coming around […]. All of them horrified, frightened, intimidated by the responsibility they suddenly realized was theirs. At a loss. Out of their realm. And, like her, thrilled by the whole mess of an experiment" (349).

In ending on this note of unprecedented expectation to "solve" an essentially unsolvable problem, and the overwhelming effect this task has on the scientists, *Carbon Dreams* again emphasizes science's continuously growing responsibility to partake in the multiple risk discourse of global anthropogenic climate change. In order to master a challenge threatening every inhabitant on Earth, including the multitudes who do not even understand the nature of this challenge, the isolationism that science is often accused of must be left behind in favor of interdisciplinary and inclusive communication that takes into account the multiplicity of existing perspectives.

2.3. Integrating the Forgotten: Science and Education in *Flight Behavior*

Carbon Dreams unravels the multitude of perspectives from the angle of a scientist community which is occasionally confronted with the perspectives of differently informed laypeople. The second novel I analyze with regards to science communication reverses these roles. Barbara Kingsolver's *Flight Behavior* is focalized through the eyes of Dellarobia Turnbow, an intelligent, but relatively uneducated layperson, and set in a financially struggling rural working-class community. In Tina Arenas' environment, farmer and landscaper Chip is an unusual intruder and his direct and sometimes naïve attitude towards scientific work and its responsibilities provokes important conversations on the relationship between scientists and the world. *Flight Behavior* focuses on the very laypeople that are oftentimes excluded from the discourses that shape the world risk society and confronts them with a small intruding group of scientists. The relationship between scientists and laypeople is therefore illuminated from the other side: Much of *Flight Behavior*'s plot revolves around exploring the reasoning behind working class people's aversion to and ignorance of science, and the alternative explanations they rely on to make sense of the world. This section of the chapter thus explores in greater detail the construction of isolation and educational alienation that leads to difficulties in accepting science as a legitimate field of inquiry about the world. The scientific perspective is positioned in contrast to a conservative, religious worldview which rejects the human pursuit of knowledge gain in favor of the idea of divine power as the meaning behind all complex phenomena. Similarly to Tina, who overcomes her ignorance of the working class through her romantic relationship with Chip, Dellarobia's interest in science is initially reignited by a personal fascination with Ovid Byron. Despite these feelings not being

reciprocal, the two characters develop a close relationship that breaches the gap between their social standings and serves as an initial trigger for Dellarobia to gain access to scientific work and eventually become a college student herself.

2.3.1. This Is Here: Signs of Climate Change in Feathertown

Carbon Dreams tells its story of climate risk from a purely anticipatory perspective; all the climate scenarios that are mentioned exist only in the form of speculation. *Flight Behavior*, on the other hand, is set around twenty-five years later, during the first electoral period of Barack Obama. During this time, the first harbinger events of catastrophic climate change are already underway and observable without the need for complex laboratory analyses.

Most obviously, the eponymous flight behavior of the monarch butterflies indicates the breakdown of the continental ecosystem supporting the lifecycle of an entire, unique species (228). While the butterflies themselves are of economic or even emotional significance for only a small number of individuals, their symbolic meaning in the context of the novel can hardly be overstated. Initially, they are described using Christian terminology, compared to the fire of Moses' burning bush and a "heavenly host" (70), while it is later revealed that indigenous peoples in Mexico saw in them the "souls of dead children" (389), thus imposing them with symbolic, divine meaning as well as directly connecting them to the fate of humanity itself. In a less spiritual reading, their possible demise also serves as an example of the multitude of potential mass extinction events induced by climate change. Finally, the potentially devastating consequences of insect species extinction go far beyond the aesthetic value of biodiversity. According to a statement often falsely attributed to Albert Einstein, "[i]f the bee disappeared off the face of the earth, man would only have four years left to live", linking the fate of humans and other species together even closer. From an even more realistic perspective, pollinating insects such as honeybees and butterflies have been estimated to provide about 9.5 percent of the value of global food production (Gallai et al. 819), putting their theoretical economic value at over 150 billion US Dollars. The extinction risk faced by monarch butterflies can therefore not only be read as an analogy for the general endangerment of biodiversity and loss of natural beauty, but also as an indicator of economic value in addition to the inherent value of life.

The acute endangerment of the monarch population is not the only plot element foreshadowing the possible consequences of climate change within the novel, however. The landslides Dellarobia fears will be caused by logging the Turnbow family grove have already happened, on a larger scale, in Michoacán. Yet the landslide at the monarchs' original winter habitat was not caused by an ill-considered logging plan. Gradually increasing temperatures at the location constantly moved the tree line further up the mountain, until the lack of stabilizing vegetation resulted in the whole town being buried under the inevitable mudslide that was to follow (*FB* 102, 349). Following the loss of their home and their economic base in Mexico, the Delgados are also the embodiment of climate refugees, a phenomenon projected to rise drastically in significance in the years and decades to come (Biermann and Boas 61).

Finally, the local weather in Feathertown has also begun to exert pressure on the farming population. The neighboring family is repeatedly described as having lost their entire harvest due to banking on the wrong crops (*FB* 204), and the whole plan of logging the Turnbow grove comes to fruition only because the Turnbows themselves are struggling financially due to poor harvests.

These events each represent an increase in the narration of visible planetary transformation, in contrast to the speculative narration of climate change in *Carbon Dreams*. However, the described effects do not yet have any systemic consequences. With regard to their impact on human lives, the effects of bad harvests, as well as the landslide in Michoacán, are strictly confined to specific locales and small communities and do not exert any influence on society as a whole. In the case of monarch butterflies, the impact of climate change may be felt on a continental level, but the species in question is one of no immediate economic, and little cultural, significance. The only humans directly impacted are those who are either locally connected to the phenomenon, or, as in the case of Ovid Byron and his assistants, linked to them via their highly specialized field of academic research.

Ovid Byron and his crew are also the only characters who explicitly relate the presented events to global warming. He creates a global vision of a rapidly changing planet and constructs the powerful image of humanity and its current state of existence as occupying a canoe at the top of Niagara Falls (367). The examples with which Ovid illustrates this situation – drowning islands (231), disappearing Asian watersheds and a collapsing Arctic (367) – are more globally

impactful, but within the narrative, only exist in the short outbursts of his rage at human ignorance and are never explored in more depth than in Ovid's lamentations.

In this reading, the potential climate catastrophe is not only temporally separated from the narrative, as is the case in all risk narratives of anticipation, but also spatially disconnected from the rest of the world, where actual climate change is already visibly taking place. The community of Feathertown can be skeptical of these facts only because it is so cut off from the rest of the world, an impossible isolation that is only gradually broken down over the course of the narrative.

2.3.2. When Isolationism Fails: Reconstructing Feathertown in the World

Where the narrative of *Carbon Dreams* transforms the whole world into a laboratory for studying (anthropogenic) climate change, *Flight Behavior* first has to transform the secluded, local space of Feathertown into part of the globalized world. While the rural community, like all other places on the planet, has always been under the influence of global systems, the narrative accentuates the enthusiasm with which its inhabitants deny this fact. Whether due to the economic limitations of not being able to afford a flight, their proud self-declaration as 'hicks' and 'hillbillies', Cub's stalwart conviction that "that is Mexico. This is here" (171), or the numerous examples of racist tendencies among the townsfolk, the inhabitants of Feathertown are forgotten by the world and have embraced this seclusion. In their disdain for the rest of the world, they do not seem to care whether this 'rest' is Mexico, or the neighboring city of Cleary, fifteen miles down the road (76).

The reality of globalization, and with it the recognition of the knowledge provided by science, forcefully enters the town in several steps (cf. Mayer, "Science" 219). The arrival of the monarchs as undeniable heralds of the outside world is initially explained as an act of God – a remarkable analogy to the historical explanations of natural risk as indicators of divine favor or disapproval. Even when the Delgados arrive in Feathertown, the Mexican refugees are not paid any attention by anyone except Dellarobia, and Cub actively denies any connection or comparability between the events in Michoacán and the potential local consequences of logging the Turnbow grove (*FB* 171). At this point, Dellarobia, who had been skeptical of the religious explanation in the first place, begins to question the situation and starts to research

the monarchs herself, with her limited options essentially consisting of Wikipedia (121). When Ovid Byron arrives at the site he is able to explain the phenomenon to a certain degree and directly attributes it to global warming. Despite the general surprise that an occupation such as "butterfly-ologist" (120) even exists, and the townspeople not taking Dr. Byron seriously in any way (131), he and his small team of research assistants are allowed to set up a small lab in the Turnbow barn, in close proximity to the monarchs' location. This transformation of an old barn, a symbol of the impoverished, locally confined circumstances that dominated the Turnbow's way of life in the past, into a space where state-of-the-art research is performed, symbolizes the transformation in Dellarobia's life, and continues Feathertown's inclusion into the globalized world. The research conducted both in the transformed barn and in the open field of the Turnbow grove creates a place of academic relevance in one of the least likely localities imaginable, and thus can be read as one iteration of the global laboratory that the world has become under the influence of global risk.

The increasing number of external influences pouring into the rural community continues when political activists and interest groups arrive in town and begin pursuing their individual agendas. Gradually, the media pick up on the story, and Feathertown becomes a place of national recognition, featuring on local and national news (211). The transformation process that is initiated by the monarchs' arrival is called into question, however, in the final arc of the novel. Dellarobia, who has grown into "a different sort of person" (258) over the course of her involvement in the phenomenon, is leaving Feathertown to attend college. In the final scene, immediately following the revelation of her new life plans, a massive flood washes over the Turnbow home, threatening to destroy it as well as large parts of the town, accompanied by an emotionless news commentary that had "churned all morning with strange accounts, regardless of station. Flood and weather warnings, disasters. Something beyond terrible in Japan, fire and flood" (429)[11]. Within this destructive scenario, however, Dellarobia witnesses the exodus of "[n]ot just a few, throngs, an airborne zootic force" (433) of monarch butterflies, both a slightly optimistic indicator that the species might survive the event, as well as a symbol for her own 'exodus' from Feathertown. Following the conventions of the risk narrative, the question of whether their numbers are sufficient for the species' survival is left explicitly unanswered (433), as is Dellarobia's future at Cleary Community College. The novel ends with

[11] A clear reference to the nuclear disaster in Fukushima Daiichi, which began to unfold on Friday, March 11 in 2011, the second most devastating nuclear accident of all time after the Chernobyl catastrophe.

the biblical destruction of the past, and a new beginning, "a new earth" (433), which is in this case characterized by complex connectivity and the uncertainties it carries. While it is not revealed how great the damage caused by the flood truly is[12], the symbolic destruction of Feathertown represents both the ultimate renewal of Dellarobia's life, and the demise of a backward isolationism in the face of a globally connected "new earth".

2.3.3. Arriving in the World: Dellarobia's Journey of Growth

In addition to the transformation of space within the novel, *Flight Behavior* also features the remarkable transformation of its main character, and thus includes many elements of the *bildungsroman* (Mayer "Science", 217). At the start of the novel, their gender and age of 28 years seem to be the only thing Dellarobia Turnbow and *Carbon Dreams'* Christina Arenas have in common: Dellarobia is a housewife, the married mother of two children and does not have any education past her high school diploma. In addition, her entire social environment consists of uneducated farmers and workers, as "[c]ollege is kind of irrelevant" in Feathertown (224). Where Tina is already a renowned scientist in her field, Dellarobia's last (and only) academic experience was failing the ACT, in part due to her lackluster education in the fields of mathematics and science, but also because of her unexpected pregnancy, which resulted in a miscarriage shortly after her disappointing college application. These crushingly negative experiences, along with her hasty marriage to the stillborn child's father during the pregnancy, have led to her accepting the role of an underachieving housewife and mother.

Having lost her parents at a young age, her husband Burley 'Cub' Turnbow, their two children and Cub's parents remain Dellarobia's only family, and, with the exception of her tech-savvy best friend Dovey, her only social contacts in Feathertown. Dellarobia's intellectual superiority to her family as well as to most of the other townsfolk is emphasized repeatedly and is later revealed to be the reason for her parents-in-law's negative attitude towards the young woman (345). The novel's beginning shows its main character and focalizer in a literal state of crisis, in the term's original meaning. Walking towards a cabin in the family grove, Dellarobia is on her way to meet a potential lover, to betray her husband and, should rumors of her infidelity spread, ruin her life and be forever marked as an adulterer (9). The decision between

[12] In fact, Houser argues that the flood can also be read as entirely imagined by Dellarobia (114).

continuing her unfulfilling family life and the momentary excitement of an extramarital affair is quickly removed from her thoughts, however, as she stumbles upon the colony of monarch butterflies and, mistaking them for a forest fire, returns home without having met her romantic interest. With the subsequent revelation of the butterflies' inexplicable appearance, her personal crisis is pushed back by the harbingers of global catastrophe, which are, however, initially revered as a sign of divine favor.

Ironically, what was expected to ultimately separate Dellarobia from her family and the other townsfolk ends up earning her unprecedented acceptance within the community: As "Our Lady of the Butterflies" (77) who foresaw the arrival of a "heavenly host" (70) (due to the very profane reason of having seen them before), she is inseparably connected to the event that puts small, insignificant Feathertown on the map. Her unenthusiastic church attendance is forgiven along with her other 'shortcomings' and she is declared a "beacon of faith" in the small parish. In this role, Dellarobia becomes the prime target of the press, who use her as a personal anchor for their articles about the monarchs, rendering the young woman even more of a local celebrity. It is, however, another group of foreigners and the unique openness Dellarobia shows them that reveals the true background behind the monarchs' appearance. The hospitality she shows both the Mexican Delgado family and Caribbean American scientist Ovid Byron on their respective arrivals in Feathertown is another element separating her from the town's population, who refer to the newcomers with various degrees of skepticism and outright fear. Her willingness to invite and learn from external sources and to abstain from the racial prejudice demonstrated by her peers allows Dellarobia access to a world that remains closed to the isolationist inhabitants of Feathertown. The "new earth" that is constructed by the world risk society can only be understood, or taken part in, by accepting the planetary connections and global influences it stands for.

Her first contact with the Delgados leaves Dellarobia, who has always assumed the role of the intellectually superior in her family, "abashed for the huge things she didn't know" (102). Yet again, while floored by her apparent lack of knowledge of the complexities of the world, her next thought revolves directly around closing this gap, despite her underprivileged position giving her many excuses to remain ignorant. Since the younger Turnbows do not even own a computer, "[t]onight she and Preston would go over to Hester's and get on the computer together". (102)

Following this initial information gathering (mainly consisting of googling and reading the monarch's Wikipedia page for a lack of more accurate sources (121)), another foreign encounter is what ultimately triggers Dellarobia's final break with her old life and leads to her development into an aware inhabitant of the globalized planet. Like the Delgados, Dr. Ovid Byron arrives at the Turnbow farm unsolicited after having been forwarded the local newspaper, and again, Dellarobia is the one to open her door and invite him for dinner despite her husband's protest.

Byron first explains to her the real reason for the irregular winter location for the butterflies: Global warming is throwing the butterflies' natural orientation system off balance and the entomologist wants to investigate the impacts this change has had on their physiology. While Dellarobia is able to overcome her initial skepticism regarding the foreign visitor and allows the guest to stay on their property, the rest of the town remains leery: On the one hand they resent the thought of having their 'miracle' taken away from Feathertown, and on the other hand the idea of global warming is looked down upon altogether, since their main sources of information are extremely conservative news channels (29).

As the exception to the rule, Dellarobia befriends the scientist and starts to work for him as a research assistant, breaking her filter bubble and gaining insight into the complex systems that are influencing each other – and even secluded villages like her own. The surge in personal development induced by Ovid Byron is indicated by several changing factors: Dellarobia is used to being the "smart gal" in Feathertown (174, 345), becoming the local "expert" on monarch butterflies by means of having read their Wikipedia article (116). A whole new level of knowledge is revealed to her when she realizes the amount of academic work that exists about such an 'insignificant' animal, including a level of language she is so unfamiliar with that Ovid might as well be "speaking in tongues" when talking about "cardenolide fingerprinting [and] lipid analysis" (220). The language barrier described here mirrors the difficulties between Chip and Tina in their conversations and illustrates the danger of "overwhelming" laypeople with complex technical terminology, thus rendering them unable to participate in the discourse.

While Dellarobia is at first just as clueless as the rest of the locals about scientific work, her kindness in offering to launder researchers' used field attire, combined with her curiosity, which leads her to accept their invitation to accompany them on a day of field work, allow her

a first insight into the work of “scientists” (136). While she still has difficulties grasping the idea that “these people counted dead insects all day” (141), she starts helping out on simple tasks and gets involved in conversations about the whole event, which she realizes the group is trying to “[hold] for her benefit”. At first, though, Dellarobia feels deeply sad and inferior, as the butterflies that she discovered in the first place are 'taken away' from her by the real “smart people”, who declare “the one rare, spectacular thing in her life […] a sickness of nature” (149).

Her feelings of inferiority are attenuated quickly though, as she realizes the college students are themselves actually surprised and impressed by her ability to replace a zipper, a skill she had not even considered worth mentioning, so that she is not sure “whether to feel proud or mocked” at first (150-51). Her conversations with the scientists open Dellarobia's eyes to their concepts of climate change and its global scale: a Christmas shopping trip is where she first assumes the position of 'something being wrong' with the whole Earth, and lectures Cub about it (172). The next step in the development of Dellarobia, who has hardly been around people at all for the last five years (135), is a small pre-Christmas gathering at her home before the scientists leave Feathertown over the holidays, despite previously being highly anxious about showing her home to strangers, due to the poor condition of many household items (154). The party is a success, with everyone having fun, dancing and one of the guests actually giving his digital watch to Preston as a secret Christmas present (178, 180).

Dellarobia’s growing irritation about the importance of global warming manifests in a short talk with Dovey, showing her first discussion on the topic with someone she regards as an equal (191-92). Dellarobia's thriving confidence receives an unexpected dampener though, as her first encounter with TV journalist Tina Ultner results in an interview about her personal feelings about the butterflies. Due in part to her flattening anxiety and her inexperience with the media as well as her lack of knowledge about the environmental effects she originally wanted to talk about (206), the interview that is eventually aired only lasts “one or two minutes”. It completely ignores the ecological aspects and depicts Dellarobia as a suicidal party in the “Battle over Butterflies” (210).

Despite this setback, she still applies for a job in Ovid Byron's lab and, aided by the lack of alternatives and time pressure the team is working under, gets the position (215, 225). In accepting the job, she instantly becomes the top breadwinner in the family (334). This fact of no longer depending upon her husband and in-laws, along with the fulfilling experience of

doing academic lab work and having the ideas behind the investigations explained to her immediately, provides a significant boost to Dellarobia's confidence – and thus acts as an important step in her transition towards becoming an aware citizen of the world risk society. Her newfound authority is first shown when she drives a group of foreign protesters from her porch. Reflecting on the event afterward, she is surprised: "[S]he'd stood before a crowd of fifty people and told them to go bark up the correct tree. To command this kind of attention was a lifetime first for Dellarobia. […] This morning, they'd listened" (238). In addition, her understanding of complex systems and their behavior grows, as is showcased by her quick grasp of the different concepts of correlation vs. cause and effect, a difference that Ovid describes as actually being problematic for many college students (244).

One of Dellarobia's most remarkable talents is tied in directly with her social background, as her ability to put scientific concepts "in real world terms" (282) leads to the idea of her teaching those concepts to other people (318). Eventually, she takes on the responsibility of teaching on a kindergarten field trip dedicated to finally establishing contact between the scientists and townsfolk and breaking down the communication barriers. In her first experience with being seen as a person of authority, "a teacher-superior kind of personage", Dellarobia leads the group of children up the hill. She embraces the experience, admitting that "[t]his was quite something, being in charge" (352) and, substituting for the absent Dr. Byron, begins to explain the monarch situation in language accessible to her young audience, for which she receives applause from both Ovid and her listeners. The experience of personal authority and competence marks a significant milestone for Dellarobia's personal growth (355). The success of her unique combination of attained scientific knowledge and the ability to communicate this knowledge in ways accessible to those who lack scientific education once again underlines the necessity for cooperation between different types of knowledge and fields of expertise in order to gain comprehensive understanding of complex problems in an inclusive way.

The multitude of new experiences and the realization of her individual potential encourages the unhappily married woman to reevaluate her situation, and to decide to no longer accept her unsatisfying life as being without alternative. She finally openly confronts Cub about their unsuccessful marriage, stating that they have done a "fair job" of making themselves love each other, but also admitting that she does not respect her husband and that his attempts at

making their union work were “not bad stuff. Just the wrong things for [*her*]” (383, emphasis in original). The final symbol of the completion of her character development arrives in the form of a newborn lamb. The pregnant ewes had been moved to a barn near their house and Dellarobia was to watch them deliver. When one of the ewes enters labor extremely early, there is no time to call for Hester or even a veterinarian (413). Dellarobia takes charge of the situation, instructing Cub what to do and – using the skills she has read about while educating her son and contemplating her “lid [having blown] off, and the whole world [being able to] peer in” at her (266) – saves the premature lamb. This strongly implies the closing of a personal circle, her having lost her first child to premature birth, which was the reason she entered her marriage to Cub in the first place.

In the aftermath of this event, the reader is presented with Dellarobia's future, as she lays out their new life to Preston: The breakup with Cub is officially complete. As her scientific understanding has grown, Ovid Byron arranges for her to obtain a spot as a working student at Cleary Community College, where she will also live, sharing a flat with Dovey, who is leaving Feathertown along with her best friend. In addition, Dellarobia invests her small income in a smartphone with internet access, understanding the importance of both connecting herself with the outside world and having access to the plethora of information required to satisfy her son’s never-ending curiosity. In the end, Dellarobia completes her development as an individual who has increased her academic and social skills by a wide margin. She has broken out of her unsatisfying, stereotypically passive gender role and developed a lifestyle which resembles her earlier plans in life far more accurately. In addition, she has realized the multiple options for a future that have opened up to her, and for the first time in her life finds herself in a situation of having “too many choices” (426) for her to be sure what her future will hold. She has become an acting individual in a closely connected society, where not everything can be controlled, but in which options to adapt or react are plentiful, if one is able to take one’s life in one’s own hands.

2.3.4. Competence at a Loss: Ovid’s Confrontation with Ignorance

Both *Carbon Dreams* and *Flight Behavior* portray the development of their main characters in the manner of a *bildungsroman*, and in both cases, this development is triggered by the relationship between a scientist character and a layperson. But where *Carbon Dreams* narrates the opening up of an ivory tower scientist to the ‘real world’, the most prominent

scientist in *Flight Behavior* is already acting in the regular world to a certain degree. While the isolated town, whose inhabitants suffer from a drastic lack of formal education, is obviously an unknown environment for him, Ovid Byron is presented as being a skilled communicator who does not shy away from conversations with laypeople. In his first meeting with the Turnbows, he reveals his awareness of other people's knowledge and admits to "never learn[ing] anything from listening to [him]self" (122). While he and his associates can come across as standoffish at first, when drawn out by genuine interest in their work or person, they happily interact with the outside world (137) and even reveal a remarkable ability to communicate with children (119). This worldly attitude is also reflected in Ovid's marriage to Juliet Emerson, associate professor of folkloristics.

An academic like her husband, Juliet's work in cultural anthropology represents an entirely different aspect of academia which is completely absent in *Carbon Dreams*. While not contributing to the biological or ecological understanding of the monarch butterfly as an organism, she knows "things about the butterflies her husband [does] not" (392), framing their meaning not as a phenomenon of nature, but from a cultural perspective. When Ovid reveals that the Monarch's life cycle was unknown to the scientific world as "no one knew yet where they went in winter", Juliet corrects that the "Woodcutters in Michoacán knew", revealing the value of local knowledge as equal to its scientific equivalent (396).

In an analogy to the greater phenomenon of climate change, the marriage of Ovid Byron and Juliet Emmerson illuminates the impossibility of understanding these global phenomena if limiting oneself to a singular perspective. The joint efforts of natural science and the humanities, in addition to other, non-scientific epistemologies are required for a holistic understanding of complex phenomena such as climate change and other global risks "as an idea […] as much as a physical phenomenon" (Hulme xxv). Ovid's associates, most notably his second-in-command Pete, are presented as less open-minded towards non-academics at first, preferring insects and scientific work over human company (*FB* 230), representing the tendencies of seclusion into the proverbial scientific ivory tower. However, once Dellarobia proves herself capable and skilled in areas of life where the scientists have no experience, their attitude becomes friendlier as well, symbolizing the potential of overcoming the boundaries of individual perspectives and cooperation across all areas of knowledge (323).

Despite his evident ability to act in and meet the challenges of the world risk society, Ovid finds himself unable to cope with the isolationist attitude and utter neglect of solid education in Feathertown. When his usual approach to field work – reliance on volunteer aid from local schools in order to familiarize the children with scientific work and aid them on their way to college – fails spectacularly (223, 224), he is at a loss. When Dellarobia explains to him the simple truth that "college is kind of irrelevant" (224) in Feathertown and lays out the devastating state of the local school, regularly failing state standards for education and having accepted this situation as a given, Ovid is visibly shaken by the utter disregard for quality education in the area. Within this setting, the idea of the population actively engaging in scientific discourse or seeking out valid knowledge on their own instead of accepting the simple answers provided by the media, does not promise much success. Not unlike the difficulties Tina Arenas and her father face when attempting to talk about Tina's work in *Carbon Dreams,* the different levels of knowledge are too distant from one another. The condescending attitude that often accompanies the realization of this knowledge gap by the 'superior' party adds to educationally disadvantaged people's further detachment from the experts and leads to a complete cultural divide as displayed in the novel:

> 'I'd say the teams get picked, and then the beliefs get handed around', [Dellarobia] said. 'Team camo, we get the right to bear arms and John Deere and the canning jars and tough love and taking care of our own. The other side wears I don't know what, something expensive. They get recycling and population control and lattes and as many second chances as anybody wants. (321)

Bridging this divide appears difficult, not only for individual reasons, but because both sides look down on trespassers. In Ovid and Dellarobia's case, this is depicted in the initial skepticism shown towards their uneducated host by Pete, Bonnie and Mako, which is ultimately overcome only by the coincidental circumstances of the Turnbow barn providing them with a useful working space and her being able to provide them with useful assistance. For Ovid, public opinion in town sees him as "a foreign meddler in local affairs" who is even rumored to have impregnated his host (323).

A possibility for overcoming this alienation and reaching out to the foreign demographic is the popular media, which is consumed by all classes. One similar trait shared by all the respectable scientists in both *Carbon Dreams* and *Flight Behavior,* however, is a strong aversion to the popular press, which is motivated on the one hand by negative experiences with sensationalist

press representatives who twist and manipulate scientists' statements to maximize their potential audience (244), and on the other hand by the fear of entering the territory of 'popular science' and compromising scientific precision for comprehensibility. Ovid tells Dellarobia: "'Having a popular audience can get us pegged as second-rank scholars'" (324). Faced with the dilemma of either talking over a potential lay audience's heads and being ignored due to the inaccessibility of scientific language, or the danger of sabotaging one's academic reputation, Ovid and his associates, similar to Tina Arenas, avoid the press and defend their restraint by denying any responsibility for normative statements. The problem with this attitude (which is also addressed by Hulme (74)) is summed up perfectly in a conversation between Dellarobia and Ovid, who resists making any statements about causality regarding climate change and the monarch's behavior due to the system's complexity:

> 'We cannot jump to conclusions. All we can do is measure and count. That is the task of science.' It seemed to Dellarobia that the task of science was a good deal larger than that. Someone had to explain things. If men like Ovid Byron were holding back, the Tina Ultners of this world were going to take their shots. (244)

While *Carbon Dreams* resolves this conflict in a highly pessimistic way, having Tina Arenas give multiple newspaper interviews, all of which either end up compromising the scientific truth in disappointing fashion (*CD* 336) or, in the only promising case, get cancelled altogether due to unfortunate weather in New York City (338), *Flight Behavior* bypasses the mainstream media entirely. When Tina Ultner returns to Feathertown for a second TV report, Dellarobia refuses to stand in for Ovid Byron a second time and convinces Tina to interview him in person. The skeptical scientist refuses to abide by the reporter's suggestions of portraying the butterflies' presence as a positive event, and with little restraint begins a passionate speech about the true background behind their erratic behavior, naturally linking it to global warming, and strongly rejecting her suggestion of global anthropogenic climate change as an unproven theory (*FB* 365-66). The rant quickly develops into accusations towards Tina and the media in general, who are catering to their audience without even attempting to educate them about unpleasant truths, fearful of losing their audience and their paychecks (367-69). Convinced that the interview will never be aired and thus having missed a chance to at least get some of his points across by cooperating with the media, it is revealed that Dovey has recorded the whole situation on her phone and publishes the interview on YouTube herself (370), where it

gathers hundreds of thousands of views within a few days (374). His wife dubs the emotional speech "the best presentation [Ovid has] given in years" (393) and emphasizes the significant service he has done the climate science community. The viral success of this video creates hope that with the use of modern technology, the divide between the different social strata might become less insurmountable, and at the same time less dependent on traditional media bound to their financiers' agendas.

In addition to this medial success, Ovid's interactions with Dellarobia also render him more open towards the Feathertown public, and he begins to understand the mistrust he encounters in the village. Although he usually avoids public attention, he agrees to head a field trip for the local kindergarten and once again proves his natural talent with children. Educating the new generation of Feathertowners about the ecosystem the monarchs belong to, Dellarobia realizes that her influence on the scientist has revealed a blind spot that had impacted his public relations ability for a long time (357), a drawback he manages to overcome due to their partnership, and which also makes him a more suitable actor within the world risk society.

2.3.5. The Lord's Business? Diverging Worldviews in *Flight Behavior*

Both *Carbon Dreams* and *Flight Behavior* tell stories of personal development arising from the relationship between a scientist and an openminded layperson. In focalizing this story through two different perspectives, one through the eyes of the scientist, and one through the layperson, different aspects of these relationships are highlighted. In focusing on Dellarobia's perspective, the closeminded laypeople that were an abstract "them" in *Carbon Dreams* – Feathertown's conservative, deeply religious and uneducated population – become an important part of the overarching narrative. With the exception of Dovey and pastor Bobby Ogle, the inhabitants are presented as uninformed, naïve and short sighted. Their mindset does not allow them to see the complexities of globalization, and they are willing to accept the simple answers provided by presumed authorities over more complicated explanations. Naturally, this reflects most visibly in the town-wide acceptance of the monarchs as a miraculous sign of divine favor. There are, however, many other examples that illuminate this worldview. While Cub notes at the very beginning of the novel that the wet summers and mild winters of recent years have brought new diseases to the forest (12), his analysis stops there,

and he continues to maintain his position of weather being "the Lord's business" (261), the ultimate excuse he uses for every event that defies immediate explanation. This transposition of unknown connections and explanations onto a higher power is one source of the difficult relationship between risk and religion, as the acceptance of a higher power as the ultimate driving force behind all human endeavor is thoroughly incompatible with the human responsibility to "find their own explanations and justifications for the impending catastrophes" in the world risk society (*World at Risk* 72). The fatalistic attitude that characterizes the Christian community in Feathertown is perfectly summarized by Dellarobia's reaction to Cub's interpretation of the weather: "Every loss she'd ever borne had been declared the Lord's business. A stillborn child, a father dead in his prime. 'So we just take what comes?' she asked. 'People used to say the same thing whenever some disease came along and killed all the children. 'It's part of God's plan``" (261).

Notably, the idea of the divine as a collective excuse for not attempting to understand complexity, which is identified by Murphy as one of the four reasons for the community`s failure to connect to the complex phenomenon of climate change (160), is explicitly not held by the town's pastor Bobby Ogle. He is repeatedly described as both an extraordinarily skilled preacher and an empathic and able caretaker for his parish. When confronted with the Turnbow's plan to log the family woods, he strongly reminds them of human responsibility for God's creation. The existence of Bobby Ogle and his down-to-earth understanding of religion puts the unfavorable depiction of the other religious characters into perspective. While the religious elements in *Flight Behavior* must certainly be read as a warning not to fall back onto the simplistic understanding of complex phenomena as incomprehensible workings of the divine, they do not act as a general critique of religion in modern times. On the contrary, a holistic, accessible Christianity, influenced by pantheistic ideas of finding God within nature's complexities and deriving from this an inherent responsibility of caring for God's creation is constructed as an effective, beneficial worldview within the novel[13]. A similar perspective is adopted by Mike Hulme, when he suggests the "possibility of some bridge-building between the different traditions of religion and environmentalism" (151) which might bring together

[13] An extensive analysis of religious perspectives in *Flight Behavior* and their localization in Kingsolver's work is given by Liliana M. Naydan in *Rhetorics of Religion in American Fiction* (162-76).

people of multiple backgrounds under a worldview that "embraces science" (150), while acknowledging its limitations on certain questions.

While a religious worldview might be more difficult to maintain in the times of second modernity, the example of Bobby Ogle shows that a character's religious orientation does not necessarily say anything about their cosmopolitan attitude. Interestingly though, with the exception of Bobby Ogle, the more open-minded characters in the novel display a rather detached attitude towards religion: Dovey has created a hobby out of photographing all the different, quirky "one-liners in Christ" she comes across in her life, and clocked in "enough church hours in childhood to do her for life" (*FB* 65); Dellarobia herself is characterized by her mother-in-law as a "911 Christian" (60), who only turns to religion when she needs something – which often is simply a place to be outside her home and socialize – and got evicted from the local bible study group for demanding the same inherent consistency from the holy book as she would from any other story. While he respects the grace spoken before their first shared meal, Dellarobia notices Ovid Byron does "not close his eyes for the prayer either" (115). In contrast to the prevalent religiosity in Feathertown, Byron's devotion to science and human agency is presented as passionate to a degree that is comparable to religious faith (318), drawing a parallel to Beck's argument that "Risk enters the global stage after God has made his exit" (72).

The townsfolk's reliance on external authorities and simple solutions is accompanied by a remarkable short-sightedness, manifesting in Burley 'Bear' Turnbow senior's decision to enter a contract with the foreign logging company 'Money Tree Industries', enabling it to clear out the entire family grove in order to make just a singular repayment of his equipment loan. The preference for such 'brute force' methods that do not take possible consequences into account continues in his plan to kill all the monarchs with the illegal insecticide DDT, as they turn out to pose a problem for his logging plans.

It must, however, be noted that, despite their isolationism and shortsightedness, the inhabitants of Feathertown are not portrayed in a villainous way but are presented as victims of their surroundings. The complete neglect of high school education in favor of sports – manifesting in the biology teacher / basketball coach regularly cancelling class to go "shoot hoops" (222) – leads to a situation in which unqualified former high school footballers hold key positions in the town's administration. The low-paying, working class jobs available in

town additionally force Feathertown's inhabitants to abstain from activities or purchases that could enable them to escape their isolation. Neither Cub nor Dellarobia have ever seen a different country; they do not even own a computer that would allow them to access the global information source that is the internet. Their newspaper subscription has to be cancelled for financial reasons, and their background as 'hillbillies' marks them out as a constant target for ridicule from more privileged members of society. Leaning on Kari Norgaard's 2011 Study *Living in Denial: Climate Change, Emotions, and Everyday Life*, Axel Goodbody underlines the fact that climate denial is a complex psychological and social process, growing from a combination of factors. Chief among them is the sheer overload of mentally dealing with highly complex problems beyond individual control, while simultaneously having to live under a multitude of far more immediately existential, personal crises (51, 52).

In addition to a fatalist approach to religion and general psychological difficulties in accepting climate change[14], Murphy identifies two other reasons to explain the existence of Feathertown as a place without perspective, which are again attributable to external authorities: "[T]he preference to believe popular media people over scientists because the former provide easy answers that require no fundamental changes in a person's belief system or their behaviors" (160) is the first of the two, and relates to the only truly villainous characters within the entire novel, fictional news anchor Johnny Midgeon and television reporter Tina Ultner. Midgeon is the first personification of the popular (and populist) media. Though never appearing in person, he is repeatedly mentioned and referred to as the embodiment of a vocal, conservative, climate change denying media, whose commentary seems to be the only source of information for the town, while the academic elite would never tune in to his show, as they "already know what they're going to say" (*FB* 230). His main scientific qualification appears to be the fact that he "gives the weather report" (261), and ridicules environmentalist politician Al Gore to "come toast his buns" on the local snowfalls. Another example of such reliance on external guidance can be seen in Crystal Estep's attempt to have her son's obnoxious behavior justified by famous advice columnist 'Dear Abby'. In her

[14] This psychological problem essentially summarizes Moser's study of challenges to communicating and understanding climate change – among others, the invisibility of causes, perceived distance of impact, and the lack of gratification for taking action – and Kari Norgaard`s findings of people "not really wanting to know" about seemingly inevitable, life-changing events, a result of her groundbreaking study of climate denial in a rural, west Norway community during the unusually warm winter of 2000/2001 (7-8).

explanation sent to the columnist, she twists reality to a degree that the true story and its evaluation have nothing to do with the situation she explains – all that matters is for a famous authority to take Crystal's side in the dispute (88). Again, however, Crystal comes across less as a villain and more as a helpless and overchallenged single mother who cannot keep her two sons under control and is attempting to protect her sense of self-worth.

If *Flight Behavior* features a true villain, that role is filled by Tina Ultner, the self-centered news reporter who is bent on creating a sensational story about the butterflies and blatantly ignores both the truth as well as the wishes of her interview partners in her search for the most attractive picture. Upon her first interaction with Dellarobia, the working-class mother is blinded by Tina's immaculate appearance and domineering personality and agrees to an interview against her better judgement. Despite explicitly stating that none of the personal information Dellarobia let slip would be used in the eventual article, Ultner ends up constructing her as a suicidal renegade who was only stopped from ending her life by the miraculous sight in the grove. While this first encounter already paints a highly negative picture of Tina Ultner, her final appearance sees her confronted with the far more confident and skeptical Ovid Byron who does not fall into the trap of unintentionally helping her construct the 'TV reality' that best suits her viewers' desires. Initially fascinated by the scientist`s unconventional laboratory in the barn, Ultner is quickly irritated by his uncooperative attitude and attempts to steer Byron towards supporting her idea of the butterflies as a beautiful sight. When Ovid objects, and stresses the phenomenon's strongly negative implications regarding the global climate, her otherwise flawless smile cracks, her voice turns frosty, and she threatens that the scientist is "going to lose [his] audience" (366). Repeatedly suggesting that Byron adjust his story to the overwhelmingly positive feedback her station has received regarding the butterflies, and relativizing the scientific consensus on global warming, the "interview" turns into the aforementioned viral YouTube rant, leading to a quick wrap-up on the part of Ultner, who exits the barn with her voice a shrill pitch (369). The media that was an abstract entity in *Carbon Dreams* is personified here in the form of a manipulative dazzler, allegedly controlled by the oil-industry's PR firm (368) and providing the greatest barrier between experts and laypeople in risk communication.

Finally, Murphy holds responsible the "educated middle-class professional strata of the population" (160) and their failure to cater their well-meaning but ultimately uninformed

activism towards the underprivileged. His interpretation holds true for the obscure character of Mr. Atkins and his "Sustainability Pledge" (*FB* 327), a document which is designed to help people root out their unsustainable behavior in various categories, and thus lower their carbon footprint. While this is an interesting idea in theory, SUV-driving Mr. Atkins sabotages his own account with his condescending, hypocritical behavior, alienating those who he attempts to persuade. In addition, the pledge is clearly aimed at the upper middle-class section of the population, and thus utterly lost on Dellarobia and her fellow citizens from the start (327-28). While Mr. Atkins certainly represents precisely the type of failing middle-class activist Murphy criticizes, the novel also features characters whose grassroot activism is successful in raising awareness of environmental problems. Where Mr. Atkins is a perfect example of pursuing a well-meaning but ultimately futile attempt to transfer the idea of a sustainable lifestyle onto a demographic that cannot relate to him at all, the fictional group "womyn knit the earth" (300) represent an unorthodox yet successful attempt at actively influencing society for ecological benefit, much like the real world website '350.org', which is also mentioned by Ovid Byron himself as contributing towards combatting climate change.

2.4. Conclusion

In conclusion, both risk narratives of anticipation analyzed in this chapter illuminate social divides that hamper the emergence of an (eco)-cosmopolitan society fit to respond to the global risks of second modernity. As lab lit novels set respectively in the relatively recent past and present, they do so by focusing on an accurate, realistic portrayal of scientific work, and the difficulties the academic world and scientific ways of thinking have to face when confronted with different ways of thinking and the uncertainty created by complex systems that marks the world risk society. The accurate description of science, which is achieved through the elaborate characterization of scientist characters and their routines, is challenged in these novels by the intimidating complexity of second modernity, which has transformed Planet Earth, not yet on a *visual*, but on a *conceptual* level – a transformation reflected in the figurative construction of the planet as a mere laboratory for Revelle's "Great Experiment" (*CD* 169, 349) and the literal formulation of "a new earth" in *Flight Behavior*'s closing words

(433). Both novels emphasize the significance of this transformation in metaphorical language: *Carbon Dreams* relies on the use of sublime imagery on its final pages, when Tina Arenas returns from her congressional hearing, and experiences a "spectacular Atlantic storm" (351) pouring over her new home in New York. *Flight Behavior* achieves similar effects by using strong religious imagery in its description of the environment, allegorizing the "unearthly beauty" (15) of the butterflies with Moses' burning bush (16), in Dellarobia's salvation of the newborn lamb and, obviously, in the flooding event at the end of the novel that washes away her past and virtually gives way to the new earth, making use of "the dominant literary strategy for locating climate change" (Trexler 82) in the past forty years. The creation of these new earths also reflects upon the novels' focalizers, who, in completing their personal development, both leave their former homes and social connections behind to move onto an entirely new environment where they can make use of the knowledge and abilities they have gained along the way.

As risk narratives of anticipation, both climate change novels discussed here avoid the "future perfect subjunctive" tense and mood which Greg Garrard postulates as the distinctive grammar of climate change (297). Despite the fact that *Flight Behavior* already features a certain degree of natural loss in the destruction of Michoacán, and that both novels address predictions of devastating futures, Lloyd and Rapson emphasize that this is "a foreshadowing of what *may be* inevitable rather than a depiction of what *may happen* after the inevitable has occurred" (925). While the outlook is not necessarily described in an optimistic way, both novels theoretically leave time to act between the time of their narrative and the potential catastrophe, though in both cases, the communicative boundaries between different levels of non-knowledge, as well as the manipulations enabled by them, represent a major challenge to any meaningful action being undertaken. In both cases, the interaction of scientists with other scholars, policymakers and laypeople, and a careful use of the media are the reasons behind most successes within the stories, while at the same time the failure to break out of isolation and careless attempts at communication are responsible for the setbacks. In illustrating these challenges in a scientifically accurate yet (for instance by employing powerful imagery) emotionally accessible way, risk narratives of relatively pure anticipation grant opportunities beyond purely artistic and cultural value. They provide the chance to serve as real world facilitators of solutions to the problems and challenges so central to their own narration.

Chapter 3

Evaluating the Invaluable:

Market Capitalism and Social Justice in the Risk Narrative of Transformation

[Climate fiction] reflects the basic realism of near-future science fiction, and is just the latest in the names people have given it; in the 1980s it was often called cyberpunk, because so many near-future stories incorporated the coming dominance of globalization and the emerging neoliberal dystopia. Now it's climate change that is clearly coming, even more certainly than globalization. That these two biophysical dominants constitute a kind of cause and effect is perhaps another story that near-future science fiction can tell.
(Robinson, *Everything Change* X)

The previous chapter outlined the challenges anthropogenic climate change poses in terms of understanding and communicating its implications for the future of our planet. While the controversy about the possible futures it might produce is provoking fierce debates, and the first effects of rising sea levels and increasing weather extremes can already be felt, the impacts of climate change become most visible in the barometer of public opinion that is the global economy. In the words of Sir Nicholas Stern, Head of the Government Economic Service and Adviser to the British Government on the economics of climate change and development, in his Review of *The Economics of Climate Change*: "Climate change presents a unique challenge for economics: it is the greatest and widest-ranging market failure ever seen" (1).

In his introduction to *World at Risk*, Ulrich Beck names global financial risks as one of the three "'logics'" that characterize his model of the world risk society (13). The reflexive aspect of his second modernity lies precisely in the fact that the neoliberal "consensus on progress, the abstraction from ecological consequences and hazards" (*World Risk Society* 73) have by now moved to the center of political debate and are no longer ignored. However, while Beck considers the 'logics' of environmental crises and financial risks to be "interrelated" but separate, close analysis of anthropogenic climate change clearly shows that they can, in fact, be understood as two symptoms of the same illness. The process of globalization that has brought humanity to the point of being an undeniable, geological force, and that has led to the rise of the world risk society, was only possible on the back of a liberal market economy that treated the environment as a source for capital income.

3.1. Approaches to the Economics of Climate Change

On the highest levels of policymaking, the environmental effects of climate change and possible countermeasures are mainly understood from a perspective of short-term economic impact. This was the case in 2001, when George W. Bush justified his government's forgoing of the Kyoto Protocol by highlighting the projected "negative economic impact, […] layoffs of workers and price increases for consumers" that the protocol would cause for the United States (Bush); and it was still the case in 2017, when Donald Trump used virtually the same argument to explain the United States' withdrawal from the Paris Agreement, which he assessed would "undermine our economy, hamstring our workers […] and put us at a permanent disadvantage", while the then inspector general of the Environmental Protection Agency, Scott Pruitt, called the withdrawal "an historic restoration of American economic independence" during the same announcement (Trump and Pruitt).

This understanding of climate change as a mere inconvenience that does not justify economic setbacks to counteract it is not only prevalent in politics, where short-term effects naturally carry additional weight due to their impact on elections, but also among influential scholars. At a public lecture held at Bayreuth University, Joseph Heath, Member of the Canadian Royal Society argued that "while climate change may lower life expectancy, increasing per capita GDP by an order of magnitude is likely to raise it by a good deal more, effectively ensuring that no one's rights will be violated (or need be violated) under the BAU[15] scenario". While explicitly not arguing that climate change should be outright ignored, Heath strongly recommends that 'alarmist' philosophers "should be taking economic growth much more seriously" (18). In this line of thinking, which assumes economic growth as the ultimate answer to global problems, Heath constructs his arguments in a similar way as Nobel Laureate Robert Lucas, who states that

> [t]he potential for improving the lives of poor people [which, following the conception of global climate change as a mainly economic phenomenon, will include the generations hit in full by its effects] by finding different ways of distributing current production is *nothing* compared to the apparently limitless potential of increasing production. (8, italics in original, my underlining)

[15] Business as Usual, referring to a political agenda that abstains from enacting any countermeasures against climate change at all, and instead continues to focus entirely on increasing global wealth via unhindered economic growth.

The conclusion Heath and Lucas arrive at – that the wealth generated by continuous economic growth will be sufficient to offset the potential damages caused by runaway climate change – presents a stark counterpoint to the assumed non-compensatability of global risk that is fundamental to the concept of the world risk society. Simultaneously, it also radically contradicts the works of other economists, most prominently among them the aforementioned author of the *Stern Review*, as well as William Nordhaus, 2018 recipient of the Nobel Memorial Prize in Economic Sciences for his work on "integrating climate change into long-run macroeconomic analysis" (Royal Swedish Academy 1). In one of his latest works, Nordhaus warns of the dangerous fallacy that due to the significant "impact of uncertainty on [climate] policy […] [i]t might be tempting to conclude that nations should wait until the uncertainties are resolved, or at least until the fog has lifted a little." His study instead comes to the opposite conclusion and urges a rapid political response, as unlike Heath, Nordhaus estimates that the relative cost of climate policy will increase over time (359).

No matter the position one adopts, the sheer existence of radically diverging approaches to the economic questions on climate change, the prominence of supporters on either side of the debate, and the massive influence economic analysis has on political decision-making leave no doubt that "[e]conomics [are] at the heart of arguments about climate change policy" (Hulme 109). At the same time, the debate is unlikely to be settled in the near future, as simple changes in calculation (most prominent among them the discount rate that is applied to impacts on future generations) result in fundamentally opposing implications for action. Essentially, Beck's theory of risk staging can be applied equally well to the economic discourse as it can to the scientific one. The massive controversy regarding both the general economic perspective, and the more concrete implications of the respective approaches, lead to the second reason for climate change disagreement, which Hulme formulates as the different ascription of [economic] value towards "activities, assets, constructs and resources", both in the present and the future (112).

This short overview has shown the controversy that exists around the topic of climate change as an economic phenomenon, even within the field of neoliberal economics or classic welfare capitalism. Yet if climate change is understood as a global risk in the world risk society, even these economic models are called into question. Beck himself deems the "neo-liberal regime […] counterproductive" for the challenges of the world risk society, such as "inequality,

poverty, […] global environmental and technological risks [and] tensions between capitalism and political freedom, the market and democracy" ("Cosmopolitan State" 153). For other theorists, even the welfare-economic ideas of the *Stern Review* "maintain allegiance to an economic orthodoxy which perpetuates the dominant political myth that traditional economic growth can be both sustained and answer all our problems" (Spash 706). The idea that the global economic system, which has played an important part in elevating humanity to the point of being a geological force, might not be suited to solving the problems that accompanied this elevation is mainly discussed in what Hulme calls "more radical" economic theory (130). As these 'more radical' ideas play an important role in the novels I analyze in this chapter, the final concept introduced here originates from this critical view of capitalism. It transforms the concept of the Anthropocene as introduced by Paul Crutzen and Eugene Stormer into the concept of the *Capitalocene*, taking into account the social justice approach that "neoliberal globalization" and the continuous growth it has brought to the most privileged regions in the world was achieved at the cost of the "health and livelihood of the poor most directly" (Nixon 46).

The concept of the Anthropocene assumes that the growth of human dominance over the planet has led to a point where humanity has become a geological force that is no longer simply inhabiting Planet Earth, but shaping and influencing its geology on a lastingly significant level. Currently under review by the International Commission on Stratigraphy, the Anthropocene is proposed as a new geological epoch to succeed the current Holocene. In this geological understanding, scientists are currently looking to identify a geological marker in global sediment that would allow for the new epoch to be formalized (Zalasiewicz et al. 59). The term has, however, quickly outgrown its roots in the geosciences, and the "courageous" new understanding of humanity soon became an important concept in the humanities. The new conceptualization of nature and humans' place in and relationship to it, all embedded in a comprehensible framework that could encompass many elements of globalization and global risk, has since become one of the most influential concepts "across the spectrum of Green Thought" (Moore 3).

Despite its comprehensibility, and the resulting surge in its popularity and influence, the Anthropocene has not been free from criticism, especially regarding its frequent use in the humanities. The main point of critique lies in the fact that while the concept and the proposed

epoch are adequately named after human influence on the planet within geoscientific terminology, the term does not hold up in the liberal arts, as it reduces complex questions of "'society'", "'nature'", "power and class" to the generalizing factor of "humanity". Jason Moore acknowledges that the concept of the Anthropocene provides a new perspective on globalization discourse: "[t]he Anthropocene sounds the alarm – and what an alarm it is!", continuing, however: "But it cannot explain how these alarming changes came about" (5). Instead, he develops a different approach. He does not identify industrialization and technological progress as the ultimate source for the rise of second modernity but embeds these factors in the overarching system of global capitalism. Importantly, capitalism is not understood here as a purely economic idea but "as a new way of organizing nature, and therefore a new way of organizing the relations between work, reproduction, and the conditions of life" (85). Within this framework of capitalism as the organizing principle of second modernity, Moore emphasizes that "the story of Humanity and Nature conceals a dirty secret of modern world history. That secret is how capitalism was built on excluding most *humans* from Humanity – indigenous peoples, enslaved Africans, nearly all women, and even many white-skinned men (Slavs, Jews, the Irish)" (79). Following this argument, the eponymous anthropocentrism behind the Anthropocene is refocused: not "humanity" but capitalism is seen as the organizing societal principle. This leads to the term *Capitalocene* as a proposed alternative for the Anthropocene 'buzzword' in the humanities. In Moore's understanding, mere laws and regulations aiming at a reduction in CO_2-emissions and other climate-damaging actions cannot provide a successful answer to second modernity. Instead, the solution can only be found in a departure from market capitalism:

> To locate modernity's origins through the steam engine and the coal pit is to prioritize shutting down the steam engines and the coal pits, and their twenty-first century incarnations. To locate the origins of the modern world with the rise of capitalism after 1450, with its audacious strategies of global conquest, endless commodification, and relentless rationalization, is to prioritize a much different politics—one that pursues the fundamental transformation of the relations of power, knowledge, and capital that have made the modern world. Shut down a coal plant, and you can slow global warming for a day; shut down the relations that made the coal plant, and you can stop it for good. (94)

Such radical thoughts of changing the very roots of (Western) society's underlying systems such as global capitalism are notoriously unpopular among policymakers across the established political spectrum, given the fact that they came into power under the very system

these thoughts call into question. Within the realm of fiction, however, the transformation of the entire societal system, just like the transformation of planetary spaces, becomes a highly interesting thought experiment. Unlike the novels in the previous chapter, the risk narratives of transformation analyzed in this chapter present a significant spatial development in their respective storyworlds, which in both cases focus heavily on the city of New York as a prime example for the multitude of coastal megacities around the globe that are endangered by rising sea levels. In both novels, the transformative events are enormous floodings, which are thematically connected to the financial system. While the *potential* for catastrophe – meaning global risk – is portrayed as a great opportunity to amass enormous financial gains through morally questionable but technically legal business practices, these practices all fail spectacularly upon the catastrophe's actual *realization*. For Nathaniel Rich's *Odds Against Tomorrow*, the focus lies on the utter helplessness of those who appear to have "mastered Risk" (30) in the face of actual catastrophe, and on the disillusioning realization that the revelation of such helplessness does not necessarily lead to a change in society.

Kim Stanley Robinson's *New York 2140*, which moves 130 years into the future, presents its reader with a world in which the realization of environmental catastrophe has occurred not once, but twice. New York 2140 works under the premise that the societal model that allowed these catastrophes to happen has not changed at all. While their temporal settings are decidedly different, both novels explore the complex relationship between nature, society and economy in a world that has already transformed significantly under the pressure of global risk, but in which the preexisting social system is still able to uphold order. This order is questioned within the narratives, however, as both novels challenge capitalism from their fictional perspective, both by emphasizing the problems of capitalist society, and by exploring ideas of alternative economic models.

3.2. Marketing the (Un)imaginable: Capitalism in *Odds Against Tomorrow*

The very first paragraph of *Odds Against Tomorrow* presents its reader with no less than four deterritorialized risk scenarios of devastating destructive power. Despite this prominent presentation, however, the novel's unnamed narrator is quick to clarify that neither he nor any of his peers at the University of Chicago are losing any sleep over the "erupting supervolcano that would bury North America under a foot of hot ash", a potential nuclear conflict between the U.S. and China, "a modern black plague" or a "new dark age" brought forth by asteroid impact (1). Their anticlimactic calm is due to the fact that these prophecies stem from the mind of their fellow student Mitchell Zukor, a mathematical genius but also socially inept oddball, whose deep fascination with catastrophic risk is well known to be an unsuccessful coping strategy for the "very real terror" (1) he feels when thinking about the future.

Not even trying to fit in with his peers, Mitchell, the son of an aging Hungarian immigrant and slumlord, constantly researches new kinds of risk scenarios and in a "near-nightly ritual" (1) comes racing out of his bedroom, quickly scribbling and calculating new findings, finally falling asleep over his work. He is prepared for all kinds of hypothetical disasters, but when a 'real' catastrophe unfolds in the form of a megathrust earthquake laying waste to the city of Seattle during one of his classes, he is just as stunned as the rest of the attendants. It is with this sudden manifestation of one of Mitchell's scenarios, which had previously been purely theoretical constructs, that *Odds Against Tomorrow* turns its entire storyworld into a singular riskscape. The combination of the plethora of scenarios presented to the reader in the form of Mitchell's research, and the early, unexpected realization of one of them creates an atmosphere of constant threat. This is reflected within the story itself, when the narrator, who remains Zukor's unnamed classmate during the first chapter, recalls that upon their graduation the following year, "the panic raised by the Puget Sound earthquake had become part of us. It was slapped across our faces like a birthmark. We were dubbed Generation Seattle. Both the best and the worst suddenly seemed possible" (11). Within the first eleven pages of the novel, the uncertainties of the future enter the story's reality with great effect.

The different risk scenarios presented in *Odds Against Tomorrow* are not necessarily global or anthropogenic in nature, as the example of the huge earthquake in Seattle illustrates. On the

contrary, with the exception of extraterrestrial threats such as an asteroid impact, earthquakes are perhaps among the most dangerous and devastating risk scenarios that are largely unaffected by human activity. In this case, the human component that contributed to the disaster's catastrophic scale lay in the carelessness of building a large number of skyscrapers within a known riskscape of major geological activity, which ultimately leads to the death of thousands of Seattle office workers. Still, the Puget Sound earthquake seems to be contained in a singular location, and therefore, a point could be made for not considering it in an analysis of global, anthropogenic risk.

However, this primarily local risk becomes deterritorialized, and thus transcends its local borders, with the events that follow the Seattle catastrophe. The colossal indemnification lawsuits filed against the destroyed buildings' proprietors by the bereaved families of those who perished in the catastrophe spread the consequences across the continent. The verdicts end up leaning heavily towards the bereaved. After the jury is confronted with the highly emotionalized pictures of iconic landmarks being destroyed and the testimonials of children and families, "someone needed to pay for this" (15). While the event of the earthquake itself marks the alumni year of Mitchell Zukor as "Generation Seattle", the following financial disaster is what detaches the earthquake's consequences from its original locale to the other side of the continent, represented by New York City, three thousand miles away.

Following the introductory chapter, which tells the story of Mitchell Zukor's past and the origins of 'Generation Seattle' in a flashback, space in the novel is transformed in three stages: first, there is the construction of a riskscape for the reason of profit; second, this riskscape unravels during the hurricane; and, third, space is transformed by adjusting to a new risk reality. This trifold structure corresponds with the three parts of the novel which are marked by Mitchell's flourishing career as a risk salesman, Jane and his journey through the catastrophic hurricane, and Mitchell's new life in the Flatlands.

3.2.1. Monetizing Fear: Mitchell Zukor as a Risk Merchant

The transformation from a locally definable risk of earthquake into a deterritorialized risk of financial loss marks a key aspect of the narrative: "Blood would be converted to treasure" (15). The practice of converting damage into monetary value is a necessary concept in modern

day economics, in order to create comparability between otherwise incomparable situations (Heath 19), and it is highly practical in the case of material damage. When expanded to calculate the monetary value of irretrievable elements such as cultural heritage, biological species, or even human lives, however, the concept quickly loses its appeal, as the very idea of monetization implies the possibility of repairing the damage, or, at least returning to the damaged an object of equal value. Despite this obvious difficulty, the lack of alternatives makes this monetization of human lives a necessary evil as a substitute for true compensation in certain cases[16]. The cynicism of virtually transforming human bodies into 'human capital' or "treasure" for their bereaved notwithstanding, the economic challenges do not stop here. In one interspersed sentence, *Odds Against Tomorrow* works with Beck's proposition to measure the world risk society's loss of control by an increasing absence of private insurance (Beck, *World at Risk* 132-33): "The exchange rate was brutal. That's because the insurance industry, after the terrorist attacks at the turn of the century, had discontinued major catastrophe coverage" (*OT* 15). With the risk of global terrorism as a catalyst, the insurance industry retracts from "major catastrophes", and in doing so, creates a void in the system. Without the fallback plan of being able to insure their human capital, the monetary value of human life suddenly becomes a factor in the long-term financial planning of large companies, and the cynical reality of non-compensatable risk is formed: "The loss of life, if regrettable, they could overcome. It was the loss of capital that brought the chief executives to their knees" (14).

In the aftermath of the Seattle catastrophe, Sherman-Fitzsimmons, the wealthiest tenant company in the Empire State Building, tasks fresh-out-of-college associate Mitchell Zukor with calculating the monetary value of each of their employee's lives. As the Empire State Building is described as the most disaster-prone building in all of New York, and one which has to be evacuated nearly once a year due to various risk scenarios, the firm is now knowingly facing the risk of fatalities among their workforce and needs to assess the scale of potential financial loss it must be prepared for. Importantly, the knowledge regarding these dangers does not lead to any other preventive action: "[F]leeing New York, or even the building, was inconceivable. The firm would be perceived as craven, weak, fearful. Or worse: un-American. Shares would cannonball. No, they had to stay put" (15). Thus, ignoring any ethical implications regarding the commodification of human lives, a problem of endangering human

[16] See for example the financial compensation paid to the bereaved of civilian casualties of U.S. military operations (Ali).

beings is transformed into a question of financial survivability. Additionally, the fact that this transformation is constructed as a deeply American way of thinking – acting according to its maxims in order to protect the company's public image – expresses a strong critique of a neoliberal U.S. market capitalism. This is highlighted even further when Mitchell appears to expose the plan's futility, given the fact that a catastrophe within the building would also likely lead to the death of Sherman-Fitzsimmons' leadership and thus eliminate the problem of financial repercussions in morbidly brutal fashion. When he confronts his superiors with this thought it is revealed to him that the company's executives do not work in the building at all, despite still maintaining their offices with "chocolate leather couches unbroken by sitting and dim mahogany lamps that emitted insufficient light for reading and tufted, untrampled carpets, soft as sea-moss" (17).

This miniscule piece of information essentially sums up the perversion that had been previously ignored in the unemotional business meeting in Sherman-Fitzsimmons' conference room. The exclusion of the executives from the same risks that they are willing to enforce for their employees illuminates the completed transformation of employees into a combination of numbers: they are identified by fourteen-digit identification codes (19) signaling an individual, financial value, all under the pretext of 'American-ness'. For Mitchell, this critique of modern-day market capitalism is topped off with personal humiliation, as his own calculations reveal to him his personal value for Sherman-Fitzsimmons: At a depressing $266,213, Mitchell's life is the second least valuable one on the entire employee list.

Annoyed by his naiveté at not having negotiated for a higher salary (which would have increased his value), Mitchell's research repeatedly confronts him with an ad for FutureWorld, a startup company promising to answer the question of "what the future will cost you" (19). Curious, Mitchell meets up with the company's founder Alec Charnoble and is fascinated by the company's business model, which aims to fill the gap in the market left by the retreated insurance industry. FutureWorld has specialized in "minimizing losses that may result from unforeseen or worst-case-imaginable scenarios" (21) without having to rely on any form of compensation. This business strategy has been dubbed "ingenious" by Antonia Mehnert (140). It is made possible through political manipulations undertaken by FutureWorld's powerful parent company. Ensuring an "earmark" in a legislative bill following the Seattle earthquake, the bill now includes "'a defense to liability claims'" (*OT* 28) for the proprietors of office

buildings, as long as they can prove to have made "'reasonable, good faith effort'" (28) to shield the building from higher power events. As these efforts do not necessarily have to include any proactive measures, but can also be fulfilled via the simple act of receiving risk counseling, any firm, after having paid a substantial amount of money – which is the equivalent of 'undertaking reasonable effort' – gains immunity from the compensation charges that had "brought the [Seattle] executives to their knees" in the past. Since insufficient counseling is not a liable offense either, no party can be charged with the financial compensation for potential catastrophes, and the unavoidable residual risks of the world risk society appear to have been turned into a win-win situation by political, legislative, and financial manipulations. The fact that once again this merely transposes the residual risk over to the bereaved, who can no longer receive any form of (partial) compensation for the loss of their family, is ignored both by Mitchell and Charnoble in the face of the financial opportunity: "[W]e don't even have to compete with the insurance firms for catastrophe money. Catastrophe is all ours. *We're going to make a killing*" (30, my emphasis).

When Mitchell's remarkably detailed calculations of human value fail to earn him a spot in Sherman-Fitzsimmons' prestigious department for risk analysis, he quits his unfulfilling job there and takes a position at FutureWorld, completely dedicating his career to the analysis and commodification of risk. At FutureWorld, the research on and development of risk scenarios begins to dominate his life even further, and the novel begins to explore a plethora of global and local risk scenarios. As Mitchell's new life revolves completely around his ability to convincingly project visions of potential future catastrophes to his clients, he quickly establishes an ordered repertoire of scenarios:

> With a new client, he began by discussing Sino-American military conflict, and for the next several meetings he rounded out the war quartet with hour-long sessions on Iran/Israel, India/Pakistan, and the Koreas, war-gaming the rapid ascension to regional, then total nuclear war. […] Even a 'small', regional nuclear war, such as Iran and Israel exchanging bombs, would kick up enough ash and particulate residue to dim the sun and cause global crop failure. A billion people would starve to death. […] He then turned to public health scares: the mass production of tainted meats; the poisoning of the water supply; a gas explosion on the sewers; an airborne toxin that escapes from a chemical factory on a windless day and floats into a major city; an explosion at a nuclear power plant […] Then there was the possibility of a pandemic, […] a special feature on terrorism. […] Then earthquakes, floods, wildfires, tsunamis. […] Finally, large-scale financial fiasco: The dollar collapses; a major foreign currency fluctuates violently; the real estate market slides eighty percent; the World Bank files for bankruptcy; commodities soar, leading to food riots and political instability. […] [T]he

> collapse of industrial agriculture, travel, and international trade; a return to premodern agrarian life. (71-73)

While *Odds Against Tomorrow*'s main storyline strictly follows Mitchell's career through the exploitations of the risk market and commodification of his clients' fears, a notable second storyline develops alongside his success: Elsa Bruner, a former classmate of Mitchell's, whom he had saved from a heart attack during the chaos of learning about the Seattle disaster, unexpectedly contacts him in a letter, thanking him and explaining the changes her life has undergone since (33). Following her heart attack, Elsa has left college and moved to Maine, where she has founded a self-sustaining farming community together with her boyfriend and several mutual acquaintances. Built on the ground of a former youth summer camp, the developments on 'Camp Ticonderoga' described in Elsa's letters accompany Mitchell's life in corporate finance; reading and responding to them becomes a regular part of his routine. As the entirety of *Odds Against Tomorrow*'s first part is set in central Manhattan, the construction of Ticonderoga presents an alternative space to the skyscraper-ridden world of global capitalism until the transformative event of the hurricane. When Mitchell asks Elsa why she – with a condition putting her at constant risk of another heart attack – has willingly secluded herself from access to hospitals, the internet, or even a phone line, she reveals her vision of developing an "entirely new way of living" (64). Elsa and her companions are keenly following an alternative, sustainable lifestyle: "Shopping for overalls in Augusta is better than shopping for overalls online, but weaving our own overalls out of hemp is better still. Nudity is best" (89). While their activism is also ironically inflated – for instance, when an inhabitant of the camp is found arguing against cleaning the camp fountain of mold, as it also represents a "colony of living organisms" (89) –the inhabitants of Ticonderoga do make a case for a departure from the rationality-driven way of life that dominates the cities: "Rationality has made a mess of this world. Rationality isn't helpful or useful, and it's certainly not exciting. We want to trust our impulses more" (64). With this formulation, Camp Ticonderoga becomes a countermodel to everything that Mitchell's Manhattan represents. The faceless legions of associates and partners working in law and finance there are contrasted with a small group of friends that is working together to create their personal, utopian farming life. Whereas Mitchell and colleagues buy clothing worth more than a monthly rent payment (151), the group at Ticonderoga attempts to sew their own overalls. While the issue of global warming at best plays a small role in Mitchell's doomsday scenarios, Ticonderoga is outfitted with solar

tubes and other sustainable technology. And in their rejection of rationality, the Ticonderogans promote a direct counterculture to the fundamentally calculation-based capitalist ideology that dominates Mitchell's working environment.

Antonia Mehnert notes that, "[i]nterestingly, Rich does not once mention the term 'climate change' in his novel". Nevertheless, she reads the events leading to the catastrophic flooding of New York City as a confirmation that "climate change involves the only risks that [Mitchell] should have taken seriously" (135). It is true that weather phenomena amplified by climate change constitute a significant part of Mitchell's scenarios; the catastrophic hurricane, around which the novel's second part revolves, can certainly be understood as one manifestation of a series of worsening climate conditions. Rich also repeatedly works the worsening climate into Mitchell's predictions but without dubbing them 'climate change', instead speaking of a "warming world" (97), "new meteorological patterns" (254), the weather becoming "increasingly erratic" (286), and a general worsening of weather conditions, including a massive increase in hurricanes and floods (195, 234). While the risks brought forth by global climate change are ultimately the ones that radically transform both New York City and Mitchell's understanding of coastal living space upon their occurrence (196), they are not the only ones impacting the storyworld. Given that the initial catastrophe in Seattle is entirely unrelated to climate yet triggers the developments that allow for the story to unfold, I read Rich's work as a climate change novel, but much more as a novel of global risk, in which the importance of a risk's source is overshadowed by the interconnected society that allows it to become a deterritorialized, global threat.

Mehnert's position is not entirely unjustified, however, as the Seattle earthquake is only indirectly narrated via the Chicago news in the first chapter and later referenced due to its financial consequences. Every other risk scenario – some of them laid out in significant detail – either remains anticipated or can be connected to the occurrence of the hurricane and the flood that follows, and thus related to climate change. *Odds Against Tomorrow* can thus certainly be called a climate change novel, while simultaneously illustrating the even larger picture of global risk.

Both risk narratives of anticipation covered in the previous chapter end with descriptions of weather events – a sublime, "spectacular Atlantic storm" (*CD* 351) and a flood – which I read as signifiers of a "new earth" (*FB* 433), understood in the light of global change brought forth

by the climate risk. In *Odds Against Tomorrow*, such a change-bringing event does not constitute the narration's finale but acts as a caesura, concluding the section about Mitchell's career as a FutureWorld risk salesman and confronting it with the 'reality' of disaster. In doing so, the novel moves away from a focus on anticipating catastrophe towards an engagement with the catastrophic consequences of risk realization, and turns into a risk narrative of catastrophe.

3.2.2. A Clash with Reality: Catastrophe-Induced Transformation

The transition between the anticipatory arc of the novel and its conclusion in the aftermath of catastrophe is foreshadowed by several occurrences and developments. On the very day that Mitchell receives his first check from his new employer, he encounters several doomsayers in the streets of New York. These prophets in themselves are not a remarkable sight in the neighborhood, rather the surprising element on this day lies in the fact that the crowds are actually listening to them. The rhetorically versed preacher rejects the understanding of mankind as "intricately wired meat" (51), directly analogous to the numerical objectification in Mitchell's calculations. In this world, where humans have become sacks of meat that are measurable only by their financial value to their employer, "[a] feeling was building. An urban malaria, a future-affected anxiety disorder" (51) has affected the masses, an intangible sense of dread that makes Mitchell's new favorite food taste rancid and acts as the first tactile herald of impending catastrophe.

This first glance at catastrophe is not addressed further, however, and initially, FutureWorld enters a surging streak of success, acquiring new clients and more than doubling Mitchell's salary. Their success is also helped by what is initially described as an "unusually arid summer" (75) – the tactic of having clients sweat uncomfortably during their meetings produces good results. Analogous to the difficulties of talking about global warming in the face of cold weather that was an issue in *Carbon Dreams*, the heat streak and its coverage in the media "seemed to contribute to the anxiety that had settled like a poisonous cloud over the country" (ibid.). As the now catastrophic drought continues, and claims its first life (ibid.), despite the still surging value of FutureWorld, the novel's tone shifts further in the direction of dread.

Mitchell's eschatological client presentations reach a new, entirely illogical but biblically graphic level, when he literally begins describing the end of days to his primary client:

> The East River has turned into blood. The Harlem into blood. The Hudson – also blood. Blood spurts out of the tap. There is a red ring around the shower drain. Blood comes out of there too. […] The blood is thick and dark, almost black […]. It clots the pipes. Plants and crops start to wither. People raid supermarkets for bottled water. When that runs out, they start drinking the blood. […] The blood is nothing like normal human blood. It tastes awful. […] "This taste," said Mitchell, "this is the taste of the future." (79)

While eschatological prophecies had been mentioned before, this extremely graphic speech is a premiere within *Odds Against Tomorrow* and can certainly be read as a second indicator of approaching catastrophe. It is quickly followed by the information that Elsa Bruner has finally succumbed to her inherent risk of spontaneous heart failure and is now lying in a coma. This news concludes the novel's first part and sets the tone for the climactic events in the second. The first sentence here directly picks up on this fatalist tone: "Your coffin's here" is the announcement with which Mitchell is greeted by his doorman on the phone, leaving him shaking in terror (95). While the 'coffin' turns out to just be an expensive piece of art bought on impulse, the novel from hereon in describes living conditions that are rapidly worsening, starting with an extraordinary heatwave that strikes the city. A constant fatalist, supernatural undertone accompanies the description of extreme heat: Mitchell perceives erratic behavior in the usually unshakable rats and vermin of New York City and reads this as another telltale sign of lurking dread: "The animals were always the first to know. It was that way with the warming world" (97). Shortly after, he also begins seeing signs of "this tremendous thing, whatever it was, that was coming for them all" (98) in the shrieking of infant children, culminating in his assessment of the drought as a "new hell" (103). This notion of divine punishment is also picked up by the general public; even the experienced and jovial weatherman is depicted as directly addressing his audience with desperate, deeply religious lamentations: "'When the heavens are shut up and there is no rain because your people have sinned, […] then what can we do? Oh Lord, what can we do?'" (109). The continuously growing public desperation still provides a perfect market for FutureWorld, however, and during the absolute height of the heatwave, the firm is able to move to a new office and double its employee count by hiring a secretary and a colleague for Mitchell. While the catastrophic consequences of the drought are graphically presented as life-threatening, their impact is not significant enough to truly challenge the societal system in New York City. On the contrary,

the more real the catastrophe feels, the easier it is for FutureWorld to stage its business model as sensible, and thus to increase the already surging revenue even further.

When the drought finally ends with the arrival of much welcomed rainstorms, the New Yorkers are ecstatic. Children play in the rain, as well as serious businesspeople – spontaneous dance circles form in Central Park, and the catastrophe seems to be over. However, following the idea of the world risk society, where one risk begets its own successors, this notion is rapidly deconstructed and a new risk even greater than the heat wave presents itself. Mitchell quickly realizes that the water is not seeping into the ground, as would be expected, but rapidly forming large pools on the dry soil (118). While the news anchors and weather reporters are still ecstatic about the soothing rain, scientists begin to explain the dangers of massive flooding, both due to the dry ground's depleted water storage capability and the tropical storm forming near the East Cast. Within the predominantly euphoric atmosphere, however, their warnings are ignored. This once again emphasizes the significant impact of context for the communication of global risk, in this case despite its clear visibility (121). As signs of the impending hurricane grow stronger and weather forecasts begin issuing warnings, the euphoria is quickly replaced by pure panic. FutureWorld's phones never stop ringing, until eventually, the New York City mayor issues a large-scale evacuation order on all city zones (141). While this late-issued order is still being chaotically carried out, the category three hurricane Tammy hits the city with absolute force and brings with it the second true transformation within the narrative. Again, the flood, as the most widely used visualization of climate change in the entire corpus of climate narratives (Trexler 82), plays an important role. But while in *Flight Behavior*, it symbolized the changed situation at the narrative's open ending, in *Odds Against Tomorrow* the transformation does not occur at the end of the narrative, but at its turning point. What ends is the current iteration of New York's society and the notion of invincibility that had been a central part of it.

The hurricane itself is described in the form of heavy rainfalls, which force Mitchell and his colleague Jane to retreat to his apartment, where they wait out the storm. Within the apartment, the transformative process is only visible in the form of sputtering water taps, caving electricity and bursting windows, through which they witness the streets turn into canals, levitating debris being carried through the streets, and tunnels turning into cascading streams. "[A] world-cleansing flood of biblical proportions" (154) is washing away the old

system. By morning, Mitchell "peer[s] out at a new world" through a hole in the window barricade (160). New York City has become a flooded ruin, thousands of people have died, and hundreds of thousands are missing. After missing a U.S. Coast Guard rescue boat, he and Jane attempt to make it to dry land in his *Psycho Canoe*, and the extent of destruction unfolds before them as they paddle through the streets and avenues: "Wrathful Kali was dancing at the door, the Valkyries were hurtling through the air with flashing spears, chanting their death hymns" (162), the water is foaming, reeking of sewage and occasionally virtually burning with blue fire from floating chemical waste (165).

During their travels through the ravaged streets, Jane and Mitchell come across various reminders of pre-catastrophic life in New York. People seem to have abandoned their most basic morals, as looting and fighting over the spoils have broken out, and gangs are described as savagely hunting weaker people for their belongings (170). While the important museums and oldest houses are said to stand a chance of survival, the iconic Grand Central Station and the United Nations headquarters are entirely flooded, the latter "a sunken ship in the East River" (191). Grand Central Station is described in even more detail as a falsely convenient deathtrap that appeared to provide shelter from the rain, but ended up crushing and drowning people under the masses of water that poured down its underground tunnels (173-74). The most powerful image of the old system's downfall, however, comes in the form of an old FutureWorld client. During their trip, the duo encounters Ned Nybuster, Mitchell's first client as well as the recipient of his blood-soaked doomsday prophecy. Alone, left behind by his family that sought shelter in Montauk, Nybuster watches over the streets from a balcony, ridiculously overdressed and helplessly drunk. In his ravings he switches between cursing Mitchell for not having emphasized that this particular catastrophe (among the hundreds of different possible scenarios they had discussed) was going to come true, and madly destroying his father's expensive liquor collection and golfing equipment. His behavior stands in such contrast to the quirky but calm businessman he had once been that, in Mitchell's perception, around Nybuster, "he was a spaceman encountering an alien landscape for the first time" (185-86). The stark contrast between Mitchell as the lone prophet and the new face of the world is further illustrated in the depiction of his ridiculously colored canoe as a *psychotic* incarnation of Noah's Arch, carrying the two remaining, sane representatives of risk commodification, along with several boxes of animal crackers, through the flood. The absurd

canoe trip comes to an end when the duo reaches a refugee camp in Bennett Park (193) and subsequently abandons their vehicle to continue their journey.

The narration of catastrophe in this second part of the novel, beginning with the concrete description of drought and the first heat-related death and ending with the arrival at Bennett Park, strongly emphasizes the transformation of New York City from a densely populated and wealthy megapolis into a flooded ruin filled with the bodies of those who could not flee. Every single location in this part of the novel is described to have been impacted by the hurricane, the creation of a "new world" is mentioned several times, and the description of catastrophe and its immediate aftermath is the key element of the narrative's central second part. Catastrophe plays a far more important role here than it did in the novels discussed in the previous chapter, which also reflects in the fact that this novel is focused more on the construction and transformation of its storyworld than on its characters. However, its third and final part, while still maintaining attention on the hurricane's consequences and the changed reality it brought to the American Northeast, is devoted to returning the world to the status quo. Given this third section, while granting a far more detailed glimpse at the catastrophes to come, Hurricane Tammy and the destruction it brought do, again, act only as heralds of the future potential catastrophes to come:

> According to the scientists, these would become the presiding conditions. Over the next years and decades, things would not be as before. Things would be, for starters, a lot wetter. The floods would keep coming, more and more frequently. Soon the coastal cities would lose the will to rebuild the old seawalls and leeves. No one would have to pay to hear about worst-case scenarios – they'd be living them, night and day. The future would vanish as a preoccupation; the present would consume man's full energies. (195)

Oblivious to Mitchell's vision of the future, the capitalist society is bound to re-establish the previous, 'stable' situation. Mere days after the hurricane, mosquito-supertankers begin to suck the excess water in the streets of Manhattan out into the bay, and rebuilding plans for the city are made public. It is, however, made abundantly clear that those who profit from the reconstruction will be the powerful and wealthy, those living in Manhattan and Brooklyn. Those from less wealthy parts of town, who "didn't have friends with guesthouses in other parts of the country; [who] couldn't afford hotels or airfare", many of them first generation immigrants (241), must wait for months in the refugee camp trailer parks or, in the case of the "Zone Five" sections, accept that their home district will be abandoned and returned to nature

(285). In this divide between the rich neighborhoods on the one hand and the abandoned neighborhoods of the underprivileged on the other, it becomes clear that the restoration of the world will once again be made possible at the expense of the powerless. The novel here closely follows Moore and Nixon`s critique of modern capitalism.

Meanwhile, the terrible conditions at the refugee camps are graphically described. Theft of government property has become daily fare, women are turning to prostitution out of sheer desperation, and children are seen playing with used syringes found in the open field (258). Simultaneously, the naïve attempt to create a communal alternative society at Ticonderoga has been utterly thwarted by the unchecked, overwhelming influx of hurricane refugees. The utopian alternative to the profit-driven capitalist society has crumbled under the influence of the disillusioned and traumatized newcomers and has turned into something resembling a warzone. While the inhabitants were initially open to refugees, offering them food and shelter in exchange for voluntary farm work, the small community of idealists was in no way prepared to take care of the arriving masses. When Jane and Mitchell arrive at the site, the picture unfolding in front of them is simply disastrous: The vegetable fields on the old playgrounds are trampled and barren; the windows of the small huts shattered; and the large, wooden infirmary that had functioned as the camp's dorm is burning down in a blazing fire. Savage, shirtless "packs" of men are roaming the area "like foxes" (224), hunting, and in part experiencing traumatizing flashbacks to their time in the military (228). The surreal scenery projects a strong image of a failing, male-dominated society in the form of unprepared, fleeing New Yorkers, dragging down with it the few individuals that had attempted to sever themselves from its practices and lead a more sustainable life. The old, the weak, and, most prominently, women and children have abandoned the site completely, leaving behind only groups of marauding men. The exhausted woman that greets Jane and Mitchell at the camp's entrance comments on this in a way that can easily be transferred to the state of the male-dominated society in the real world: "'This place was a little treasure, but they've ruined it now. Like they always do.' 'Who ruined it?' 'People. Human beings. Well, to be specific, men. It's the men that did it. They're doing it still'" (223).

3.2.3. Rebuilt from Scratch: Potential Continuations for Mitchell and Jane

In addition to this metaphorical reading of Camp Ticonderoga as representing the ravaged environment of the planet, the area also serves as a climactic location for Mitchell`s character development. Unaware that all the original Ticonderoga inhabitants have long since left, his search for Elsa Bruner reaches its presumed end at her last known residence. Fearing that his long-time correspondent still lies helplessly in a coma in the infirmary, Mitchell charges recklessly into the burning building, only to find her room empty. By the time Jane is able to pull him back from the flames and carry him outside, Mitchell has sustained several burns, the most visible of which is the complete loss of his eyebrows. This symbolic 'rebirth' from the fire lets him emerge a changed man. While Jane is busy setting up her professional separation from Alec Charnoble and starts securing interviews and business contacts, Mitchell realizes his long-developed alienation from the world of business. He re-assesses Jane's idea of founding a new firm under the same business model as FutureWorld, and his changed way of thinking breaks through:

> Now when he thought about the future, all he found was blankness. *There would be no long term*. Jane's scenario, in which he founded a new futurist firm, would certainly make him money – lots of it, enough to force his parents into retirement in Mission Hills. But the worst-case scenarios would return. That would be part of the bargain. (237)

Following these newfound thoughts, Mitchell can finally come to terms with the fact that "deep down", his father the slumlord, and the high-tier executives in the financial world are driven by very similar motives. "Both […] were obsessed by financial gain; they were, in this way, sociopathic, seeking profit at the expense of human dignity" (239). With these insights, Mitchell accepts the fact that he does neither want to return to his wealthy old life, nor follow in his father's footsteps and take over the dirty family business. He decides to turn his back on the entire, greed-driven system. At the same time, the conditions in the refugee camp continue to deteriorate, so Mitchell and Jane both decide to leave there and return to New York at the earliest possible moment.

While the two end up travelling together again, their motivations are entirely different this time, resulting in a drastic divergence of their future lives, although they remain connected in friendship. Representing what can be read as the two possible answers to catastrophic planetary transformation and also the two central interest groups that feature in the novel,

both characters embrace their respective path passionately. Jane follows through with Mitchell's comment of being "too rich" (259) for life in a refugee camp and is among the very first people to arrive in a "re-opened" Manhattan, thus getting a head start for her new company. With Mitchell's name as a figurehead, and her significant skills, her new firm 'Future Days' becomes a strong business competitor of FutureWorld. It follows the exact same business model, the only difference being improvements in employee treatment. This decision stands for a continuation of the successful type of capitalism that commodifies risk in the form of public fear, with minimal to no adaptation to the ecological transformation. Over the short time span of the epilogue, this decision proves highly successful, as business is "*quite* good", even during the city's slow recovery period (303, emphasis in original). A notable difference between Jane and the other members of high finance portrayed lies in the fact that she continues her friendly relationship with Mitchell and the other Flatlanders, even supporting them with deliveries of goods from the city in her regular visits to the area. The other highly successful business leaders in the novel are all shown to have little care for other people, especially their employees, who they are willing to submit to massive danger as long as they cannot be held accountable form a legal or financial angle. Nybuster senior is even shown abandoning his own son in the flooded ruin of his apartment while fleeing the city with his wife. Despite losing importance following the hurricane and only appearing in furious and increasingly desperate attempts to reach Mitchell, Alec Charnoble acts as the only 'true' villain in the narrative. Initially he is described as a cynic, who understands risk only as a "way you could use […] to get between the client and their money" (25), and who is willing to use any manipulations available to make more money. His most evil act, which is also his final interaction with his employees, involves forcing them to work on the day of Hurricane Tammy's impact – putting their lives in jeopardy while he himself remains in safety.

In contrast to this, Mitchell follows his plans to reject the business world and turns his entire life on its head. He settles down in the utterly flooded "Flatlands", a zone that is planned to never be reconstructed and act as a natural buffer for future catastrophe. Ironically, the 'new' life that had begun with Mitchell's symbolic baptism by fire at Ticonderoga is literally built on the ruins of capitalism, in the "old financial fortress" of the Canarsie Bank Trust Company (268). Within the walls of this massive stone building, Mitchell is eager to create a solitary existence outside of social conventions, but not entirely without its achievements. Initially living off looted store supplies, with Jane's support he begins to educate himself in farming,

"*Domicilic Engineering*" (296) and other fields of handiwork, and slowly turns the former financial headquarter into a sustainable home. While remaining in relatively regular contact with Jane, Mitchell's rejection of society as a social system becomes rapidly apparent. He stops caring for personal hygiene and his shares in Future Days' rapidly growing business, estimated by Jane at roughly $500,000, are simply lying in a suitcase next to his other supplies in the unlocked vault.

The foolishness of his behavior is not entirely lost on Mitchell. Yet, it only empowers his desire to continue on his path, which leaves the world of capitalism and human dominance, and reunites Mitchell with the planet as a whole:

> He was under no illusions. Out here in the neighborhood formerly known as flatlands […], he wouldn't unearth Eden, or even some agrarian ideal. Most likely, his work here wouldn't amount to very much at all. He knew nothing, after all, about farming, fertilization, engineering, construction. Problems would arise that he could not anticipate, and he'd be comically unprepared to fix them. […] There was also the danger that he might lose his nerve. Yet he doubted this. The only thing stronger than his desire to stay in the flatlands was his aversion to the idea of returning to his old life. […] *He'd be away from the world, yet in it more intimately than he had ever known*. […] In the Canarsie Bank Trust Company building, he would build his own self-contained universe. This was a future. It might not be the best possible future, or even a particularly comfortable future, but it was a future that he could see. (286-87, my emphasis)

Mitchell's newfound connection to the world is also expressed in an appreciation of nature, which leads to the detailed description of a fallen oak tree on 'his' lawn. Simultaneously disgusted and fascinated, he discovers the "festering micro-universe" existing within the trunk, the many species of insects, worms and mushrooms populating the seemingly dead log. Eventually overcome by the fascination, Mitchell ends up lying next to the crawling microcosm, and realizes the flood has not only freed the ground of buildings, but has also expanded the sky that "used to steal through the narrow slivers between skyscrapers, a petty thief; now it had been restored its dominion. It was radiant with its pride" (292). Despite the initial disgust at the rotting plant and the inhabiting bugs, this scene creates a pastoral tranquility that is unique within the novel. It underlines the different relationships to the environment that the neoliberal society on the one hand and the self-sustaining community of the Ticonderogans and Mitchell on the other hand have. In fact, while he is adamant about the isolation necessary for his cathartic new life, more and more people are pushed away from both the refugee camps and Manhattan. They are drawn towards the Flatlands, where they

begin to establish a community, creating a counter-model to society, this time in direct proximity to the city, and built upon its old territory. "[L]ugging camping backpacks like mules […], they were building: hackneyed, unprofessional, ramshackle homes with mismatched walls and askew floors straight out of Dr. Seuss" (305). While some of the Flatlanders, similar to the former inhabitants of camp Ticonderoga, fulfill the cliché of being 'unworldly hippies', the examples of Mitchell, Hank Cho and the briefly mentioned "Dr. Valentine" (305) reveal that there are people from many different social strata among them, indicating that in the far future, a return to nature might become a possible alternative for society.

People from the middle and lower classes do not feature prominently in the novel at all, and are mainly presented as flood victims who are forced to live in the poorly maintained refugee camps, dependent on government welfare. An interesting case in between high finance and the middle class is Mitchell`s father Tibor, the aging slumlord. While he has certainly been able to provide for his family, his advancing age has him fearing for his future, as his controversial job puts him under significant stress. Despite this, Tibor is adamant about not needing any support from his wealthy son, actually shouting at him that "*we don't need your money!*" (81, emphasis in original), when Mitchell presents him with a five-thousand-dollar check. Tibor is utterly enthralled by the concept of the American Dream, as when tears come to his eyes during a family trip to Wall Street, a rare occasion for the otherwise deeply unemotional man: "'This is where America happens, […] where *we* happen.' His passion for old American movies surfaces whenever he finds himself overpowered by emotion. 'Greed is good,' he said. '*Wall Street*, starring a certain Mr. Michael Douglas" (43, emphasis in original). The ruthlessness of his own profession, his idea of America as the host of with large capital and the financial markets, and his infatuation with the traditional Hollywood narrative make Tibor a prime example of a social strata that heavily supports free market capitalism, even though it is an economic system that it does not necessarily profit from and which is often even directly detrimental to their personal situation. This phenomenon, which can be summed up in a quote from Thomas Frank's thorough analysis *What's the Matter with Kansas?*[17], provides a

[17] In *What's the Matter with Kansas? How Conservatives Won the Heart of America*, Historian Thomas Frank uses his home state Kansas as an example to analyze a dramatic shift in American working class political views between the 19th and 20th century. While the working-class-heavy state was a source for left-wing populism in the past, recently, the majority view has shifted towards corporate-friendly conservatism, despite the majority of the population remaining working-class.

background for the silent majority of the population acquiescing to a system that is working against their personal benefits.

> The ills described here – depopulation, the rise of the food trust, the general reorganization of life to favor the wealthy – have been going on for ten to twenty years now. Nobody denies that they have happened, that they're still happening. Yet Kansas, that famous warrior for justice, how does it react? Why, Kansas looks its problems straight in the eye, sets its jaw, rolls up its sleeves – and charges off in exactly the wrong direction. (68)

Interestingly, the world of politics as a potential regulator of the financial sector does not play any role at all in the novel, as the only politician that is mentioned within the story remains the "good senator from the Twenty-fifth District" who created the legal loophole that enabled FutureWorld's entire business model, and thus will certainly "not have to worry about fund-raising this year" (29). As such, the entire political sector is constructed as being a non-factor to the machinations of finance.

Ultimately, *Odds Against Tomorrow* confronts its readers with the realization that long-term planning is no longer an option in the face of continuously evolving worst-case scenarios that are laid out in strong images in the novel: first in Mitchell's apocalyptic prophecies, and later in the highly detailed description of Hurricane Tammy and its aftermath. For the short term however, two possible future scenarios are laid out. One is the return to a capital-driven society, in which some will be able to make large enough fortunes to sustain themselves until the next inevitable collapse and beyond. In such a society, most people are forced to live under less privileged circumstances, represented by the devastating conditions in the refugee camps. The alternative is brought forth by a cathartic experience, represented by Mitchell's journey in the *Psycho Canoe* that culminates in his fiery rebirth at Ticonderoga. While still profiting from some of modern society's achievements, brought in by Jane and looted from ruined stores, the Flatlanders refuse to take part in its growth- and profit-oriented proceedings. Their new lifestyle is not glorified as the sort of pseudo-utopia that had been the idea behind Camp Ticonderoga, but as a way of life that is still "based in mathematics and logic, even scenario planning and risk analysis, only now the application would be practical instead of theoretical", and the uncertainties connected to directly perceptible consequences in terms of injury or hunger (287). Where the two novels in the previous chapter revolved around characters whose affinity to science grew over the course of the novel, here, the

successful and gifted economist constantly grows apart from his profession and finds his new life in the rejection of his old ways.

Ultimately, the uncertainty of the future is emphasized by the fact that none of the future scenarios – neither the escapism of the Flatlanders nor the short-sighted continuation of the old system – seems to offer a true solution. The Flatlanders are reliant on Jane's support and on the support from several non-profit organizations, and while through this support, "[t]heir little experiment in self-sufficiency might even end up succeeding" (305) where Elsa Bruner's Ticonderoga project failed, the model remains an adventurous experiment for a small group of pioneers that not even Jane is ready to visit without a personal bodyguard. At the same time, Jane, who is making a great living in partially restored Manhattan, also expresses a fear of the future – signaling the continuity of the risks that accompany the old capitalist order:

> [S]he felt that she would like to live in the Flatlands herself one day. She felt that she wanted to live in the Flatlands rather desperately. Large Keith slammed the door. The cold darkness of the limousine enclosed her, the seat gave gently beneath her, and her thoughts turned to that afternoon's meeting. It was an important meeting. […] A fortune was at stake. […] "Ms. Eppler? Everything all right back there?" No, she thought. Everything is not right, not at all. I am *scared*. But she choked back the words. "I'm fine," she said at last. "I just need to get back to New York. We don't have a lot of time." (306)

The one conclusion that remains even more important than this fatalist outlook on Jane's future is the message that as long as the challenges and global risks of second modernity continue to be understood as short-term business opportunities and mere food for sensationalist entertainment, their realization will hit even harder.

3.3. Reinventing the Future: Societal Transformation in *New York 2140*

One potential scenario for the long-term development of a world in which this final message has been ignored is explored in the second novel I analyze in this chapter, Kim Stanley Robinson's *New York 2140*. The fictional world of this novel is foreshadowed in a passage in *Odds Against Tomorrow*, just after Mitchell and Jane finish their journey in the *Psycho Canoe* and arrive at a makeshift refugee camp in Bennett Park. Still under the impact of their surreal adventure, Mitchell tries to imagine how a return to regular life might look like after the hurricane, considering the projected increase in radical weather events:

> The floods would keep coming, more and more frequently. Soon the coastal cities would lose the will to rebuild the old seawalls and levees. No one would have to pay to hear about worst-case scenarios – they'd be living them, night and day. The future would vanish as a preoccupation; the present would consume man's full energies. The nation's money and power would gradually transfer to the largest inland cities. Chicago, Dallas, Atlanta – even Kansas City – ascendant. Miami, San Francisco, New Orleans, Houston: drowning. […] Invincible New York would persist, but it would be rebuilt as a canal city. Amsterdam on the Hudson. Amsterdam *in* the Hudson. Boats instead of cars. Canoes instead of bicycles. In a floating world, Sternman would be king. (195-96, emphasis in original)

New York 2140 is set roughly 125 years into the future from its publication in 2017, which places it further in the future than any other novel analyzed in this study. Additionally, both New York City and the entire planet have undergone remarkable spatial transformations, a result of two "pulses" of climate change-induced rapid sea level rises from 2052 to 2061 and 2087 to 2102 respectively, which increased the mean sea level by a total of fifty feet.

Despite the catastrophic and transformative impacts of these pulses (which are mentioned in several flashbacks) however, the societal system and the circumstances of life in New York City appear to not have undergone significant change. While the increased sea level has permanently flooded most of the city, including Downtown Manhattan, this has not depopulated these areas but instead twisted the entirety of New York City into a sort of "SuperVenice" (77) where cabs and sports cars have turned into ferries and speedboats. Quoting one of the focalizers Ralph 'Mutt' Muttchopf as he remembers the 1927 classic *archy and mehitabel*: "It was funny to see how little New York changes through the centuries" (*NY* 537). So, while the novel is set in a world that has been significantly transformed from a spatial perspective, the world's underlying systemic structure has essentially stayed the same. As such, the systemic criticism found in the text can be read as a thinly veiled comment on the society of the present. In fact, the novel can be read in a way that constructs anthropogenic climate change as a sub-problem of unhindered, liberal market capitalism. Both perspectives – the significant spatial transformation coinciding with the adherence to traditional societal systems – will be taken into account in the following analysis.

First, the transformed state of the world in the year 2140 is analyzed in comparison to both the real world of the late 2010s, as well as the world of *Odds Against Tomorrow*. Following this survey, the novel's focus on liberal capitalism as the root of societal problems in the 22nd century – and the distinct parallels to real world issues in the second modernity – are analyzed

through the large group of focalizers. Special attention is given to the characters Franklin and Charlotte, who play key roles in the decisionmaking that ultimately drives the plot to its conclusion. The character of Amelia Black is analyzed separately from the others as her story, while interwoven with the rest, focuses largely on environmental and medial phenomena. While these are topics of great importance to the world risk society and the world building in *New York 2140*, they mainly serve as a detailed background and context before which the main storyline on global finance and venture capital plays out.

The majority of information about the developmental process Earth has gone through in the 125 years between the novel's publication and the time it is set in is provided by 'the citizen', a heterodiegetic narrating instance. In a sarcastic tone that at times drifts over into a deeply cynical one, the citizen, or "the city smartass" (495), uses a mixture of neutral background information on historical developments in the world since the late twentieth century, judgmental commentary on both past developments and the ongoing plot, and violations of the fourth wall to convey his message. In directly addressing the reader in a condescending tone of superior knowledge and understanding, and in his blatant mockery of the ecologically unsustainable decision-making of the past – which refers to the early 21st century – the citizen's commentary introduces elements of the cautionary tale to the narrative. The people of the narrative's past were made aware that their behavior was unsustainable, yet they ignored the warnings and were thus punished by natural catastrophes of unprecedented proportions.

3.3.1. How Little Has Changed: New York City and the World in 2140

The transformation of the world following the two pulses of rapid sea level rise manifests in various ways. Given that the majority of the plot plays out in New York City, the most obvious change is the fact that most of the city is now permanently flooded, with the exception of Uptown Manhattan, which is dominated by 'superscrapers' – monumental buildings several hundred story tall, owned by the world's richest. While this financial elite leads a secluded life dominated by cocktail parties in the superscrapers or aboard private airships, the less fortunate inhabitants reside in the intertidal, the permanently flooded section of Downtown and its surroundings. Old skyscrapers, among them iconic New York landmarks such as the

Flatiron or the Met Life Tower, are constantly under threat from the shifting tides. These relics of past centuries have been redesigned into housing communities co-owned by several thousand inhabitants and require constant repairs and supervision to prevent their collapse into the water that now surrounds their lower floors. While life in these partially self-sustaining towers is confined and nowhere near as luxurious as in the elite superscrapers, they still provide far greater comfort than those buildings that remain entirely unsupervised. The semi-ruinous remains of Brooklyn, Queens and the South Bronx have essentially been removed from the city administration. In this extralegal environment, the 'water rats', citizens too poor to afford any official living space, lead their lives under the constant threat of their homes collapsing to the tides. The segregation of life into these three basic models creates a hierarchical society whose borders seem all but insurmountable.

Despite the undeniable devastation and constant threat of collapse, however, every area of the city is swarming with people. The individual buildings are connected by a network of 'skybridges', the streets-turned-canals are overflowing with water-taxis and wealthy individuals' speedboats, and while a lot of capital has fled 'to Denver', which has become a synonym for "all the inland snoozefests called out when one says [this] single dread word" (495), the hedge fund managers of former Wall Street still reside in their Uptown offices.

Simultaneously, the devastation brought forth by the first and the second pulse has served as an undeniable argument for the destructive power of unchecked anthropogenic climate change. Akin to the central challenges in the risk narratives of anticipation analyzed in the previous chapter, the invisibility of climate change and the perceived distance of its impacts are given as an explanation for the lack of effective climate regulation in the narrated past of *New York 2140*. In the words of the citizen: "[Y]ou can't really imagine a catastrophe will hit you until it does" (140). In what can be read as a direct reference to the ideas promoted in works such as *Carbon Dreams* and *Flight Behavior*, it is emphasized that many warnings were uttered and ignored. While scientists "published their papers and waved their arms, and a few canny and deeply thoughtful sci-fi writers wrote up lurid accounts of such an eventuality, […] the rest of civilization went on torching the planet like a Burning Man pyromasterpiece" (140). This scenario of failed communication between scientists and policymakers perfectly mirrors the situation created in *Carbon Dreams*' Congress hearing as well as the general attitude of Ovid Byron and his team towards those in power. Interestingly, *New York 2140* also includes

some unspecified, “deeply thoughtful sci-fi writers” in the group of unheard admonishers – which can be read as both an important reference to the role of literature and art as a form of meaning making, and a tongue in cheek reference to Kim Stanley Robinson himself, who, as a distinguished writer of science fiction literature, demonstrates a cynical outlook on the potential impact of his work on climate change.

This situation of ignorance is quickly unraveled though, as the scenario that had always remained a distant threat in the risk narrative of anticipation suddenly manifests itself in the form of the ‘first pulse’. Over the course of a single decade, the global sea level rises by ten feet and makes the global threat of a runaway greenhouse effect an indisputable reality (139). Within this new reality, civilization is finally mobilized on a grand scale, as the “postpulse people” began “’changing everything’ and decarbonizing as fast as they should have fifty years earlier” (139). Here, another characteristic of the world risk society becomes clear. The realization of catastrophe does not cause risk to disappear. Instead, the new, catastrophic reality becomes the starting point that is threatened by new risk. In *New York 2140*’s background setting, this is portrayed by the fact that the complex connections of the global climate system could not be halted instantaneously, as many of the influencing effects had already been set in motion. Thus, the measures taken immediately after the first pulse proved insufficient to protect the world from the similar, yet even more devastating catastrophe of the second pulse twenty-five years later. Here, the already increased sea levels rose by another forty feet, and whereas the first pulse mainly posed a threat to the areas immediately on the coastlines, the second pulse affected the entirety of the planet, bringing with it “price jumps, hoarding, hunger, famine, and death” (377), ultimately giving

> everyone, and this time everyone, the sudden awareness that even food, that necessity that so many had assumed had been a problem solved or even whipped by the wonders of modern agriculture, was something that was made uncertain by the circumstances thrust in them by climate change among other anthropogenic hammerings of the planet. (377-78)

Were the novel set in the period during or immediately following that second pulse, *New York 2140* might have been a prime example of a risk narrative of catastrophe. However, the devastating transformation of the second pulse is only mentioned as a distant memory of some of the older characters, and cynically referred to by ‘the citizen’. The narrated present

of the years 2142 and 2143 depicts a world that has, to a certain extent, re-stabilized in the forty years after the second pulse.

Following the second catastrophe, massive reforms in land use, energy production and other climate-relevant policies were enacted around the world. This time, they proved effective enough that the world has so far been able to avoid a third reiteration of the event, albeit at a massive cost. Scientific and procedural improvements were made, working together with "every other human discipline or field of endeavor. […] It could be said that all the sciences, humanities, and arts contributed to the changes initiated in these years" (378). Once again, the importance of not only the sciences, but a combined effort of all fields of cognitive endeavor are pronounced as key elements of a successful reaction to global risk. Some developments provide technological means of adaptation to the new status quo, such as improvements to isolate buildings against water; others, like carbon-negative construction techniques, even have the potential to restore pre-catastrophic levels of atmospheric CO_2; some problems, such as the acidified oceans, remain unsolved symbols for the damaged state of the planet. In the extensive wildlife corridors, the American bison and re-introduced herds of mammoths roam the wilderness again (39), while simultaneously, the polar bear population has shrunk to less than 200 individuals that need to be relocated to Antarctica due to the melting ice in the Arctic (101).

In summary, the world in the year 2142 has transformed, along with its global risks, and confronts its inhabitants with challenges and uncertainty that are, while remarkably different on one hand, quite similar to those in the present of 2019 on the other: The global housing market symbolized by the situation in New York City is entirely out of control, the city is facing a continuously rising ocean and is predicted to be entirely submerged in the following centuries (34), and the state of the environment is precarious at best. Even with regards to risk communication, those who attempt to convey narratives of social justice and environmentalism to the public have to resort to pseudo-scientific infotainment to get any of their points across to a larger audience, or be ignored. Humanity is undoubtedly dwelling in crisis, but it has gotten so extraordinarily good at it that the status quo is accepted as an inevitability by the majority of the population.

Remarkably, all observations of climate change in *New York 2140* are closely linked to the economy as a whole, to a degree that the changes in climate are at times presented as mere

symptoms of the same unchecked market capitalism that brought the world risk society into existence in the first place:

> Carbon-neutral and even carbon-negative technologies were all over the place waiting to be declared *economical* in comparison relative to the world-blasting carbon-burning technologies that had up to been determined by the market to be 'less expensive'. (378, my emphasis)

Within all this 'stabilized chaos', the richest one percent of the population has grown to control eighty percent of global wealth. The philosophy of liberal market capitalism has continued to dominate global economics to the point where the world of high finance has become a parallel society to the nation states, including private security firms acting as combinations of bodyguards, police force and army for hire. The world of finance and those at the top of its hierarchy are repeatedly described as a multi-armed octopus whose arms reach deeply into all areas of life, and whose individual suction cups are constantly pulling individual strings, which in sum manage to influence decisions at both the highest and the lowest levels of decision-making (582, 604). While the plot largely revolves around events in New York City, the novel makes clear that the effects observed there are by no means confined to the city and are all part of a global "mega-megastructure" (319), an all-encompassing and inconceivably complex network of connections that influences the entire globe:

> So, while there is no need to describe the situation in other coastal cities like watery Miami, or paranoidly poldered London and Washington, D.C., or swampy Bangkok, or nearly abandoned Buenos Aires, […] it is important to place New York in the context of everywhere else […]. Because […] the story of New York only begins to make sense if the global is taken into account to balance the local. (495)

This global network of financial transactions is so inherently powerful and interconnected that it not only elevates the effects of local catastrophes into the "mega-megastructure" of global capital, but it also elevates this "moneysphere" to become "coextensive with the biosphere itself" (496). It has become a "hyperobject" (319) in the sense of Timothy Morton, who, incidentally, uses the "whirring machinery of capitalism" as a prime example for his definition of *hyperobjects* in his monography of the same name (1).

Within this setting, *New York 2140* follows the lives of nine characters from all sectors of life, whose interactions and unlikely friendship end up becoming an influencing factor to challenge the system of nigh unregulated capitalism altogether. In addition to the narrator commentary of the 'citizen', the plot of *New York 2140* is told through seven perspectives, each focalized

by one or two characters. While all focalizers receive near equal space within the novel, their impact on the story's development varies significantly. The following analysis will focus on the characters of Franklin Garr and Charlotte Armstrong, who provide the most significant insights into the interconnections between capital and politics, which in turn are constructed as the responsible forces for the state of the planet. Their actions are supported by building supervisor Vlade and senior NYPD-officer Gen, two other focalizing residents of the Met Life Tower, as well as Stefan and Roberto, two orphaned homeless boys who receive shelter there. The environmentalist cloud star Amelia Black also lives in the tower and contributes a unique perspective on the world. Through her work as a producer of informative and entertaining social media content, Amelia introduces the role of the media to the narrative and thus provides another take on the difficulties of reaching the general public with important environmental messages in a world where content producers of all kind are competing for public recognition. However, her story develops largely separated from the other characters and mainly convenes with the central plot in the novel's finale; accordingly, Amelia is analyzed in a separate section of this chapter.

The final focalizing instance that also plays a special role in the narrative is the duo of Mutt and Jeff, two ingenious but somewhat quixotic 'quants' who have made it their mission to bring down the capitalist system on their own. Following their idea that "the problem is capitalism. We've got good tech, we've got a nice planet, we're fucking it up by way of stupid laws" (*NY* 5), the very first chapter shows their attempt to hack the largely automated online trading market to implement modifications to these laws that are supposed to change the market into a more just system. While exchanging philosophical understandings of 'value', and the aesthetically ideal number of defining rules for a potential new, post-capitalist societal system, their hacking attempt is immediately spotted and nullified by faceless agents of the market. Consequently, the two are kidnapped and thrown into an underwater cell, where they spend a significant part of the novel in complete isolation, only provided with the barest necessities by their unidentified captors. Following their rescue by the other focalizers, Mutt and Jeff's role to the other main characters becomes comparable to the citizen's role towards the reader. They provide background information on the nature of the financial market as well as commentary on societal injustice to the others in a position somewhere between advisor and entertainer, but otherwise have no significant impact on the plot other than their initial attack on the market. In essence, their role might be summed up by the realization that

singular individuals, however gifted and aware, are powerless to change the system on their own but can enable others to create change on a societal level.

The primary actors within the hyperobject of the moneysphere are investment banks, largely faceless conglomerates of traders and their henchmen, all devoted to the maxim of profit optimization. Leveraged a hundred times over their already gigantic market values, these banks place bets on the development of incomprehensibly complex monetary indices, which have long left behind their connection to the real world that they attempt to portray.

3.3.2. Adding Value to Finance: Franklin's Character Growth

One of these indices is developed and monitored by Franklin Garr, 34-year-old investment banker and one of the narrative's seven focalizing instances. Franklin is introduced as a profit-hungry financial analyst who cares little about anything in the world, except the reputation of his index and his personal pleasure. With a daily income of around sixty thousand dollars (20), Franklin can definitely be considered extremely rich, yet even he is only a small part within his substantial firm WaterPrice. Similar to Mitchell Zukor's obsession with risk in general, Franklin is fascinated by the insurmountable mass of data required to estimate the financial effects of global sea level. Unlike Zukor, however, Franklin entirely lacks the existential angst that drives his *Odds Against Tomorrow*-equivalent's existence. More hedonist than fatalist, Franklin's days consist of long working hours which regularly end in one of the "very expensive but convenient" nightclubs and bars, "[c]igars and whisky and watching women in the river sunset" (21). In his initial mindset, Franklin never questions his comfortable lifestyle, and instead enjoys his profits from the capitalist system and looks down condescendingly upon the less fortunate.

Separated from the other focalizing characters as the only one whose perspective is narrated in the first person, Franklin's character development can be seen as resembling the overarching narrative on a personal level. His growth from a shallow, self-centered hedonist into an aware citizen who uses his expertise to help overthrow the financial system from which he himself initially profited is analogous to the transformation of the novel's society from one more or less secretly controlled by big finance to the eventual nationalization of investment banks in the novel's final chapters.

The development of Franklin's character bears certain similarities to Mitchell Zukor's, yet their changes in character are sparked by different events and are narrated from two largely different perspectives. Whereas Zukor acts as *Odds Against Tomorrow*'s only focalizer (with two brief exceptions at the novel's beginning and end) *New York 2140* is told from a total of eight different focalizing perspectives, seven of which belong to major characters within the story. Thus, *Odds Against Tomorrow* is told nigh entirely from the perspective of a risk analyst, who, despite turning his personal life on its head and inspiring a small group of people to follow his example, does not leave a large impact on the world. In stark contrast to this, *New York 2140* includes the perspectives of members of the working-class, police officers and 'water rats', and has all of those characters working together in order to achieve a significant change in the broken system.

For those characters to find each other, however, several connecting events are necessary. The first three chapters narrated through Franklin's eyes simply introduce him as a morally indifferent representative of the financial sector. While he lives in the communally managed Met Life Tower along with Charlotte, Gen and Vlade, he abstains from any personal contact with the other inhabitants, just wanting to rent an "apartment in a nice building" (130) far enough away from work. In fact, his refusal to partake in the tower's communal chores and activities has led to a "shamelessly massive" (131) surcharge to his rent, as he is seen as a non-co-op-member, a price Franklin is all too happy to pay in exchange for his personal space.

While Franklin actively avoids contact with people outside of his own social standing and ignores the ethical component of his trading profession, he is by no means unaware of the artificiality of the values and models that the trade is based on. The source of his great reputation in the financial community, the "Intertidal Property Pricing Index" (IPPI from hereon), is understood to be the most accurate model for evaluating the real estate of flooded urban areas and provides information about the developments of the market activities in the intertidal. Despite this supposed accuracy, Franklin is quick to admit to the reader that while the calculations behind the index are indeed highly detailed and complex, an accurate evaluation of the intertidal is simply impossible.

Given that much of the real estate there is not accessible or stable enough to serve any useful purpose other than housing water rats, the 'market' for intertidal property exists only in the form of artificial financial instruments that are directly connected to Franklin's own index.

Similar to the flatlands in *Odds Against Tomorrow*, the intertidal is an unregulated space, where ownership of any place is established through the simple fact of who is living in it. In addition to the unclear ownership mechanics of the intertidal, even its theoretical value is highly debatable. In the novel, international reinsurance company Swiss Re evaluates the entirety of worldwide intertidal areas at the astronomical sum of 1.3 quadrillion dollars (120). Yet even this inconceivable number is outright dismissed by Franklin as utterly unusable as it heavily discounts the future, "which of course finance always does" (ibid.). This discounted rate, and the philosophical question for its 'correct' value is explored by Hulme as one of the main reasons for disagreement on climate change (123). Following his disregarding of the 'official' intertidal value, Franklin then reveals the futility of even attempting to determine its true value, as even he (as one of the leading experts in the field) has to resort to the entirely fantastical number of "a zillion bazillion garillion dollars [… b]ecause the future of humanity as a global civilization depends completely on its coastline presence" (*NY* 120).

The irreconcilability of the economic understanding of value and its real-world counterpart constitutes a key element of the world risk society, and all that Franklin can do is create the artificial number for his index and "[assure] everyone that it was an accurate assessment of the situation" (ibid.). Importantly, a key element in the structure of his index algorithm is market participants' confidence, so that general optimism regarding the intertidal market will automatically result in an index increase without any connection to the actual situation (215). Ulrich Beck's notion that "acceptable risks are those which are accepted" (*World at Risk* 13) is turned into its economic analogy 'rising markets are those which are rising'.

This philosophy will, of course, not suffice to carry the index and the illusory market of the intertidal forever, as Franklin is very much aware. He has knowingly created a bubble, taking advantage of both the fact that people are often unaware of the bubbles they are themselves invested in and his superior perspective on the market (*NY* 123). The established rating agencies, who are supposed to protect customers from falling for such artificially high-risk investments, appear to have changed neither in name nor in practice, but the "usefully short memory" of finance has led to them still holding the power of risk definition in their hands. And so, "you could get AAA ratings, not for subprime mortgages, obviously bad, but for submarine mortgages, clearly much better!" (122-23). Within this false climate of security, Franklin takes advantage of his superior knowledge and prepares for the upcoming bursting

of the bubble that he himself has created, by betting against his own market and never questioning the ethics of his behavior. “Spoofing? No. Ponzi scheme? Not at all! Just *finance*. Legal as hell. […] What could be more nerve-rackingly cool” (123, emphasis in original). His only fear is once again illustrating the all-encompassing influence of capital on the world, as the one problem he sees is that the market crash resulting from his bubble might be so big that no one is left to pay out his winnings in an “[E]nd-of-civilization kind of thing” (217). This equation of the financial sector with the fate of global civilization illustrates the understanding of global capitalism as the main driving force behind planetary development.

While Franklin’s character arc does not make him completely abandon his materialist outlook on life, his growth allows him to adopt a more multifaceted view on society, including new insights into the perspectives of middle- and lower-class people. His enriched perspective ultimately leads to him utilizing his expertise to help defeat the system he had initially been part of and profited from. This development is initiated by Franklin’s social integration into the group of focalizers, who are all living in the Met Life Tower, but are only brought together as a group through the events of the novel. Franklin’s first encounter with other members of the group is a rather inconvenient one, as he nearly runs over Stefan and Roberto, two twelve-year-old homeless water rats, in his speedboat. Initially contemplating ignoring the near-accident, he is forced to tow their stricken zodiac back to the tower, as the two boys have recognized his face and could otherwise report him to the authorities. Soon afterwards, the boys interrupt Franklin’s plans again in a second encounter, while he is out on a date with his fellow trader Jojo. Having just narrowly escaped a collapsing house in the intertidal, the boys and their unrelated uncle-figure Mr. Hexter request another lift to the tower, which Franklin reluctantly grants them due to Jojo’s insistence. The following dinner connects Franklin to four of the other six focalizers, and while he attempts to remain distant, his initiation into the co-op begins. Simultaneously, even Jojo, a day trader herself, is alienated by Franklin’s one-dimensional worldview and his focus on monetary gain, which leads to her breaking up with him. This throws Franklin into a personal crisis and he attempts to win her back through a change in his business behavior, even going against his own convictions:

> I needed to find a means to reverse the usual way of the world. Instead of financializing value, I need to add value to finance. That was at first beyond me to conceptualize. How could you add more value to finance, when finance existed to financialize value? In other words, how could it be about more than money, when money was the ultimate source of value itself? (277-78)

These questions, while arising from a superficial desire to please a potential sexual partner, shake Franklin's libertarian ignorance and confront not only him, but the reader with a "koan" (278) regarding the instrument of finance and its exaltation into an end of itself. The question of whether it is possible to benefit society as a whole within a deeply unequal, liberal-market economy by employing the methods of this market-economy permeates the entire narrative, and for Franklin, the search for his personal answer to that question begins with his egoistically motivated thoughts about the koan – and him starting on his journey toward the realization that 'value' in an impenetrably complex world cannot be easily defined.

Franklin's character development works as an analogy for change in the global financial sector and spans the entirety of *New York 2140*'s narrative. The other focalizers, whose perspectives receive equal space to Franklin's, however, allow the global society of the twenty-second century to be assessed from a more well-rounded angle. The group of inhabitants in the Met Life Tower includes representatives from all social strata, which once again illustrates the extensive reach of the "moneysphere" into all aspects of life.

3.3.3. Rags to Riches: Stefan and Roberto's Treasure Hunt

The characters who should be the most distant from the sphere of high finance are ironically those who enter the narrative virtually being run over by it in the form of Franklin's speedboat. Before making their unlikely acquaintance with the banker, Stefan and Roberto's entirely unsupervised existence in the shadows of the intertidal is dominated by scavenging for food, seeking shelter in abandoned buildings and filling their free time with life-threatening adventures in the poisonous, polluted waters. Their main attachment figure is their self-proclaimed "avuncular" friend Mr. Hexter (543), a highly educated senior citizen who, despite his vast knowledge, is also forced to occupy rooms in an old, decrepit intertidal ruin. The trio represents society's outsiders who, despite their unregistered civilian status, make up a significant and important part of the New York population – the people who were among the first to repopulate the abandoned districts in the years after the flooding. Tolerated as pioneers in the reclaiming of legally questionable real estate, these outsiders still suffer from exploitation by speculative investors who are happy to let the squatters re-establish society

in these high-risk areas, “[w]ait and see what those crazy people did with it, and if it was good, buy it. As always” (145).

The shifting of the risks created by global climate change onto the economically underprivileged is showcased in the fact that the ‘water rats’ must frequently rinse their bodies with bleach to avoid infections from the polluted water and live under the constant, lethal threat of building collapses, only to face immediate gentrification as soon as their situation improves enough for the indices to suggest potential profits.

Following the collapse of Hexter’s building and their narrow escape, the trio relocates to the Met Life Tower and uses it as a new base for their operations. Hexter, the only character in the novel who experienced the catastrophic events of the second pulse firsthand, is fascinated with the history of New York and the many legends connected to it. His investigations into the city’s development led him to discover the presumed position of the *HMS Hussar*, a transport ship from the era of the American Revolution, which had sunk in the waters of Hell Gate in 1780, supposedly carrying millions of dollars in gold coins. While the waters around Hell Gate are treacherous and the ship is buried under thirty feet of concrete and rubble, Stefan and Roberto, seeking adventure, set out to retrieve the treasure in their scavenged, makeshift diving equipment.

The duo’s continuous search for new thrills at the cost of willfully submitting themselves to significant risk can be read as a deeply cynical comment on the neoliberal concept of edgework. This is especially clear when considering the boys’ extremely young age, the absence of any supervision and the fact that their childish inexperience and the limitations of their equipment repeatedly put them in life-threatening situations from which they have to be rescued by increasingly annoyed adults.

Additionally, Stefan and Roberto’s repeated ‘adventures’ work as an analogy to the repeated collapses of the financial sector which, in the narrative, has collapsed three times since the financial crisis of 2008. Just like the boys, finance was repeatedly bailed out of dire straits by supervisors who had failed at their jobs yet did not have to face any true repercussions. And in both cases, by the end of the novel this unsupervised status has come to an end, in the former situation through the nationalization of the banks, and in the latter due to the fact that Stefan and Roberto “now had about a dozen adults paying attention to them” (543).

However, despite Roberto's near-death experience after their makeshift diving bell malfunctions, the boys' search for the *Hussar* is crowned with success when they decide to accept the support of their new friends. With the help of Vlade and his contacts among a crew of water-construction workers, they are able to retrieve the treasure, which has risen in value spectacularly since the 18th century. Its initial value of $4 million in 1780 has increased a thousandfold and is now estimated at around $4 billion, a sum which Franklin proposes to multiply even further through speculation and insider trading, thus creating enough financial power to actually impact the entire global market. Finding the *Hussar* treasure virtually creates billions of dollars in liquid capital from nothing, and thus puts the characters in a scenario quite similar to the assumption of the famous *Global Crises, Global Solutions* study conducted by Lomborg et al. in 2009. In this thought experiment, the researchers assumed they were given a sum of $75 billion to freely distribute in order to achieve the "most 'good' possible" (1). While the "Hussar six" (*NY* 310) decide to make a profit from their findings, they also attempt to better society in the process. In a cooperative effort between financial experts, political actors, the working class and underprivileged outsiders, they set out to overthrow the unhindered market capitalism that dictates the workings of society.

3.3.4. Notorious Social Justice Warrior: Charlotte's Fight for Equity

Where Franklin is the group's connection to the financial sector, Charlotte plays the same role with regard to politics. An Ivy League educated lawyer, Charlotte presides over the Householder's Union, a job that has been downsized from city administration level into "some kind of public/private hybrid" (47) and consists of providing support and representation to the lower-class members of the city, from paperless immigrants and possessionless water rats up to those able to afford rent in the cooperatively-managed old skyscrapers.

Unable to distance herself from work in her scarce free time, Charlotte also volunteers as the chairwoman for her own skyscraper and has earned herself a reputation of being a skilled worker and defender of the underprivileged. Charlotte is also well-connected within the political sector, often being called upon by the city's incompetent mayor, and sometimes meeting for coffee with the head of the Federal Reserve, with whom she also shares a romantic past. Despite her high-reaching contacts, Charlotte's job, as well as her emotional

ties to the Met Life Tower community, do not let her forget the underprivileged. This mindset earns her the reputation of a "notorious social justice warrior" and "control freak" who has been running the building for "far too long", as Franklin assesses her from his initial perspective (131).

In her introductory chapter, Charlotte is helping a small immigrant family maneuver the city's complicated migratory laws, when she is contacted by the mayor Galina Estaban to assist her in developing a quota to help slow down the influx of immigrants and refugees into the city. The unavoidable increase in climate refugees has been identified as one of the most challenging future problems of real-world climate change and is indicated to "surpass all known refugee crises in terms of the number affected" (Biermann and Boas 61). This development is, again, the natural consequence of the "neoliberal globalization" that both Moore and Nixon heavily criticize. In the fictional future of *New York 2140*, this resulting migratory crisis has grown out of all proportion, with the second pulse having produced a "refugee crisis rated at ten thousand Katrinas[18]" (*NY* 144). Charlottes strict opposition to any refugee quotas in the face of human dignity and her quarrels with the mayor about this topic also connect the novel to the migrant crisis that has made (un)willingness to take in refugees a major political issue in Europe since the mid-2010s. Charlotte's disdain for politicians is rooted in these quarrels with Estaban, the stereotype of a successful politician who has lost her connection to the general public and is merely concerned with conservation of her own power.

Within this climate of uncertainty, the theoretical economic "value" of the intertidal as assessed by Franklin's IPPI-index is rapidly rising to the degree where high finance is actively beginning to acquire property in the intertidal area to start a gentrification process. In a deal that to Charlotte seems "almost like a hostile takeover bid" (87), an unknown company is offering to buy the Met Life Tower at twice its assumed value – a situation that is happening in many similarly co-owned skyscrapers in lower Manhattan.

This takeover bid sums up the opposing interests of finance and the common people. Affordable housing is always scarce in the city, the old skyscrapers are overcrowded, and the water rats virtually have to live under the risk of spontaneous collapses. Rent in the city has

[18] The comparison refers to the Category 5 hurricane Katrina that ravaged the US-Gulf Coast in 2005, still the "costliest storm on record" at the US National Hurricane Center (1).

risen so high that the initial buy-in price for an apartment in the Met Life Tower could now be earned back entirely in less than one year of rent (51). A perfect opportunity for “billionaires from everywhere” (88) to invest in luxury apartments as a combination of vacation home and profitable investment, rendering the former occupants essentially homeless. To achieve this end, the investors do not shy away from highly illegal acts, such as outright attacking the structural integrity of the building to scare out its inhabitants. Under this pressure and given the tempting offer, Charlotte fears the offer to be tempting enough to blind the tower’s tenants into voting in favor of selling, thus aggravating the housing crisis even further and ceding yet more territory into the hands of global capital (87). These are the circumstances under which the first real encounter between Charlotte and Franklin occurs in the Met Life Tower dining hall. Alienated by Franklin’s insensitive behavior, Charlotte reaches out to Jojo for advice regarding the offer and is met with incomprehension of the problem, combined with the insight that to those working in finance, buildings, along with “everything that can be traded [are just] a commodity” to be traded, up to the ‘commodity’ of risk itself (155). Even Jojo, who is generally portrayed as a trader who attempts to use her power to have a positive impact in the world, cannot free herself from the mindset of viewing everything through the lens of economic profit. The sharp contrast between this perspective and Charlotte’s understanding of value, which evaluates the societal benefits of the coop building as being far higher than the generous financial offer, is also reflected in the fact that the two highly educated women receive their information from completely separate sources. Distancing herself from people who “believe money can solve anything” (87), Charlotte challenges the belief of the liberal market economy and tends to read “the left side of the cloud”, a source which is “obviously” not frequented by Jojo and other capitalists (156). In this rather short sequence, the disagreement between the two well-informed women is partially attributed to their different filter bubbles, once again referring to the staging of risk – or in this case, the highly diverging answers to it, which are received by those following right- or left-wing media.

The sudden interest of capital in the intertidal and the secrecy and ruthlessness with which the transaction is enforced increase Charlotte’s discontent with the general state of society, not only directed at the potential investors, but also at politicians (who frequently turn a blind eye towards their exploits) and the naïve public that allows itself to be blinded by the promised money: “did they really imagine that money in any amount could replace what they had made here?” “Every ideal and value seemed to melt under a drenching of money, the universal

solvent. Money, money, money. The fake fungibility of money, the pretense that you could buy meaning, buy life" (331). This feeling is only reinforced when she learns that her ex-husband, head of the federal reserve and formerly a successful hedge fund manager himself, is regularly approached by a former business partner who shamelessly attempts to manipulate financial policy in his favor (234).

Charlotte and Franklin ultimately contemplate an alliance in the events following the tower community vote on whether to accept the offer on the building. While it is declined, the decision is close enough to warrant a better offer. In this situation, the unexpected influx of money from the *Hussar* expedition is brought to Charlotte's attention, and the group requires a financial expert to use the money to effectively protect the building from subsequent takeover attempts. Franklin, after having repeatedly played a role in rescuing the boys from dire situations, has gained Charlotte's trust despite his superficially grudging attitude. Presented with the background information behind the tower's cooperative ownership structure, he devises a plan to benefit from the inevitable pop of the intertidal housing bubble – a transaction which would leverage the already significant four billion dollars to a degree that he can only describe as: "[Y]ou win. You win so big that the only worry you have is that civilization itself collapses and there's no one left to pay you." (346).

The link between monetary transactions, in amounts that can only be expressed in terms of "fictional money" (345), to the structural integrity of civilization itself once again emphasizes the extraordinary influence that capital exerts upon every aspect of life. The instruments that enabled the rise of the world risk society have lost control over their offspring, but continue to undermine the societal processes that would be able to revert or slow down these changes. Franklin is quick to acknowledge that the 'civilization' collapsing in this case would mean 'financial civilization', but society and finance are so closely interlinked that from his point of view, they have essentially become one inextricable entity.

The idea of destroying *financial* civilization does not scare Charlotte; on the contrary, the thought evokes a morbid fascination in her. Upon inquiry Franklin explains to her the possibility of a "financial general strike" (348): Based on the fact that the complex connectivities of the global market, despite their highly elevated streams of leveraged money, still rely "on a steady payment stream from ordinary people" (348), Franklin proposes the idea of the Householder's Union using its communicative channels to organize a public refusal to

pay any debt owed to general institutions. Whereas a singular individual refusing to pay their obligations would certainly be prosecuted, Franklin assumes that if enough people joined in, the sheer numbers would protect the individual and the combined power of all 'ordinary people' would be enough to break the market. Uniting debtors and using their newly combined power to influence otherwise unsusceptible systems takes Velayos-Castelo's concept of cumulative responsibility ("Climate Ethics" 99) and develops it into a general form of co-agency. Comparable forms of unionized debt refusal have been proposed as a sensible strategy to escape the trap of insurmountable public debt. One of the most prominent advocates is American sociologist Andrew Ross, who, in reference to Thoreau, calls the act of refusing to pay certain amounts of unreasonable debt "economic disobedience" and justifies it as "a protective deed on behalf of democracy" in his 2014 publication *Creditocracy: And the Case for Debt Refusal* (24). Charlotte realizes that this battle "can't be fought by any one building or any one aid association. It's a global problem." (*NY* 435), and thus again establishes the financial sphere as one of the global, interconnected systems that create the world risk society. In the same way that each individual's miniscule contribution adds up to global climate change, the combined withdrawal of their income from the capital market might add up to enough missing capital to remove the inflated market's anchor to reality and cause the whole system to fail, similar to the 2008 financial crisis and its two fictional repetitions after the two pulses. While the previous crises were all felt most significantly by the taxpayer though, the new plan involves convincing the government not to bail out the responsible party a fourth time at the cost of the entire population, but to instead nationalize them. Overtaking the bank's debt should only happen if its future profits are also going to belong to the public, reducing the capital oligarchs to what would essentially be state employees, working for "[a] good salary, but just a salary. Like everyone else" (562). As with all global risks, the public already "owns" the disasters, so consequently, where possible, it should also benefit from the potential gains (427).

3.3.5. Storm of Contention: The Catastrophe and the Jubilee

Before the plan is put into action, however, a massive flooding event creates chaos in the streets of New York and provides an external catalyst to the major systemic transformation that the group had planned. Only foreshadowed by a rhetorical question posed by the 'citizen'

in the previous chapter (441), Hurricane Fyodor is the first major storm hitting New York since the second pulse, and while it is not described in as much detail as the storm in *Odds Against Tomorrow*, the destruction it brings is still transported by strong images. Under a black sky, the howling storm "was simply devastating the city" (470). Many of the older and smaller buildings in lower Manhattan collapse, and the bigger and more stable skyscrapers are cut off from their energy and water supplies. During a heroic rescue mission on a construction boat, Vlade realizes the surging tide to be a "vision of what a Third Pulse would do" (472). While the mission is successful in rescuing literal boatloads of people from the water and flooded buildings, "people of all apparent ages" are killed in the disaster (483), their floating bodies quickly turning into a risk for public health, as outbreaks of cholera become more likely with the warm weather in the storm's aftermath.

Similar to the narration of *Odds Against Tomorrow*, a second, 'follow-up' catastrophe to the first disaster lies in the unmanageable number of survivors who have lost their homes and now have to camp in the deforested remains of Central Park. Huddled together in small groups, the surviving, dispossessed New Yorkers do initially show admirable self-restraint, with only minimal fighting requiring the attention of the police. Nevertheless, the problems of the supply of fresh water and food and the lack of adequate hygiene proves impossible for the city workers. To Charlotte, "[t]he devastation was so complete it was hard to believe. […] All the people gave it the look of a sepia Hooverville photo, or some earthquake-shattered favela" (499). In a desperate attempt to relieve the situation, Charlotte calls the mayor and pleads for her to use her executive power and open the unoccupied luxury apartments of the Uptown superscrapers as emergency refugee shelters. She is quickly denied, though, under the reasoning that such an act would only increase the "capital flight" out of the city (501). This final act of neglecting the public for the benefit of the rich is what drives Charlotte to enter politics herself, as well as convincing her that the financial strike is an acute necessity to ultimately bring down the failed housing market, which is already battered by the hurricane's impact. In the face of blatant social injustice, civil protest is forming against the elites. Masses of hurricane victims begin marching on luxurious Uptown to demand shelter themselves, only to be halted – and allegedly even shot at – by the private security firm protecting the Uptown citizens, which even resists the arriving city police force.

The clash between the security firm and the NYPD, represented by senior officer Gen, puts a question mark over state authority and illustrates the power held by the firm's employers. The heads of the financial sector are depicted as an overarching, anonymous network of manipulators who control the fate of society through automated algorithms and highly paid assistants. Anxious to keep their machinations as unobtrusive as possible, they are only rarely depicted in person in the novel, and in these cases, they appear in a position of calm dominance, even when confronted with unfavorable news. Despite personally appearing only in a short segment of three pages, Henry Vinson is the most villainous embodiment of corporate finance in the entire novel. Deeply entangled in illegal transactions and business practices, he welcomes Gen Octaviasdottir in the vast open floor of his office, which spans an entire level of the "fattest tower" in Uptown New York (370). Slightly annoyed at the initial questioning regarding the accusations put forth by his cousin and former employee Jeff, he denies any connection to the case at all and, following further questions, simply has the authorized police officers thrown out the building by his private security guards. When threatened with the scene being recorded, he calmly assures the disbelieving officers that he will see them in court, if necessary. This utter refusal to accept state authority, combined with a commanding attitude and the will to harm and even kill people to further his personal agenda perfectly illustrates the concept of a parallel society for the economically dominant.

To a lesser degree, these qualities also shine through in Hector Ramirez, a former water-rat who has worked his way up to the head of a hedge fund and is first presented as Franklin's idol. Constantly addressing his 34-year-old employee as 'youth', Ramirez initially comes across as an honest businessman and agrees to help Franklin on an investment idea in the intertidal. It is later revealed, however, that his firm's subcontractors were the ones responsible for sabotaging the Met Life Tower in order to pressure its inhabitants into accepting the buyout offer. While Hector himself denies any knowledge of such practices, Franklin reminds him of a lesson Hector had taught him in the beginning of his career, according to which the loss of connection between the head of an organization and its action is always a bad sign (582). Following this revelation, Franklin severs his business ties to Hector, who appears hardly concerned by this decision, however. Following these accusations of his responsibility for serious criminal activity – knowingly or otherwise – Ramirez sees Franklin off with a "final Wizard of Oz wave" and simply leaves the conference room for his private skyvillage, where he joins an airborne party held in his honor (583).

The immunity these top-tier managers appear to have from the consequences of their actions connects naturally to the second important group that is criticized strongly in the novel, namely the politicians. The previous novels that included policymakers and their decisions generally painted a pessimistic picture of this sector. In *Carbon Dreams*, the senate is continuously blinded by the manipulations of William Cox and the fossil fuel industry, and *Odds Against Tomorrow* only briefly and sarcastically mentions its "good senator from the Twenty-fifth District" as a corrupt lawmaker in service of corporate finance. This depiction of politicians as either clueless, corrupt, or a combination of the two holds true for the majority of politicians in *New York 2140* as well. Most prominent among them, the mayor Galina Estaban is presented as the worst of both worlds, described by Charlotte as "stupid in action" (48), while simultaneously supporting the rich over the poor in every decision she makes over the course of the novel. Few other politicians from the twenty-second century are named in the novel, but they are consistently called out by both Charlotte and 'the citizen' for having repeated the mistakes of the 2008 financial crisis two times over and are generally held in low esteem for their ineptitude.

This gap between the highly manipulative, capable and rich leaders of finance and their weak political counterparts is breached by Larry Jackman, who himself has significant experience in the financial sector as the former CFO in the fund that is now managed by Henry Vinson. Jackman is regarded by his ex-wife Charlotte as the first head of the Federal Reserve with "brains" since Paul Volcker (who held the office under Presidents Carter and Reagan in the 1980s) and the first with the "balls" to act on them (435). While Jackman's first loyalty does not lie with the general public, it does not lie with the investment banks either, as "if push ever comes to shove", he is sworn to "support the Federal Reserve" (234). While Charlotte initially interprets this as equivalent to supporting the banks, when 'push truly comes to shove' inf the novel's finale, Jackman ends up following her suggestion to nationalize the insolvent banks instead of following the "script" established in the three previous incidents of the 2000s, the 2060s and the 2090s (348). These strictly non-neoliberal events unfold under the governance of the unnamed female US president, who is described as being "as progressive as an American president can be" and looking for an opportunity to "do something big" (231). Despite these positive characteristics, neither Jackman nor the President would provide a sufficient antipole to the corrupt likes of Galina Estaban and the strictly hierarchical, paralyzing career paths of party politics, however. While they follow through with actions ensuring that

society will also reap the profits from the risks it bought off the financial sector, they would most likely not have initiated comparable policies themselves. In the end, the plot's positive outcome is achieved by an actor network of characters from all branches of society, of whom one decides to enter into politics motivated by their desire to change the unjust system instead of having followed a traditional political career path. The successful cooperation between politics and responsible economics as a central point within this network is metaphorically represented by the developing romance between Charlotte and Franklin. The support of the population is presented as essential for the transformation's success, as can also be seen by the ineffectiveness of Mutt and Jeff's plan at the novel's start. While their initiative was the initial trigger for the series of events that led to the change, their first attempt to change the system without public support did not meet with success and was quickly dismantled.

A special position within the narrative structure of *New York 2140* falls to Amelia "Airhead" Black, the somewhat naïve cloud star. While not as clueless as her cloud persona suggests, the only 'true' environmentalist focalizer in the novel tends to listen to her gut-feeling and emotions before having thought things through. This hands-on attitude has however not hindered her career at all; in fact it has made her the absolute "black swan megastar" of nature focused cloud stars, and one of the biggest overall (42). Amelia's adventures on her airship rarely concern the main narrative at all. Instead, similar to the way in which the 'citizen' vividly describes life in the city and the global development of society, her chapters are the only ones that explicitly leave New York City and provide depictions of nature outside the urbanized centers of the world, at times in a pastoral, at others in a sublime tone. Her favorite flight route carries Amelia from Montana to New York City, hardly coming across any signs of human life except for other air vehicles, with "North America stretch[ing] out as empty of people as it had been fifty thousand years ago", allowing her to film "herds of elk chased by packs of wolves and a mother grizzly and cub" (38). Other routes take her over the Russian tundra, taiga and boreal forest, where herds of "de-extincted mammoths" roam the large empty space of Siberia (359). In these scenarios, "despite everything, the world looked good", though Amelia herself admits that this impression might be supported by her "flying in the dark" (ibid.), an expression that can also be read as conscious ignorance toward the state of the world.

This mindset of not being 'fond' of thinking and attempting to leave it to "other people who were better at it" (359-60) relates well to Amelia's main profession, providing the assisted migration after which her ship is named. Transporting endangered animals from their now uninhabitable biomes into one of the wildlife reserves represents a form of climate adaptation that, while being a nicely filmable and marketable activity, only treats the symptoms of ecological transformation without even attempting to counteract the risks behind it. During her tour through Siberia her well-meaning but short-sighted activism earns Amelia the title "queen of stopgaps" from an acquaintance who connects the ecological threats to neoliberal capitalism: "Because in the long run, only a system fix will work. Until then, we try our stopgaps. We do what we can with the handouts of the rich. We try to save the world with their table scraps" (357). Amelia's philosophy is characterized by the words of her university undergraduate advisor 'Lucky Jeff', whom she remembers from the introduction to his first lecture, where he explained to her the human desire for simplification of complex connectivities, preferably into "one master rule". In this lecture, Jeff explored several of these possible rules, moving from the predominant and strictly capitalist "more is better" towards potential alternatives along the lines of Jeremy Bentham's "greatest good of greatest number" and finally – leaving behind the utilitarian anthropocentrism – the land ethics of Aldo Leopold, which he summarized briefly as "[w]hat's good is what's good for the land" (360)[19]. Amelia's contemplations of his proposals directly follow her conversation about being the 'queen of stopgaps', and they begin to shift her focus from the hands-on approach of temporary wildlife preservation towards beginning to question the economic system: In her next spontaneous adventure, she uses her medial reach to spread a new, political message and urges her viewers to join the Householder's Union, organize and do "synchronized lifting of each other, to get through the emergency" that is the depressing and uncertain ecological and economical state of society (364). From this appeal to collective responsibility, Amelia's political commitment grows further upon her return to New York City in the aftermath of Hurricane Fyodor. She learns that her friends in the Met Life Tower, along with everyone but "the people in the

[19] In his groundbreaking work *A Sand County Almanac*, which has been named one of "the two most significant environmental books of the 20th century" alongside Rachel Carson's *Silent Spring* (Duffy 6), and which contains the essay "The Land Ethic", Aldo Leopold is one of the first thinkers to extend the context of ethics from a purely societal concept that only regards the interaction of human beings towards the inclusion of "man's relation to land and to the animals and plants which grow upon it.". He criticises the "land-relation" of his time for being "still strictly economic" (Leopold 238), meaning that nature is viewed as a thing to exploit and is only protected if this protection can result in the generation of short term economic value – a "system of conservation" which he calls "hopelessly lopsided" (251).

superscrapers" (525) will be forced to rely on external help and charity for food, electricity and other essentials for quite some time. The image of a devastated city, filled with dead animals, homeless flood victims and public utilities contrasted against the unfazed superscrapers and their luxurious and empty but inaccessible apartments fills her with such rage that she publicly calls the general financial strike into action to her 30 million viewers. This act makes her – an environmentalist that has turned away from attempting to fix the ecological symptoms and towards questions of social justice – the final actor in the series of events leading towards societal transformation:

> [T]hese towers are just assets. They're money. They're like big tall purple gold bars. They're everything except housing. […] Now, here below us is central park. It's a refugee camp now, you can see that. It's likely to be that for weeks and months to come. Maybe a year. People will be sleeping in the park. Lots of tents already, as you see. […] So you know what? I'm sick of the rich. I just am. I'm sick of them running the whole planet for themselves. They're wrecking it! So I think we should take it back, and take care of it. And take care of each other as part of that. No more table scraps. You know that Householders' Union that I was telling you about? I think it's time for everyone to join that union, and for that union to go on strike. An everybody strike. (526)

While Amelia herself is not able to understand the exact details of the plan, under the guidance of Franklin and Charlotte, Amelia's crowd-pleasing personality is enough to convince her audience to follow through. The New Yorkers, already frustrated from the lack of governmental support after the hurricane, quickly begin a campaign of civil disobedience:

> Strategic defaulting. Class-action suits. Mass rallies. Staying home from work. Staying out of private transport systems. Refusing consumer consumption beyond the necessities. Withdrawing deposits. Denouncing all forms of rent-seeking. Ignoring mass media. Withholding scheduled payments. Fiscal noncompliance. Loud public complaining. (531)

The initial spark of New York City rapidly kindles similar riots all across the globe, with the coastlines leading the way. Importantly, the two most effective means of civil disobedience are narrated as being two fundamentally different methods. While the refusal to pay financial obligations is a criminal act, it immediately gets the public on board with the strike, as the potential impunity – due to the unmanageable mass of culprits – provides an attractive way for individuals to improve their personal financial situation. Second and more importantly though, spending on consumer goods beyond the absolute necessities also sharply drops everywhere, giving a "perfectly legal fuck-you" (532) to the growth-focused, consumerist

economy. Within this second successful practice lies the representation of a true shift in society that is not merely driven by a motivation for personal gain (as the refusal to pay personal obligations could be read), but by a true desire for departure from liberal market capitalism. Within this climate of societal shift, the anticipated burst of the intertidal housing bubble creates the next, and this time final, iteration of a financial crisis modeled after the events of 2008. This time though, in the spirit of the new economic thinking that has overtaken the public, Larry Jackman and the secretary of the treasury bail the banks out only under the condition of nationalizing their profits along with their risks (601). Once again emphasizing the fact that the global challenges of the world risk society cannot be faced on a national level, it is emphasized that similar arrangements are simultaneously passed by the central banks of other powerful nations and regions in Europe, Asia and South America, creating a globally changed financial system in the process. In addition to the nationalization of the banks, the new legislators also introduce an asset tax for capital assets exceeding ten million dollars, and a capital flight tax, capped at "the famous Eisenhower-era ninety-one percent" keeps the money inbound. The enormous influx of money enables the government to fund "[u]niversal healthcare, free public education through college, a living wage, guaranteed full employment, a year of mandatory national service" (602), all while creating a climate of security from the ruins of the risk-obsessed capitalist markets, which ultimately even proves beneficial to the economy: "That making people secure and prosperous would be a good thing for the economy was a really pleasant surprise to them. Who knew?" (603).

Unlike the risk narratives analyzed earlier, *New York 2140* thus not only showcases the challenges posed by the world risk society, but also explores the route towards a possible solution. In opposition to *Odds Against Tomorrow*, not only do individual characters reject the system, but their actions spark a shift in societal focus which eventually results in a change in the "one master rule" (360), from a purely neoliberal ideal towards a more social one. While the social injustice of unchecked capitalism is the ultimate obstacle that must be overcome in the novel, it leaves no doubt that its ideal society is not communist or socialist in nature but comes closer to a social market economy, best illustrated in a discussion between Franklin and Charlotte: "These other ideas you're having don't sound like me. More like Karl Marx." "If only. At best, it's Keynes. But that's okay. It's a Keynesian world. Always has been" (588).

While the narration of the solution taking effect is a new feature of *New York 2140*¸the means by which it is achieved are very similar to those from *Flight Behavior* or *Carbon Dreams*. The collaboration of humans from entirely different social, ethnical and economic backgrounds is the only way to truly stand up to the challenges of global risk. In this novel, the characters do not only act as representatives of their respective strata, but the message is explicitly stated on the novel's final pages by the 'citizen':

> Note that this flurry of social and legal change did not happen because of Representative Charlotte Armstrong or the Twelfth District of the State of New York, also known as "Red Charlotte", admirable woman and congressperson though she was. Nor was it because of her ex, Lawrence Jackman, […] nor because of the president herself, much praised and excoriated though she was for her course of bold and persistent experimentation in the pursuit of happiness during a time of crisis. Nor was it due to any other individual. […] That said, people in this era did do it. Individuals make history, but it's also a collective thing, a wave that people ride in their time, a wave made of individual actions. (603)

This "collective wave of individual actions" is a perfect example of the cosmopolitan moment that enables the formation of political communities from groups of fundamentally diverse individuals who unite over "hav[ing] to live with the risks that others take" (Beck, *World Risk Society* 16). This form of cosmopolitanism is primarily connected to the "unequal political and economic playing fields" (Heise, *Sense of Planet* 159), which are repeatedly evoked by metaphorical equation of high finance and capitalism to a decree of divine power similar to that which Beck ascribes to the general category of global risk (*World at Risk* 72): The financial strike is repeatedly called the "Jubilee" (*NY* 505) by Franklin, declaring the act of fiscal noncompliance a sin that can finally be forgiven, as well as a "strike against God" (563). Additionally, the fact that the group of focalizers themselves use the tools of day trading to multiply the treasure retrieved from the *Hussar*, is justified by them with the remark that "when you're fighting the devil, sometimes you gotta use the devil's weapons" (338), thus completing the trinity of religious metaphors for an unjust system that is ultimately overcome by a cosmopolitan movement. The inclusion of the ecologically motivated character of Amelia and her activism for Charlotte's political campaign finally ties the perspective of environmentalism into this cosmopolitan movement. While her message "ALL THE GREAT MAMMALS ARE VOTING FOR CHARLOTTE" (554, lettering in original) falls short of going beyond environmentalist clichés, its connection to the ecological impact as an important factor for global finance most definitely does, as does Amelia's earlier insight into the "rebound of

secondary and tertiary effects" that were all influencing each other and thus turning global ecology into a train wreck (*NY* 360). As such, Amelia provides the environmental inflection that Heise calls for in her vision of "an eco-cosmopolitanism [that] might link experiences of local endangerment to a sense of planet that encompasses both human and nonhuman worlds" (*Sense of Planet* 159).

As a final note, unlike most other risk narratives, *New York 2140* appears to include a 'happy ending' to its story: The banks are nationalized, new legislation allows for a fairer distribution of money, the intertidal zone is projected to become habitable with new technology proposed by Franklin, and Charlotte becomes member of a progressive new Congress. Nevertheless, the novel stays true to the idea of global uncertainty, and of the world risk society as an entity that can neither be overcome by catastrophes nor successes. Each risk, whether realized or averted, carries within itself a future of new uncertainties. This axiom of the world risk society is precisely formulated by the 'citizen' in his direct address to the reader in the final chapter before the epilogue:

> [P]lease do not because of this quick list of transient political accomplishments conclude that this account is meant to end all happy-happy, with humanity's problems wrapped up in a gift box, accompanied by a Hallmark card and flowers. Why would you think that, knowing what you know? […] So sure, a leftward flurry of legislation got LBJed through Congress in 2143, but there was no guarantee of permanence to anything they did, and the pushback was ferocious as always, because people are crazy and history never ends, and good is accomplished against the immense black-hole gravity of greed and fear. […] So no, no, no, no! Don't be naïve! There are no happy endings! *Because there are no endings!* […] Meanwhile get over your childlike Rocky Mountain desire for a happy ending, because it doesn't exist. *Because down there in Antarctica – or in other realms of being far more dangerous – the next buttress of the buttress could go any time.* (604, my emphasis)

3.4. Conclusion

The risk narratives in this chapter forego scientific questions about the reality of climate change. Instead, they create worlds in which the existence of climate change is not debated at all – either because the reality of the storyworld has already created undeniable facts, or because the risk of global warming is only one among a plethora of potential worst-case scenarios that are all pictured "in Technicolor" (*OT* 71). Instead, these novels follow a twofold structure. On the one hand, with both novels featuring economists as central characters, the economic aspects of global risk are strongly foregrounded and explored in terms of two aspects. Both narratives emphasize the enormous financial gains that can be made if the ethical question of cumulative responsibility for the planet as a globalized space of nature and civilization is ignored. The tremendous social power emerging from wealth in a capitalist society leads to a moment in which those who disregard the implications of cumulative responsibility grow powerful enough to exert their influence over policymakers and shape the law to their personal advantage. While the powerful fossil fuel industry also played a role in *Carbon Dreams*, its representatives were dependent on deception and misinformation to influence the government. The financial leaders of this chapter can simply buy off the politicians and render them mere side notes, or outright ignore state authority. The second economic aspect of global risk relates to social justice. Whether by Mitchell outright stating that he is too rich to live in a refugee camp, or through the example of the precarious living conditions in the intertidal, both novels illustrate Beck's position that in the world risk society, "there is a fatal attraction between poverty, social vulnerability, corruption and the accumulation of dangers" ("Beyond Class" 693). While global risks threaten the entire planet by definition, their early indicators are felt most directly by those with no power to adapt or avoid them.

This social injustice leads directly to the second focal point: The planetary transformation that was only hinted at in the finale of the risk narratives of anticipation analyzed in previous chapters is now taking place within the narrative and described in great detail. While the planet in *Odds Against Tomorrow* is not yet flooded permanently, virtually all locations within the narrative are transformed to a lasting degree by an event that is directly attributed to spatial developments on a global level. The creation of this new, alien landscape on Planet Earth is illustrated through biblical metaphors within Mitchell's prognoses, his journey

through the flood in a makeshift arch, and the renewal in the ruins of an old system, shared only among his small group of followers. The language of *New York 2140* reserves religious analogies for the apotheosis of the financial sector. Nevertheless, the prosaic, cynical descriptions of 'the citizen' allow readers an equally detailed insight into the catastrophic events that led to the world of the twenty-second century as Mitchell's prognoses do for his worst-case scenarios.

Importantly, the catastrophic hurricanes that bring spatial transformation in both novels also trigger developments in the societal system. While the new community remains small and fragile in *Odds Against Tomorrow*, and *New York 2140* explicitly notes that there is "no guarantee of permanence" for its more widespread renunciation of liberal market capitalism, both works strongly suggest the necessity for a general rethinking of current societal systems in favor of a more justice-oriented and ecological framework. Under the creative process of fictional worldbuilding, they provide new perspectives on the discourse of justice in the face of global risk and the question as to whether the social systems that brought humanity into second modernity will also be suitable to cope with its challenges.

Both novels in this chapter are set at a turning point in the history of their respective storyworlds. The societies in which they are initially set are equal or very similar to the modern world of today, but these worlds change significantly over the course of the narrative, catalyzed by a catastrophic event of large proportions. In focusing on the transformative process that global risk will inevitably unleash, they provide a link between the risk narrative of anticipation and the risk narrative of catastrophe. This third type of risk narrative, for which I propose the term *risk narrative of transformation*, depicts a society in transition, linking the personal development of its main characters closely to the new demands of a changing world. In doing so, it creates a more dynamic plot that makes use of both predictive and reactive elements and encourages thought about the cause and effect of global policies and potential alternatives.

Chapter 4

Living in the Unsavable:

Radicalization and Terrorism in the Risk Narrative of Catastrophe

I have to admit that there is a particular aspect of climate change I do deny, and that is this notion that it exists as a discrete entity, offset and separable from the rest of our human flaws and ruinous endeavors. I find it very difficult to explore climate change in of itself, as opposed to a consequence of myriad other misadventures that have led us to this point, and that's in large part how climate change is framed in American War. I'm not sure if I did it properly, or if I spent too much or too little time exploring any one of the many causes and consequences of the climate disaster, but I always wanted the book to focus more on the symptoms than the disease.
(El Akkad, "The Power of Fiction to Change Beliefs: An Interview with Omar El Akkad")

In the previous chapters, I analyzed the narration of climate change as a global risk from the perspectives of science and economics. Chapter 2 focused on the challenges faced by scientists when trying to communicate the dangers of global warming in a world which has not yet accepted climate change as a proven phenomenon. In these risk narratives of anticipation, early indicators of global warming's effect on the environment were used as the central element of proof, and the propagation of an environmental message was the central motivation for the analyzed novels' main characters.

While still featuring prominently in the background, this environmental message is no longer thematically central in Chapter 3, which focused on the economic impacts of climate change as the "greatest market failure the world has seen" (Stern 1), and the non-environmental effects of runaway climate change on global society[20]. In this fourth chapter, I will go one step further and read climate change as an instigator for individual human behavior itself, emphasizing what Hulme calls the ethical dimensions of climate change: "Far from being a simple problem of science or of Economics, there is a deepening appreciation that climate

[20] This is a question of focus. Characters like *New York 2140*'s Amelia and the Tichonderogans in *Odds Against Tomorrow* are strong reminders that at its core, climate change produces its dangers through environmental catastrophe. Still, in these stories, the threatened environment moves to the background, behind the market economy.

change – both in the way we frame it and the way we define our response – can only be grasped through appreciation of its ethical dimensions" (174).

Whereas my first two chapters followed one or many individual characters as representatives of certain groups within the greater societal system, this chapter deals with a more individualized phenomenon, which nevertheless constitutes a global risk in Beck's definition of the world risk society: the individual response to a world (mis)shapen by global risk, and our personal inability to deal with such unprecedented and overwhelming degrees of interconnectivity, responsibility, and power.

For the protagonists of the two novels I analyze in this chapter – T.C. Boyle's *A Friend of the Earth* and Omar el Akkad's *American War* – this means a combination of the inability to deal with an ever-(d)evolving world and the temptation of the destructive power given to individuals by the means of the world risk society. Their struggle to deal with these two challenges leads to action that Ulrich Beck identifies as the third and last logic that constitutes his model of the world risk society, the risk of global terrorism, which, according to him is "transforming the foundations of international politics" (*World at Risk* 39). As the narratives of risk move away from the risk narrative of anticipation and towards the risk narrative of catastrophe, the space within which the characters exist becomes increasingly perilous. While not immediately resulting in terrorism, life circumstances in risk narratives of catastrophe create a fertile ground for radical ideas. Characters in these novels live under constant threat in spaces where functioning social order and governmental control have collapsed.

4.1. Global Terrorism and the Climate Risk

Immediately, the phenomenon of terrorism stands out quite radically from the two other risk logics that were analyzed earlier. Unlike the unintentional side effects which constitute the threats of environmental and economic catastrophe, an act of terrorism is, after all, an intentional, targeted, temporally and spatially defined attack. In order to address this fundamental difference between the previously applied risk logics and the risk logic of terrorism, an adequate definition for 'terrorism' in the sense of the world risk society is required.

A glance into the plethora of existing terrorism research quickly reveals this to be a challenging task: Terrorism scholar Alex P. Schmid identifies virtually hundreds of definitions of 'terrorism' as being currently in use, with no consensus on the horizon (39). Further still, Schmid's colleague Ganor critiques that the "politically correct" view on the search for an objective definition of terrorism has long found it both "unnecessary and well-nigh impossible" (304). Within this context, Schmid nonetheless shares his attempt at such an academic consensus definition:

> Terrorism refers on the one hand to a **doctrine** about the presumed effectiveness of a special form or tactic of fear-generating, coercive political violence and, on the other hand, to a conspiratorial **practice** of calculated, demonstrative, direct violent action without legal or moral restraints, targeting mainly civilians and non-combatants, performed for its propagandistic and psychological effects on various audiences and conflict parties. (86, emphasis in original)

This definition provides a solid foundation for my analysis and the attempt to integrate terrorism into the logics of global risk. It requires two adaptations however, which will, ironically, add another one to the multitude of existing terrorism definitions.

First, Schmid understands terrorism not only as the conspiratorial *practice* of violent action, but also as the underlying *doctrine* of said practice's effectiveness, partially decoupling the concept of terrorism from the individual attacks and their spatial and temporal confines. The understanding of terrorism as a global risk requires one further step, however. Both aspects Schmid identifies approach terrorism from the perspective of the perpetrators – their belief in the doctrine, and their 'practical execution' are his key factors of terrorism.

Following the idea of risk staging, however, the terrorist risk must also be understood from the perspective of its potential victims. While each individual terrorist attack constitutes a terrible catastrophe on its own, to the observing, not directly affected population, each individual attack only adds to the broader, less concrete but no less devastating threat of having to suffer a similar potential event in the future. Ulrich Beck formulates this distinction between the global risk of terrorism and its individual incarnations as follows: "The catastrophe [of a terrorist attack] is spatially, temporally and socially fixed, it has a well-defined beginning and end. This is *not* true of the terrorist risk" (39, emphasis in original). To him, "terrorism exploits the difference between (possible) threat and (actual) catastrophe", profiting from the "brutal evidence of the consciously produced catastrophe and its staging in

the mass media" (ibid.). Following this logic, individual terrorist attacks are merged into the combined threat of global terrorism that is perceived as an abstract, global risk through the lens of medial staging. In this abstractly staged form, the terrorist risk has influenced countless developments on a global scale, from wars and military interventions to domestic policies, national and international markets as well as interpersonal relations on an individual level.

Second, Schmid explicitly excludes all forms of violence against nonliving things from his definition. He keeps his definition "more restrictive, [for] the concept of terrorism […] to retain some analytical rigour", but admits that this exclusive understanding is not beyond criticism, as "'attacks on individuals' property can inspire anxiety, threaten population, and can be used for manipulation of the main target (e.g. government)'" (71). In their analysis of journalistic uses of 'ecoterrorism', Sumner and Weidman credit libertarian activist Ron Arnold with having coined the term in an attempt to shape the debate on ecological activism in his favor (867). They raise the comprehensive argument that the destruction of property, conducted in a way that is "careful not to injure or kill" should not be unfairly equated to acts that actively "[seek] to destroy human life, or coerce or intimidate through the threat to human life" (874).

While this argument is indeed compelling, their analysis also shows that Arnold's attempt at staging ecologically motivated property crimes as terrorism was widely successful: In their conclusion, the authors concede the fact that "the term 'ecoterrorism' [has] become widely, and uncritically, accepted" (873). This notion is backed by the fact that the overwhelming majority of crimes investigated as 'ecoterrorism' are property crimes, but its delinquents are repeatedly indicted and judged as terrorists under U.S. law (Smith 566). In fact, ecoterrorism has been called "the 'number one' domestic terror threat facing the USA by the FBI's Section Chief for Domestic Terrorism James Jarboe (Joosse 75). Until 2024, the official FBI list of most wanted terrorists featured only two US-citizens not wanted for ties to Islamist terror: convicted murderer and member of the Black Liberation Army Assata Olugbala Shakur, and environmentalist, animal liberationist and 'ecoterrorist' Daniel Andreas San Diego[21] (Federal Bureau of Investigation). Given this state of societal perspective and judicial practice, I will include property crimes in my analysis of acts of terrorism, despite the notable divergence in severity between the vast majority of crimes investigated as 'ecoterrorism' and other terrorist

[21] San Diego was arrested in November 2024 after more than 20 years on the run (Dearden and Slow).

crimes. Working from Schmid's proposed consensus definition, I thus provide as my working definition:

Terrorism refers to a **doctrine** about the presumed effectiveness of a special form or tactic of fear-generating, coercive political violence; to a conspiratorial **practice** of calculated, demonstrative, direct violent action without legal or moral restraints, targeting mainly civilians and non-combatants and their property, performed for its propagandistic and psychological effects on various audiences and conflict parties; and to its **staging** as a agglomerated risk of global proportion.

In a final difference to the other two risk logics, the immense impacts of the terrorist risk are not produced as mere side effects. Just like the planetary ecosystem or the global economy, the risk of terrorism produces its most far-reaching effects through the uncontrollability of complex, global systems, in this case of sociopolitical and ethical dimensions. The difference then lies in the intended toppling of these systems in order to change their composition. Where other risk logics are realized as unintentional side-effects of society's central decisions, "[t]errorist activity […] is intentionally bad. It aims to produce the effects that the other crises produce unintentionally. Thus, the principle of *intention* replaces the principle of *accident*" (Beck, "Terrorist Threat" 44).

The world risk society and its uncontrollable complex connectivities interact with the intentional risk of global terrorism on two different levels. On the one hand, the *effects* of a singular, spatially limited terrorist attack are deterritorialized to an extreme degree. This could be clearly observed after September 11, 2001, when the impact of the three passenger airplanes on the World Trade Center and the Pentagon not only left 2,996 people dead, 25,000 injured and destroyed one of the planet's most iconic symbols of globalization and liberal market capitalism, but forever changed the way the world was perceived. The 9/11 attacks have caused wars and war-like military conflicts involving far over one hundred nations (according to the U.S. Department of State), influenced the foreign policy of almost every country in the Western world, and changed the way in which the West perceived people of Muslim faith, all within the timespan of less than an hour (U.S. Department of State).

No security measures protect from these deterritorialized effects. To the contrary, the ever-increasing strictness of security measures around the globe serve as permanent acknowledgements to the existence of a deterritorialized threat at every airport, national border or public place in the world, regardless of whether any previous attacks have happened

in that region. Measures ranging from restricting liquid materials on airplanes or concrete roadblocks around civilian gatherings up to the proposal of banning all male Muslims between the age of 15 and 55 from air travel (Beck, *World at Risk* 106) are proof of policymakers' inability to deal with the terrorist risk on a domestic level. On the international stage, military interventions led under the infamous 'war on terror' have shown the same helplessness, while breaking international law and actually *increasing* the amount of terrorist attacks through military occupation (Pape 36).

On the other hand, not only are the *effects* of terrorism in the world risk society inflated beyond limits, but so are its *opportunities*. While partisan tactics and guerilla warfare have always existed as strategies of asymmetrical military conflict, the combination of technological advances and a connected world offer modern day terrorists unprecedented opportunities to strike their enemies at any time and any place, with greater devastation than ever before. Where the hijacking of a plane and its subsequent crashing into a skyscraper might cost several thousand lives, the potential effects of terrorist groups obtaining stems of highly infective and deadly biological weapons or even nuclear technology are virtually limitless and thus constitute one of the three primary logics of global risk.

There are two areas which closely link the threat of global climate change and the terrorist risk. The first is the aforementioned 'ecoterrorism', in which terrorist actions are used as measures to enforce a political agenda to prevent or combat climate change. This area is explored in detail in *A Friend of the* Earth by T.C. Boyle. In the second case, climate change acts as an instigating factor. Through runaway climate change, societies collapse, the standard of living drastically drops and the resulting social instability creates a fertile ground for the radicalization of the population, regardless of any environmental agenda. This scenario is the foundation for Omar El Akkad's *American War*.

4.1.1. Sustainability by Force: Ecoterrorism

Before anyone could consider ecoterrorism an actual domestic terror threat, it slowly developed from the roots of the environmental movement laid by the environmental works of Aldo Leopold and Rachel Carson. *A Sand County Almanac* and *Silent Spring* were central elements of the regrowth of environmental awareness in the decades following World War II.

The 1960s saw environmental organizations such as the Sierra Club grow from 16,000 members in 1960 to 114,000 in 1970. That same year, the first Earth Day in the U.S. featured 20 million participants country-wide and a 250,000 people march in Washington D.C. Under public pressure, President Nixon eventually founded the Environmental Protection Agency (EPA), and continued to provide environmental legislation (Liddick 14-15). These successes of the environmental movement continued in the founding and professionalization of nonviolent organizations such as *Greenpeace*.

By the end of the 1970s, however, public interest in the environment had ebbed away, and the Reagan administration of the 80s focused their legislation on industry-friendly politics. In the resulting climate of dissatisfaction among environmental activists, more radical methods started to become acceptable as a means to reignite public attention and send a signal of necessary action by politics and industry. In conflict with *Greenpeace*'s strict nonviolence policy, the *Sea Shepherd Conservation Society* (SSCS from hereon) was founded as a breakaway faction under a new policy claiming that "respect for animal life should take precedence 'over respect for property which is used to take lives'" (Long 26). While this new policy was appended with clear rules of "1. No explosives", "2. No utilization of weapons" and "3. No action taken that even has a remote possibility of causing injury to a living thing. […]", this marks a clear break with the hitherto strictly nonviolent protesting of preceding environmentalist groups. Paul Watson, who has headed SSCS since its foundation in 1977 claims to have "sunk ten whaling ships and destroyed tens of millions of dollars' worth of *illegal* fishing gear" (Khatchadourian, my emphasis) over the course of 30 years.

Watson's stress on fighting against 'illegal' practice is noteworthy, as it provides a form of justification highly common in ecoterrorism. Regardless of applicable law in the individual cases – e.g. Japanese whaling law – the appeal to a higher authority or morale is used to justify illegal action. In Watson's specific case, he invokes the UN World Charter for Nature, from which he derives his and his organization's empowerment to "uphold international conservation law" (ibid.), and thus stop any activity which violates these laws in their eyes. This kind of reasoning enables a nigh infinite range of violent radical activity, in which each individual is able justify any illegal acts as a necessary means for a just[22] cause.

[22] Judged by nothing but the perpetrator's own ethical code.

While “the ideologies surrounding the radical environmental movement are diverse and sometimes conflicting”, Liddick identifies amidst these ideologies a repeating and “central core of ideas”, the concept of deep ecology developed by Norwegian philosopher Arne Naess (19). In its essence, deep ecology understands the value of all life forms as intrinsic, unlike the opposed ‘shallow’ ecology, where conservation of nature and environmental protection are thought of from the perspective of human benefit (i.e. the conservation of an environment comfortably habitable for humans). In their 1984 summary “The Basic Principles of Deep Ecology”, George Sessions and Naess give a brief synopsis of their beliefs. Starting from the first premise that nonhuman life and its well-being and richness have intrinsic value and that “humans have no right to reduce this richness […] except to satisfy *vital* needs” (14, emphasis in original), in their later points, the principles grow more demanding. In calling “The flourishing of human life and culture” “compatible with a substantial decrease of the human population.”, Naess and Sessions create the possibility for a success of humanity at the cost of many individual human lives. This statement is immediately enhanced in the following sentence: “The flourishing of nonhuman life *requires* such a decrease.” (ibid., my emphasis). After having thus argued the necessity for a “state of affairs […] deeply different from the present” (ibid.), including the substantial decrease of human population, the text closes with a call to action for all deep ecologists: “Those who subscribe to the foregoing points have an obligation directly or indirectly to try to implement the necessary changes” (ibid.).

While Naess himself had always maintained a strict policy of anti-violence, his teachings can easily be interpreted as calls for radical action against “the human population” and thus, human lives. Liddick reads deep ecology and the underlying consequences as “misanthropy taken to its limit” and, from this reading, constructs what he calls “the true threat of eco-terrorism”: “some motivated deep ecologists” who are not held back by a personal conviction of nonviolence might seek to hasten the “inevitable, imminent and *necessary* [environmental] apocalypse” (21).

Incidentally, ‘Miss Ann Thropy’ is also the pseudonym chosen by radical environmentalist and *Earth First!* founding member Christopher Manes[23] to publish his most radical ideas connected to deep ecology in the environmentalist group’s eponymic journal. In his 1987 text, which is

[23] While Manes himself never acknowledged being Miss Ann Thropy, his long-term companion Dave Foreman disclosed the information in the 1991 book *Defending the Earth: A Dialogue Between Murray Bookchin and Dave Foreman* (123).

simply titled “Population and AIDS”, Manes connects the global AIDS-epidemic with the required substantial decrease in human population as formulated by Sessions and Naess. He takes it as “axiomatic that the only real hope for the continuation of diverse ecosystems on the planet is an enormous decline in human population” (32) and praises the ‘advantages’ of AIDS as a means to achieve this reduction. Chief among them he lists the fact that the virus only affects humans and could thus kill a significant number of humans without the side effects of ecological devastation that would be brought by famine or nuclear war. With the ultimate goal of permanently ending industrialism as the driving force behind environmental catastrophe, Manes speculates “that the population of the US would have to decline to 50 million to really undermine its industrial economy, and down to five million to make hunting /gathering/small farming feasible. This suggests that AIDS would have to kill 80% of the world’s human population to end industrialism” (ibid.). Following this cynical and misanthropic analysis, the final connection to what Liddick called the true threat of eco-terrorism, Manes’ closing statement moves on from understanding AIDS as merely a convenient circumstance. In his paraphrasing of Voltaire, he concludes that “if the AIDS epidemic didn’t exist, radical environmentalists would have to invent one” (ibid.).

In calling the demise of 80% of humans on earth an essentially desirable phenomenon that should be actively pursued (or “invented”), ‘Miss Ann Thropy’, definitely a highly “motivated deep ecologist” (Liddick 21), demonstrates both the intention to create an incredible catastrophe, as well as the theoretical understanding for spread mechanics that would be beneficial for such a nigh-extinction event to occur.

Interestingly, both other risk logics feature in the short article. While environmental risks act as one of the inevitable factors for humanity’s downfall and thus as an almost desirable mechanism of human population control, financial risks are mentioned as well, as a characteristic of the corrupted system of modern society: “Industrial society is based on the accumulation of capital from a mass of workers. That capital represents power to organize people and material in such a way as to disrupt natural cycles – by building dams, producing toxic wastes, ‘developing’ the third world”. As this system collapses, “[c]apital dries up, governments lose authority, power fragments and devolves onto local communities which can’t affect natural cycles on a large scale” (Thropy 32).

The connection between capital and industrialism, and the perceived necessity to revert humanity back to a pre-industrial state, by force if necessary, is also characteristic of the final and most dangerous ecoterrorist in this introduction. Theodore Kaczynski, better known as the 'Unabomber', killed three people and injured 23 more in an "eighteen-year one-man terror campaign" between 1978 and 1995, designed to lead to the "downfall of modern technological civilization" (Liddick 103-04).

Kaczynski's murders painfully illustrate the reality behind the oftentimes theoretical ideas of violence in defense of nature, or as a legitimate means for public influence. His acts of terrorism were grounded in a complete rejection of and disdain for industrial society. A mathematical genius, Kaczynski suddenly left his promising, tenure track career as an associate professor at UC Berkeley to live a secluded life in the wilderness of Montana (McFadden). Over the eighteen years he spent in rarely interrupted isolation, he produced the explosive devices used in his terror attacks and worked out his manifesto *Industrial Society and its Future*, a forty-page essay about the bleak state and future of humanity, which he attributes to the "disaster" of the Industrial Revolution and its consequences (1).

In his manifesto, Kaczynski blames the rise of technology for a destabilization of society, subjecting human beings to "indignities" and widespread psychic and physical suffering, and expects these effects to become only greater over time (1). In his predictions, he views the perils of the future in a similar way as theorists of global risk, when he warns of the lack of understanding of the consequences of rapid technological advance: "The technophiles are taking us all on an utterly reckless ride into the unknown" (27). His proposed solution (and the only way to ensure human survival) is a return to pre-industrial life, enforced by an "international and world-wide" revolution with the "ONLY [sic] goal" of "thoroughly wreck[ing]" the industrial system (29-30). The manuscript was sent to the *Washington Post* and *The New York Times* in June 1995, and Kaczynski threatened to commit further acts of terror, should one of the newspapers not publish the text in its entirety (1).

Through his manifesto, Kaczynski intended to spread his ideology to the public and attract "a core of people who will be opposed to the industrial system on a rational, thought-out basis, with full appreciation of the problems and ambiguities involved, and of the price that has to be paid for getting rid of the system" (28). This way of decentrally recruiting a "small number of intelligently committed people" (ibid.) through the spread of carefully worded manifestos

and primers is an important way to recruit new followers for the movement. In areas of crime whose violence far exceeds those of the Sea Shepherd Conservation Society, no 'official' presence of these groups exists, making recruitment of new members exceedingly difficult.

"The ALF-Primer"[24], a document spread as an anonymous introduction into the ways of the Animal Liberation Front (ALF), one of the most infamous eco-terrorist-groups, formulates the process of 'joining' ALF as follows:

> Due to the illegal nature of ALF activities, activists work anonymously, and there is no formal organization to the ALF. There is no office, no leaders, no newsletter, and no official membership. Anyone who carries out direct action according to ALF guidelines is a member of the ALF. ("The ALF-Primer" 3)

Aside from the Primer, websites associating themselves with the ALF or other, similar groups provide access to writings such as *Arson Around with Auntie ALF* or *Setting Fires with Electrical Timers* (Liddick 76) to enable individuals to form their own groups and pursue direct action along the lines of the organizations.

The first book analyzed in this chapter, T.C. Boyle's *A Friend of the Earth*, follows the inner workings of a cell of such radical environmental activists or ecoterrorists. The story is split in two timeframes, one of which depicts the active days of 'Earth Forever!', a radical activist group modeled after the real-world groups of 'Earth First!' and its radical splinter group, the 'Earth Liberation Front', between the years 1989 and 1997. The second timeframe depicts the grim future of 2025 and 2026 in which the activists' actions have remained largely ineffective and the world inhabited by the now aged protagonists is devastated by ecological catastrophe. The narrative is told both through the eyes of an eager activist ready to do whatever must be done to further his goals, and the cynical view of an old man who must endure the consequences of his and his society's failures. This duality provides an interesting take on the subjectivity of conviction and its role in the world risk society, with the past story arc depicting a time in which radical real-world environmentalist groups like Earth First!, the Animal Liberation Front or the Sea Shepherd Conservation Society had already received significant media attention, while the future arc explores a future in which the terrible visions of these

[24] Due to the informal nature of the background structure, the anonymity of the authors and the simplicity with which they can be altered and respread via the internet or low-quality printing, various versions of the "ALF Primer" and similar guidebooks exist. For my quotations, I am referring to the version downloaded from https://warriorup.noblogs.org/guides, archived in 2024.

organizations have essentially been realized. Additionally, *A Friend of the Earth* puts significant emphasis on protagonist Tyrone Tierwater's desire to have an impact on the world, and the great lengths he is willing to go to in order to reach this goal. His undertakings closely resemble the approach of Kruglanski et al., who understand the radicalization into violent extremism as a twisted version of an individual's personal "quest for significance", the "fundamental desire to matter" (73). This reading of radicalization connects well to the way Mayer ("Encounters with the Abject 228-30) links Tierwater's struggles to an unsuccessful self-comparison to what Andrew Ross has called the "ecological superman" (167) or "Eco-Man" (174): the image of a hypermasculine, strong-willed, disciplined environmental protector.

4.1.2. Deadly Environment: Climate Change as an Instigating Factor

While ecoterrorism is an important aspect connecting the global risks of climate change and terrorism, it is not the only link between these two logics of risk. While the climate catastrophe is one of the central elements fought by ecoterrorists, the reality it forms can also become an important factor in the radicalization of other terrorists who are not even necessarily aware of its existence.

In a morbidly ironic turn, the most infamous terrorist of our time, Osama Bin Laden, accused the major corporations in the West of being "the real tyrannical terrorists", who were putting "the life of all of mankind […] in danger because of the global warming resulting to a large degree from the emissions of the factories of the major corporations" and were willingly accepting "the death and displacement of the millions of human beings because of that, especially in Africa." (Bin Laden qtd. in Renard 16). While this statement obviously has to be contextualized against its original author's gruesome background, Bin Laden's direct comparison of terrorist attacks and actions causing climate change certainly serves as an expressive connection between the two areas. Furthermore, the statement can be read as a justification for any terrorist attack. Revisiting the aforementioned idea that the terrorist has no superordinate moral authority except the one they choose to accept for themselves, it becomes entirely justifiable to carry out any action designed to overthrow a system in which these 'real tyrannical terrorists' are allowed to exist.

Naturally, the radicalization into violent extremism is an extremely complex process, which is both incredibly personal as well as difficult to research and understand. Thus, it is nigh impossible to identify any singular influence as the deciding factor in an individual's radicalization. While radicalization is nowadays generally understood as a dynamic process, "[t]he nature of that process […] remains poorly understood" (Borum 15). Despite the large body of research on the process, there are no "easy answers. No single theory is likely to explain all violent radicalizations" (31). As such, the connection between climate change and violent radicalization can only be found as one of several factors. Across the numerous studies that explore the connections between climate change and global terrorism, despite disagreeing on the exact consequences and diverging in their theoretical approaches, there is agreement that climate change either directly facilitates the growth of terrorism or acts as an enhancing factor for circumstances under which terrorism can thrive[25]. For the sake of clarity, I will concentrate on two approaches. The first was formulated by Arie Kruglanski et al. as the "quest for personal significance", which is assumed to be "a major motivational force that may push individuals toward violent extremism" (69). For the external factors of radicalization, I rely on Thomas Renard, who, following Martha Crenshaw, distinguishes between three factors that accompany the process of radicalization, namely the "instigating causes", "permissive factors" and triggering or "precipitant events".

Instigating causes are understood as "the root of terrorism" (19). The aforementioned 'fertile ground' for terrorism to grow in "may be rooted in economic, social or political conditions" (ibid.) and provide "the deep reasons that motivate a terrorist's actions" (ibid.). As climate change is likely to create an environment in which poverty, inequality, migratory crises and state failures become far more frequent, this environment will also contain more instigating causes for terrorist development (38-41).

Permissive factors, then, "facilitate the use of violence. Economic, social, political, psychological or environmental conditions can ease or hinder the development of violence" (19). In the scenarios of the risk narrative of catastrophe, these conditions will be those of failed states, scarce resources and dwindling societal control. As such, violent conduct is strongly abetted.

[25] cf. e.g. Renard, Fjelde and von Uexkull, Vestby, Butts and Bankus

Finally, despite all surrounding factors, "violence does not come out of nothing. It needs a trigger", which Renard and Crenshaw call the precipitant event. "Violence, without a trigger, will remain abstract. […] however, once violence ignites, […], it can spread quickly and burn for a very long time. […] The precipitant event is the tipping point beyond which the status of violence changes from being an option to being a solution" (20).

As these precipitant events are experiences that send an individual 'over the edge' into violent extremism, they are naturally also extremely individual in nature and thus hard to classify. Nevertheless, Renard argues that given the increased number of potential catastrophic experiences individuals can undergo in a world dominated by the climate crisis, the number of precipitant events will also rise due to climate change. More specifically, he postulates that

> it is the government response to natural disasters and other crises – or the absence of response – that determines whether violence will break out or not. If the government responds adequately to a crisis, it could appease some popular grievances and violence could be avoided. In the case of an ill-managed crisis, more grievances could be created, offering more legitimacy to political violence. (45)

Thus, even when climate change does not create 'new' or 'unique' forms of global terrorism, it acts as a "*threat multiplier*", which "will exacerbate tensions where they exist" (50, emphasis in original).

This stance has also been adopted into political discourse. Climate change is often connected to the risk of global terrorism in the political debate. Barack Obama's Pentagon called climate change a "threat multiplier" at a 2015 Coast Guard Academy commencement speech (Obama, "Remarks"), and the U.S. Center for Strategic and International Studies, "finds strong and surprising intersections between the two great security threats of the day — global climate change and international terrorism" under a scenario of catastrophic climate change (Campbell et al. 7).

These intersections are explored in the second novel discussed in this chapter, *American War* by Omar El Akkad. Fitting well into Renard's claim of governmental crisis management as a potential precipitant event, *American War* creates a future in which the U.S. has been ravaged by climate catastrophes and the violent differences over political responses have resulted in a devastating second civil war. Its characters grow up and survive in a world of scarcity, injustice and the ever-looming danger of falling victim to dangerous remnants of the war.

Dwelling in this environment of constant risk exposure, the inhabitants of Akkad's collapsed American South are constantly reminded of their political and military enemies, the victorious Northern States, until repeated injustice and humiliation leads protagonist Sarat to carry out a devastating terror attack.

The world of *American War* is shaped and defined by global climate change. While climate change as we experience it in the early 21st century is not explicitly mentioned, the setting, living conditions, and the political and economic conditions which the characters experience are consequences of a (partly) collapsed climate. The overarching developments brought forth by this collapse – from the rise and fall of political superpowers to the living conditions of individual households – are a central element of the narrative. They provide evidence that climate change must be read from a multitude of perspectives and influences areas of life, and indeed humanity, which are not immediately obvious, but still require careful analysis.

4.2. Fighting a Losing Battle: Ecoterrorism in *A Friend of the Earth*

In an important difference between the global risk logics of environmental and financial risks, the risk of global terrorism is not necessarily realized by the accumulated effects of human activity. On the contrary, the actions of one singular individual may cause its manifestation and devastatingly affect the lives of people on a national or even global scale. Nevertheless, the terrorist risk has been shown to be closely connected to the world risk society. In my corpus, the existence of ecoterrorism was already briefly touched upon in a short episode of *New York 2140*, in which a group of environmental extremists attempts to defend the purity of the Antarctic habitat with a small nuclear explosion (258). In this episode, the perpetrators are written off as "religious fanatics" and "fucking murderers" (260) and while the attack causes Amelia significant distress over a few pages, the entire issue is left without any further remark afterwards.

T.C. Boyle's *A Friend of the Earth* showcases in great detail the complex relationship between the looming threats of the world risk society, different human coping strategies and the development of ecoterrorism as an additional risk. The novel is focalized almost entirely through radical environmentalist Tyrone 'Ty' O'Shaugnessy Tierwater and narrates both Tierwater's radicalization into an infamous ecoterrorist in the 1980s and 1990s as well as his

bitter life as an old, cynical zookeeper in in the environmentally devastated world of 2025. This split is accompanied by a split in narrative perspective. While the storyline set in 2025 is narrated autodiegetically, the story elements set in the past feature heterodiegetic narration which is at times enriched by emotional commentary of Tierwater's future self. These short sections of commentary are set apart from the other text through italics and a switch back to autodiegetic narration. The split narrative situation strongly underlines the narrative's focus on the dark development the storyworld has undergone over the 40 years the novel spans. While the events of the past are narrated every bit as vividly as those of the future storyline, and the constant alternation between sections of past and future plot in the novel's chapters gives both plot threads equal space, Tierwater's cynical commentary clearly marks the events of the past as an artifact, which nevertheless still influences the events of the mid 2020s. This notion is enhanced by the initiating plot element for the future storyline: The unwelcome attempt of Ty's former colleague at 'Earth Forever!' to write a biography about his late daughter, who lost her life in an accident while fighting against the logging of an ancient tree. Thus, while the narrative about Tierwater's days as a radical environmentalist is embedded in the narrative of him coping with the dystopian future that he attempted to prevent in the past, the resurfacing of this very past is also the central event upon which the future story begins to unfold.

Another possible way to read *A Friend of the Earth*'s narrative split is the fact that the character's agency is severely changed in between the two plot arcs. In the past timeline, the novel tells the story of a group of environmentalists who are willing to do virtually anything in their power to fight the process of climate change, resorting to criminal, violent, and even deadly means in the process. In this part of the novel, the plot is entirely driven by the characters' actions and their surrounding reactions. This changes drastically in the second part, which counterposes Tierwater's colossal efforts against environmental destruction and his struggle for agency in the past to the future reality of his failure. Large segments of narration are devoted to descriptions of the ravaged environment and the resulting, devastating situation for all remaining life on the planet, with the characters being confined to a life reliant on external support to get by in a civilization locked in a state of slow collapse. This dual emphasis on narrating Tierwater's life both before and after an evident environmental catastrophe is a strong argument for calling *A Friend of the Earth* a risk narrative of transformation. Still, while it undoubtedly features elements of this category, the

catastrophe itself and human dwelling in the aftermath are emphasized in far greater detail than in the risk narratives of transformation analyzed in the previous chapter. As such, *A Friend of the Earth* contains various features of the risk narrative of transformation and the risk narrative of catastrophe.

Tyrone 'Ty' O'Shaughnessy Tierwater is an enemy of the people. To him, the cold, hard truth of this misanthropic mindset is the logical consequence of a close connection, the eponymous *friendship* he feels towards the earth and all life on it (44). Before his active role on the extremist fringe of the environmental movement is revealed, however, the reader is introduced to the protagonist of *A Friend of the Earth* as a 75-year-old, bitter and cynical zookeeper at the private menagerie of an eccentric aging rockstar on a dying Earth in the year 2025.

The inevitable death of the planet – the society, economy and biosphere as it existed until the late twentieth and early twenty-first century – is the novel's central recurring theme. Over the entirety of its two main storylines, the novel follows a group of environmentalists in their fight against the destruction of the biosphere in the first, and depicts a grim future ridden with vivid imagery of a collapsed global ecosystem and natural disasters in the second. The two arcs of the non-chronological narrative both follow Tierwater as the protagonist and main focalizer. The first (referred to as 'past' arc from hereon) narrates Tierwater's path from being a careless, materialistic, yet pseudo-environmental yuppie born into wealth towards a life of environmental extremism and violent crime in the late 1980s and 1990s. This plot arc is embedded into an episode from Tierwater's later life in 2025/26 ('future' arc from hereon), in which an aged Tierwater is reunited with his old love Andrea and their past acquaintance April Wind under the pretense of reappraising the life of his late daughter, prominent environmental activist Sierra, in the form of a posthumous biography.

While the storyworld in the past arc closely resembles the real world of the 1980s in its societal and environmental state, the world of the late 2020s in the future arc is described as a system in the process of global collapse. Basic structures such as companies, hospitals or grocery stores do still exist, though they mainly act as solitary reminders of an earlier time, a long line of "age[s] of excess" which culminated in the 1990s (118). The oceans are dead except for a few species of mussels (4), the only thing available at restaurants are catfish sushi and cheap

sake, and the extreme weather has rendered large strips of land uninhabitable. Behind these tales of environmental catastrophe, however, *A Friend of the Earth* is a tale of human helplessness, and the desperate desire to regain agency in the face of lost control. For the sake of a more stringent argumentation, this analysis will follow Tierwater's character arc in largely chronological order.

4.2.1. Responding to Loss: Ty Tierwater's Radicalization into Ecoterrorism

The story begins shortly after Sierra's birth, in 1979, when a 29-year-old Tierwater accompanies his first wife Jane on her scientific field work in Glacier National Park. The two are aware of the threat posed by the park's wildlife, which is "as wild as it got on the planet earth in 1979" (99), and take precautions including a temporal 'oath of celibacy' so as to not attract any dangerous wildlife with their sexual activity. While a violation of the oath remains without consequence, disaster strikes from an entirely different, unpreparable direction. An otherwise harmless bee sting reveals Jane to have a strong, previously undetected allergy to insects, and causes an anaphylactic shock that culminates in her death due to the absence of medical equipment or expertise in the wilderness. Tierwater's helplessness is emphasized by the vivid description of a dying Jane in his arms:

> Her eyes sank into her sockets and bounced back at him like two had black balls. […H]er heart was trying to tear its way out of her chest even as he held her, and she wet herself, hot urine down her leg in a smear of dirt, the smell of it like vinegar burned in a pan, and here she was on the ground, on her side, vomiting up the blackened paste of the pancakes. (102)

When he finally manages to take her to a hospital, Jane is already dead, "and all the king's horses and all the king's men couldn't – what? They couldn't do shit (54)". The vivid description of bodily functions and other subjects connected to disgust and taboo are frequent in the future story arc and have been identified by Mayer as signifiers for the destabilization of "both bodily integrity and received notions of the self", which is caused by the drastically changed environmental conditions (223). The description of Jane's death from the side effect of a simple and unforeseen bee sting, despite the pair's great caution regarding all known environmental dangers, can thus be seen as foreshadowing the challenges that will dominate Tierwater's future.

From this point onward, Tyrone Tierwater's life becomes a quest to regain the agency he had lost in the wilderness; a motivation which ultimately leads to ever further radicalization and alienation from society in a quest to both obtain the power to influence society and be recognized as doing so. Initially though, Tierwater's birth into a life of wealth enables him to attempt to bury his sorrow under a lavish lifestyle. He owns a "three-thousand-square-foot house with redwood siding and oak floors and an oil burner the size of Texas" plus several cars – which he races so relentlessly that his glovebox is so stuffed with tickets, it looks like a "napkin dispenser" – and accumulates things to the degree that he is unable to use them in any manner. His lavishness also extends to his personal life, dating "thundering herds" of women in his fruitless search for "another Jane" (43-44).

Eight months before the first autodiegetically narrated event of the past storyline, the protest in the Siskiyou Mountains, this coping strategy has failed, however. Tierwater has fallen into a quiet depression, which he wears "like a lampshade over his head" (62). Within this helpless situation he is first contacted by *Earth Forever!* (E.F.! from hereon), a fringe group of radical environmentalists that acts as the legal gateway organization for his descent into violent extremism and marks a direct reference to real-world radical environmental organization *Earth First!*.

Despite the fact that Tierwater only ever had gotten around to recycling "maybe twice a year" (42) and the obvious non-sustainability of his lavish lifestyle, "nature had always glimmered somewhere out there on the horizon of his consciousness". He unreflectedly thinks of himself and potential new romantic interests as "environmentally minded" (62), and aside from his genuine but incongruent belief that he is interested in saving the environment, meeting some of these environmentally minded women is one of his main motivations to attend the advocated "powwow/chili cookoff" at a wealthy E.F.! donor's house. Importantly, the cookoff is also labeled as an "apocalyptic lecture" (ibid.), as well as being called Tierwater's "call to arms" into the environmental movement (63), both figures of speech foreshadowing with regards to both his later descent into violence as well as the catastrophic development of the earth in the future storyline.

In addition, the scene offers a critique of a certain sect of environmentalism as a hypocritical upper-class-endeavor, treated as a business like any other by its practitioners. Starting with the "whole cordilleras of junk mail" (62) Tierwater gets from his lip-service membership to the Sierra Club, to the "sleek and menacing" import cars (63) that are clustered around the event location and the parodic high dress protocol of some attendees, the introduction of E.F.! as an organization caters strongly to this critique. The underlying implication is summed up in a cynical comment from future Tierwater: "What's an environmentalist? Somebody who already has their mountain cabin"[26] (64).

Tierwater's rapid immersion into the organization is strongly tied to his immediate infatuation with his future wife, Andrea. As the "main attraction" of the evening, the enigmatic activist is the one who holds the power to "[admit] him to her circle", while he is so stunned by her presence, "he must have watched her for a full five minutes, picture only, sound muted, before he found himself moving toward her, […] in the way of a moth following a pheromone trail". And while originally, his motivation is described as "Save the world, sure, and get laid too" (ibid.), a mere five months later, Tierwater and Andrea are married, and after another three months, his personal life and the connection to E.F.! have overlapped far enough for him to allow his 13-year-old daughter to accompany them on their first 'direct action' in the Siskiyou Mountains. This event marks the beginning of the past plot thread and starts the novel's Part One, titled "Bring 'Em Back Alive" in reference to Jane's death.

In the prologue, Andrea is introduced as Tierwater's 67-year-old ex-wife who suddenly re-enters his life and has him every bit as helpless as he was when they first met. Their power dynamic, which never truly changes from their first acquaintance, is, however, first established during this direct action. Tierwater is inexperienced and careful to a degree that even he himself admits borders on paranoid (19), while Andrea and Teo have organized the entire action and are relatively calm about the entire endeavor, both having substantial experience in similar undertakings. Andrea is merely annoyed by Tierwater's irrational fear, his

[26] This accusation of 'environmental elitism' has been around at least since the 1980s (cf. Morrison and Dunlap), and in his 2009 review, Brisman still comes to the conclusion that "certain actions, although performed in the name of green consciousness and thus seemingly noble and well-intentioned, may serve to separate and segregate, rather than include and incorporate individuals into more environmentally responsible living" (367).

impractical ideas stemming from his “watching too many movies” (21), and his constant doubts about her planning ability.

Teo, about whom at this point, the reader knows only that his untimely death before the events of the future arc brought Tierwater great joy, treats him with a friendly to neutral attitude but is quickly established as his superior as well. At thirty-one, Teo is eight years younger than Tierwater and described as a “weightlifter with the biceps, triceps, lats and abs to prove it” (22). Known in the media as “liverhead” from a radical action in his early twenties, Teos name and voice in the environmental movement are respected to the degree that he has become a full-time environmental activist, or “Eco-Agitator” as is printed on his business card (ibid.). Depicted as a successful, attractive and highly respected professional in his field, Teo is an embodiment of Ross’s ‘ecological superman’, remaining “a model of stoicism” during the highly uncomfortable operation, “utterly at home” in his role as a potential “martyr” to his cause (32).

Tierwater on the other hand, has to realize quickly that he “isn’t in [Teo’s] league” (ibid.). The mosquitoes, the diapers, the pain from their uncomfortable position and the violations of the law get to him. He only manages to handle the situation by contextualizing his personal suffering into the background of “the silvering sky and every bird alive in every tree”, believing that “*somebody’s got to do it*” (29, italics in original). In this solitary battle against the “machine” (64), Tierwater finds a sense of purpose and agency, which had been taken from him in Jane’s death and his consequent fall into depression.

This newfound sense of agency towards a higher goal is immediately and heavily thwarted, however. First, the bulldozer crew that had to stop because of the blockade simply begins to clear a path through the rock on the sides, and when Tierwater curses them and threatens to press charges he is pragmatically silenced by the sheriff with a duct tape gag. This, in turn, leads to a tearful breakdown from Sierra and another experience of the “sad sick feeling of his own impotence” (34). When confronted with Sierra’s breakdown, the aggressive lumber workers suddenly “shuffled their workboots and looked shamefaced […] – but there was nothing any of them could do about [the] little girl’s grief. Least of all [Tierwater]” (35). As with Jane’s death, Tierwater is again left empty-handed, impotent and here, literally handcuffed in the face of a suffering loved one. In addition to his mental suffering, when he finally snaps and tackles one of the commandos who are breaking the group out of the concrete, he gets

brutally beaten up while the bystanding sheriff and his aides “drank pepsi and […] looked the other way” (52).

Tierwater’s first direct action thus marks the second great catastrophe in his life. On top of the immediate physical pain, the perceived injustice with which he is treated, and a trip to the hospital from the beating, the campaign ultimately also costs him his custody over Sierra due to being deemed an “unfit parent” (83). Adding insult to the injury of this ultimate humiliation, the entire episode remains utterly fruitless, as the group’s intended plan of directing public attention to the environmental damages caused by the logging utterly backfires. Not only are the media completely blocked off from the protest site, but the only article in the local press focuses entirely on Tierwater attacking a police officer and resisting arrest (66). Here, as in several other scenes, the importance of risk staging takes a central role in the narrative. As radical – but officially non-violent – activists, E.F.! had planned the direct action meticulously to reaching the public through media attention, aiming to direct public attention towards the environmental damage caused by industrial lumber production. The opposing interest groups strongly strive to prevent such attention, and even frame the entire event as the activists acting as a danger to public security. The importance of this media attention goes so far that Tierwater calls the entire act into question on behalf of the missing media coverage: “if a protest falls in the woods and there’s no one there to hear it, does it make a sound?” (35).

In his attempt to find a new purpose in his battle for the environment, Tierwater enters a tragic descent into fringe extremism over the remaining past story arc. In his descent, Tierwater is closely following the radicalization process proposed by Kruglanski et al. in its three required steps, the “arousal of the goal of significance”, the “identification of terrorism/violence as the appropriate means to significance” and the “commitment shift to the goal of significance and away from other motivational concerns” (74).

The first great catastrophe in his life left Tierwater broken and directionless in a complex, iniquitous and unpredictable world. His contact with Andrea and the E.F.!-ideology offers an alternative to his lavish but ultimately unsatisfactory lifestyle. He is offered the opportunity to experience personal significance in the face of a powerful enemy, which I read as the activation of the significance quest.

His experience in the protest against that injustice and the violent demonstration of his individual impotence in the face of Sheriff Hicks and Judge Duermer then provides tangible faces for the formerly abstract understanding of this ignorant and cruel world. Fueled by his humiliation and still believing in the "power of individuals to influence events, illuminate issues, effect change, resuscitate the earth" (*FE* 54), Tierwater starts to identify the representatives of what he deems an unfit societal system as his true enemies. At this point in the narrative, the second ingredient, the "identification of terrorism/violence as the appropriate means to significance" (Kruglanski et al., 74) becomes recognizable in his actions. While the Siskiyou protest was undeniably an illegal operation, the collateral damage was merely a byproduct of the protests and consisted of minor damage to the road. When the group's car passes a road construction site after the first court hearing following the protest however, Tierwater, filled with rage, orders the car to stop, ignites the fuel tank of a D7-Cat bulldozer and sets it aflame as a symbol of his 'true' enemy, "the anonymous, omnipresent and ever-industrious" (*FE* 67). The result of Tierwater's first felony, the burning machine, "breathing fire like a dragon, yellow, orange, and red", (68) acts as a powerful image of his further radicalization.

While violations of the law had been an accepted side effect of effective protests before, this arson marks a transition from this towards a focus on the crimes themselves. Tierwater's character development enters a downward spiral of personal tragedy and helplessness leading towards more extreme coping mechanisms and escape strategies and, in turn, to further failures and systemic repercussions. While his relentless fight for the environment remains a strong motivator, in the face of his greatest failures, Tierwater's focus on his individual understanding of personal justice becomes his primary driving force. Most blatantly, this reflects in his desperation upon the loss of Sierra: "*Give me my daughter back and I will pluck the owls and drop them into the frying pan myself, no questions asked, that's how I felt, because I was all about giving up then, a victim, a schmuck, ground under the iron heel of Judge Duermer and Sheriff Bob Hicks*" (85, italics in original). In addition, his obsession with personal revenge on the individuals he deems responsible for his fate begins to entirely dissociate Tierwater's will to break the law from his ostensible justification of ecological protest: "*I honestly didn't care — they'd hit me, hard, and I was going to hit them back and damn the consequences*" (68, italics in original). "Political protests. […] There was none of that in what he was doing now. What he was doing now […] was the prelude to an act of revenge.

It was as simple as that, and he had no illusions about it" (209). This reflection of an older Tierwater on his feelings during the arson on the D7-Cat fit perfectly with the connection of revenge to the significance quest provided by Kruglanski et al.:

> Consider revenge, the desire to reciprocate harm against those who have caused harm to oneself or one's group. Beyond any material costs that deliberate harm from another entails, it constitutes an unwelcome invasion into one's life that renders one powerless, reduces one's esteem in the eyes of self and others, and hence is humiliating and significance reducing. Revenge levels the playing field and restores the balance of power by dealing a humiliating blow to one's enemy, responsible for one's humiliation, thus redeeming one's lost significance. (73-74)

This act of revenge also constitutes the first time that Tierwater fulfils the terrorism criteria given by Schmid. The visit to Judge Duermer's family home (211) certainly constitutes an attack on "non-combatants" that Schmid (86) names as a clear characteristic of terrorism. The property crimes Tierwater commits during this action might not be severe enough to qualify as acts of terrorism per se. Unquestionably though, they represent one further step away from environmental protest and towards Tierwater's misanthropic radicalization which, as is revealed later in the novel, will ultimately culminate in his attempt to poison the water supply of the entire city of Santa Barbara (*FE* 218).

Throughout the past plot thread, radical environmentalists such as Tierwater recognize nature and all its life forms as equal entities to human beings: Trees and woods are capable of being "raped" (22) and "slaughtered" (255). The ideas of deep ecology, postulating that the existence of all natural entities, even bacteria and inanimate matter such as rocks, must be considered with the same care as the existence of humans are repeatedly mentioned. Taking these concepts into account, Tierwater's arson of the forest at Penny Pines Plantation can be read as the first act in which he endangers innocent, non-combatant 'lives', lives whose protection constituted a major motivation in his becoming an environmentalist in the first place. This arson, as well as the revenge attacks on Judge Duermer and Sheriff Hicks as representatives of an oppressive government and the fact that he keeps his nightly escapades secret, avoiding the involvement of Andrea or Teo (241), then provide the final ingredient in Kruglanski's radicalization process: The "commitment shift to the goal of significance and away from other motivational concerns resulting in that goal's dominance and the relative devaluation of alternative goals incompatible with terrorism" (74).

From here, Tierwater's development as an environmental extremist is characterized by a growing distance from even the radical environmentalism of E.F.!. His life becomes a series of individually performed guerilla attacks, followed either by short episodes of inner peace, until his desire for recognition and direct action resurfaces and a new attack must be carried out, or immediate legal repercussions, which only further his hate for the societal system. With his growing distance from even E.F.!'s moral code, Tierwater happily places himself in isolation "on the unraveling edge of the disaffected fringe" (160) of radical environmentalists.

Over the course of his radicalization, Tierwater's personal sense of self-worth becomes increasingly linked to his effectiveness and infamy as an eco-terrorist. His quarrels with his own helplessness in the face of a world dominated by hostile and seemingly invincible opposing networks are twofold: On the one hand, Tierwater's feelings of insignificance and impuissance negatively impact his own life and relationships. On the other hand, Tierwater does not only seek to ensure power over his personal environment but is also driven by a desire for renown and infamy. His only contemporary role models are the 'Arizona Phantom' and the 'Fox', two successful eco-saboteurs whose criminal undertakings have earned them a media reputation. "People who'd struck back, done something, *mattered*" (125, my emphasis). Of the two though, Tierwater prefers the Fox, "because he was visible — or at least he made himself visible at certain crucial and dramatic moments, like a kind of Zorro of the ecodefense movement", who "once was even interviewed (albeit in a mask) by a local television crew. But most dramatically – and this was what really fired Tierwater's imagination – he appeared one afternoon in the offices of a U. S. Steel executive" (126).

Tierwater's admiration for these figures manifests itself in his own pursuit of infamy. Following the arson at Penny Pines, he boasts about having been as efficient as "the Phantom and the Fox rolled into one" (141), yet his internal feeling of power surpasses even his boasting: "[H]ow had he felt about the fire? Good, he'd felt good. And more: he'd felt like an avenger, like a god, sweeping away the refuse of the corrupted world to watch a new and purer one arise from the ashes" (165). The desire to not only preserve this feeling of power and agency during his covert actions, but the additional desire for corresponding public recognition leads Tierwater to draw up an actual press statement, much akin to Kaczynski's manifesto, which he prepares to forward to the *Los Angeles Times* in the aftermath of the last directly narrated attack in the novel. While Tierwater convinces himself that his "testament" would primarily

be “a call to arms for every wondering and disaffected soul out there”, making sure everybody finally “understood just what the environmental movement was all about”, he also cannot help himself but sign the essay “*The California Phantom”* in an obvious reference to one of his idols and after careful deliberation regarding his personal alias (244, italics in original).

4.2.2. A Matter of Perspective: Staging and Individual Ideas of Terrorism

In addition to being an obvious attempt to receive public recognition, this is one more example of the concept of risk staging playing an important role in Tierwater’s subjective agenda. First, successful placement of his actions in the media works towards raising public awareness for his cause of environmentalism. Given the increasing violence of his actions, the public disapproval they provoke, and the fact that, over the course of the novel, the legal environmental movement starts finding mainstream success and begins ostracizing violent fringe actors like Tierwater himself (238), this factor graduates from just raising peaceful awareness towards instilling fear:

> Because all it took was public awareness — if they only knew what that electricity ultimately cost them, if they only knew they were tightening the noose round their own throats, day by day, kilowatt hour by kilowatt hour, then they'd rise up as one and put an end to it. (244)

In this passage, Tierwater’s reasoning can be directly linked to an argument taken from the *ALF-Primer* that is titled “Does Direct Action Work?” and quotes the president of targeted organization AMP[27] and the August 1993 Report to Congress on Animal Enterprise Terrorism:

> ‘Because of terrorist acts by animal activists like Coronado, crucial research projects have been delayed or scrapped. More and more of the scarce dollars available to research are spent on heightened security and higher insurance rates. Promising young scientists are rejecting careers in research. Top-notch researchers are getting out of the field.’ […] ‘Where the direct, collateral, and indirect effects of incidents such as this are factored together, ALFs professed tactic of economic sabotage can be considered successful, and its objectives, at least towards the victimized facility, fulfilled.’ (3-4)

[27] Americans For Medical Progress is a US-based charity organization that focuses on biomedical research and “supports research involving animals when it is necessary to advance our understanding of biological processes” (“Animal Research – Position Statements”).

The paragraph then concludes from these damage reports, speaking for the ALF, or, more broadly, every radical environmentalist: “If we look past the ‘terrorist’ rhetoric, we can see that its [sic] a fact - direct action works.” (ibid.)

Aside from the conviction that direct action constitutes a valid means to further an environmentalist agenda, ‘looking past the terrorist rhetoric’ is another important phrase from the primer that translates directly to Tierwater. Despite his frequent and disillusioned commentary within the past chapters, and the reflection of his past in the future ones, Tierwater never uses the term terrorism to describe his actions. In fact, the only time any eco-activism is directly connected to the word ‘terror’ in the novel happens during the Siskiyou protest and is an external assumption of another’s perspective. Tierwater presumes a lumber truck driver’s attitude towards all ecologists: “[A]ll members of the Sierra Club are ‘Green Niggers’ and […] Earth Forever! is a front for Bolshevik terrorists with homosexual tendencies” (30-31). Aside from this understanding that other people, who he considers inferior, deem him a terrorist, the only terrorist accusations come from Tierwater himself. He repeatedly accuses his adversaries, the system’s representatives of terrorizing others – namely “his wife and daughter” (58) and “little girls” in general (211). Within this state of mind, seeing himself among the only opponents fighting a corrupt, dangerous, and indeed terrorizing system, Tierwater is unable to cease his increasingly violent escapades, to the point that even Andrea and the entirety of *E.F.!* distance themselves from his behavior (160, 238).
This gradual distancing culminates at the festivities for Sierra’s ascension into her redwood tree Artemis, an event which is celebrated by activists including Teo, while Tierwater, upon the renewed loss of his daughter – this time at the hands of his former organization – finds himself unable to feel anything but “hate and fear” (256).

Still, he manages to keep himself closer to his daughter than anyone else during her entire record-breaking stay atop the tree. He moves to a small flat close to the grove and his visits to Sierra constitute his “chief recreation” for four to six days a week (263). At this point in his life, caught in a “nothing job”, separated from everyone but his daughter, the third and final catastrophe sends Tierwater over the edge. While Sierra’s death during one of his visits is only revealed at the very end of the novel, it marks the point where his last connection to a peaceful world is severed and Tierwater completes his transformation into what the media later call the “human hyena”. This episode in his life is not directly narrated in the novel. The only

information apart from his moniker comes from a short sequence when he is recognized at a press conference for Mac's death and confronted with his final act of terrorism, the "Cachuma Incident":

> It was my darkest moment – skull-and-crossbones time, hyena time. I was fighting a war, you understand, and maybe I lost my judgment, if I ever had any. […] I found myself out on those windswept waters with eight big plastic buckets of tetrodotoxin at my feet. The lake was in the Santa Ynez Valley and it constituted the water supply for the city of Santa Barbara. The toxin, the very same concentrated in the liver of the puffer fish-fugu, that is-was produced by the Alteromas bacteria, it was twelve hundred and fifty times more deadly than cyanide, and it had been mutated in the lab to adapt itself to fresh water. (217-18)

Despite the fact that the event turned out to be an FBI setup, and the fact that Tierwater is ultimately unable to carry out the act, this single attack illustrates the devastating potential of terrorist attacks in the complex structures of the world risk society. With the help of artificially mutated bacteria, Tierwater and his associate were able to threaten the lives of over 90.000 people with a single terrorist attack. In addition to the immediate threat to the community of Santa Barbara, the release of this deadly, mutated bacteria into the global biosphere would naturally cause a permanent health risk for the entire globe which would prove nigh impossible to extinguish again. Within these few lines, *A Friend of the Earth* showcases the incalculable risk humanity has begun to pose to itself in the world risk society in the form of terrorist attacks.

4.2.3. Diverging Paths: Alternate Models of Activism to Tierwater's Rage

While Tierwater's character arc as an environmentalist can thus be read as a constant concatenation of tragic failures and catastrophes, resulting in his transformation into a terrorist and global threat, the novel also provides two alternative models of radical environmentalism. Both these approaches, while also operating outside the law, require far less illegal action, and are temporarily depicted as successful strategies.

The first of these alternative models is represented by Andrea and Teo. During Tierwater's first contact with *E.F.!* at the villa in Croton, the duo is clearly identified as the "main attraction" of the evening, easily capable of entertaining and agitating a multitude of environmentally interested attendees (64). While both play radically different roles in Tierwater's life, their characters share many similarities, which elevate their status over his.

Unlike Tierwater, who is merely described as average looking (65), both Teo and Andrea are described as extremely physically attractive. Teo is a “weightlifter with the biceps, triceps, lats and abs to prove it” (22), while Andrea is “gathering faces round her like a puppet master” (63), mesmerizing Tierwater like a “moth following a pheromone trail”, when he first lays eyes on her (64).

In addition to their optic superiority, both Teo and Andrea are presented as experienced activists and well-respected members of the environmentalist community, and rarely lose their calm attitude during direct actions. Throughout the narrative, this results in a condescending tone towards Tierwater, from their first action in the Siskiyou Mountains to Andrea’s final lecture on successful environmental politics (238). Although Teo’s past as the legendary “Liverhead” is elaborated on in more detail than Andrea’s accomplishments (22), she is also described as a capable and experienced environmentalist. Tierwater immediately notes her “big and mannish” hands, “hands that had done things, accomplished things - *An activist's hands*” (64, italics in original).

During the beginning of Tierwater’s radicalization process, Andrea and Teo act as mentor figures to him: His first direct action is actually planned and prepared by the duo, with Tierwater and his daughter mainly being brought along (22). During their exile in Ratchiss’ mountain cabin, Teo still supports Tierwater’s enthusiasm for action and teaches him effective ways of clogging drainage pipes and creating roadblocks (133-35). At this point in the narrative, though, the opposing directions of Tierwater’s environmentalist radicalization on the one hand and Teo and Andrea’s paths of environmentalism as a professional career on the other, become apparent.

While still supporting and encouraging direct action via mentoring, neither Andrea nor Teo actively take part in destructive behavior anymore, fearing damage to E.F.!’s image and their personal careers. There is “never any question” regarding Teo’s direct participation in criminal activity such as tree-spiking, monkeywrenching or other acts of ecotage anymore. Since having become “the big fundraiser”, or “Earth Forever’s poster boy” (137), his options for extreme acts of environmental protest have depleted: "He could chain himself to nuclear reactors and tree-sit and preach and publish all he wanted to, but his tire-slashing days were over”. He nevertheless envies Tierwater for his comparatively low profile, which enables him to still engage in “extracurricular activites” (ibid.). In addition, Teo is still leading the E.F.! action

camps, gatherings in which young activists are indoctrinated and trained in effective methods of ecological protest. The work with a new generation of activists, as well as Teo's genuine envy of Tierwater's ability to operate outside of public attention and legal boundaries can be read as evidence that Teo's roots in the movement are still present and he has not forgotten about the ideological reasoning for his activism.

From Tierwater's subjective perspective, however, Teo's motives have shifted to a point where his entire behavior is centered around his personal career and success: Preluding the nightly outing that leads to his second prison sentence, Tierwater

> had to sit through a dinner with Teo, Andrea and three other E.F.! Honchos, at which they discussed things like the electorate, Congress, letter-writing campaigns and ways to attract more green-friendly donors. Teo was wearing a four-hundred-dollar suit. Teo. Liverhead. Sitting there like he'd already been nominated for state senator. Plates of Pilaf Thai, ginger shrimp and glass noodles circulated round the table. Nobody said a word about the earth. (241)

The strongest case for Tierwater's disgust at Teo's newfound role is described during the day of Sierra's tree ascension. As Tierwater suffers through the acceptance of losing his daughter to her tree habitation protest, Teo has casually brought a picnic basket and bottles of wine to enjoy the spectacle (255). His complete absence of sensitivity to the situation can be read as a strong indicator that Teo has developed beyond the point where he is able to view the activists and their personal lives as his equals, and merely considers them instruments to further his personal success.

In a similar way, Andrea's increasing wealth shows in the increasingly expensive cars in which she picks up Tierwater after his prison sentences – cars bought with Tierwater's money (251). Unlike Teo, she no longer considers direct action as a necessary or even tolerable part of the environmental movement: During an argument, her transformation becomes most obvious when she blatantly tells Tierwater that "we don't need violence anymore –I don't know if we ever did" and emphasizes that all future actions are to be strictly legal (238). During the past story arc, this more conformist form of environmental activism seems to succeed. *E.F.!* becomes a financially successful organization, the political situation appears to turn in their favor and sustainable ecological behavior becomes popular, at least in California (238). Obviously, the future story arc proves Andrea's optimism wrong, as the perceived success of the environmental movement did not prevent the catastrophic future of the 2020s at all.

Tierwater's relationship to Teo and Andrea is also deeply impacted by his personal sense of power and agency in the world, especially with regards to romance and sexuality. In the past story arc, all narrated sexual encounters between the two can be related to Tierwater having had a positive experience of personal significance beforehand: Both after starting the forest fire in the Sierra Nevada (140) as well as upon learning that the fire had not destroyed the forest as an ecosystem, but merely destroyed the lumber company's plantation (168); after successfully starting a fire during the couple's month in the Sierra (179); and again when he has regained his freedom after being released from his first prison sentence (207).

In contrast to that, episodes of failure and personal insecurity are directly correlated to sexual impotence, rejection and fear of infidelity. While the young Tierwater constantly speculates about a sexual relationship between Andrea and Teo, these thoughts don't bother him too much when he has recently had experiences of power, mainly related to criminal activity: "so what if she'd fucked whole armies? Tierwater was no puritan. And he wasn't jealous. Not a bit" (161). During his episodes of insecurity however, he loses this confident composure and aggressively confronts both Andrea (239) and Teo (255) regarding their relationship. Further, during episodes of defeat, Tierwater routinely feels emasculated as he harbors feelings of "impotence" (34, 208), of being held "by the balls" (68), "Castrated. Fucked." (86).

Importantly, Tierwater's suspicions of an affair between Andrea and Teo are entirely unjustified until "long after it was over" with Tierwater (263). Additionally, while Teo is depicted as a physically attractive, calm and successful businessman, his initial role as an uncompromising fighter for his convictions and nature is shattered twofold in the narrative. First, while becoming increasingly wealthy, Teo separates himself not only from Tierwater's extremism, but also from his own conviction as an eco-activist. Following E.F.!'s mainstream success, his uncompromising attitude is softened, as most obviously shown during the business meeting with Tierwater and the "E.F.! Honchos" (241) and during his nonchalant treatment of Sierra's ascension. This removal from the roots of his days as 'Liverhead' is topped by Teo's death, which is only narrated as a small anecdote many years after the fact, upon Tierwaters and Andreas reunion (14-15). In a sense, Teo's transformation from an idealistic, charismatic and famous environmental activist towards a more assimilated businessman and his subsequent death by something as obscure as a meteorite impact breaks the concept of the 'ecological superman' and turns it into just another failure to halt the

planetary collapse. Ironically, Teo was initially described as “perfectly willing to accept the role of martyr” for the environment’s sake, a fate completely removed from the reality of his utterly senseless death from a cosmic phenomenon that is as unpredictable as it is insignificant.

In contrast to both Tierwater, whose craving for direct action and self-validation disconnects him from his own environmentalist movement, and Teo and Andrea, who lose their determination as a direct consequence of their success in the same movement, Sierra remains a successful activist entirely devoted to her cause throughout her entire life. Unlike her father, Sierra’s growth into environmental activism follows a straightforward path from her childhood onward. Initially sensitized for the cruelties of intensive livestock farming by an aunt and subsequently becoming a vegetarian at age eleven, Sierra becomes environmentally aware at a time when her father has not yet formed any connection to the environmental movement at all. The imagery of “doe-eyed veal calves succumbing to the hammer” (114) and the realization that “some innocent cow had to die just so we could eat like pigs” (115) lead her to the rejection of all meat, a conviction that she carries with her for the rest of her life. Tierwater’s blunt approach of simply listing meat dishes Sierra used to like does not work as a response to her “philosophical challenge” (ibid.), and Tierwater is left unable to comprehend the idea of his daughter’s compassion. Similarly, during her direct action in the Siskiyou Mountains, Sierra’s compassion, this time for Burmese peasants, is in opposition to Tierwater’s emotionally helpless indifference, leaving him “want[ing] to say something […] about the Burmese, but they’re as alien to him as the headhunters of the Trajan Valley” (25).

Over the years, Sierra continually challenges her father with radical eco-philosophical ideas – most prominently depicted in their conversation about deep ecology, moments before her ascension into the redwood tree. At this point in the narrative, Sierra has internalized the principles of Deep Ecology to such degree that her ethical considerations extend to the lives of microorganisms in the soil:

> ’Everything in the ecosystem has its integrity‘. […] ‘it's not just about wolves and caribou and whooping cranes – it's about the whole earth. […] [Y]ou have to think about what right do we have to dig up the ancient soil and disturb the fungus and microbes, the springtails and pill bugs and all the rest, because without them there'd be no soil, and we have even less right to manufacture and mutate things into new forms‘. (153)

Tierwater, on the other hand, only ever mentions deep ecology as a means to construct his intellectual superiority over others who have never heard about the concepts (30).

Despite the differences in their approach, the unconditional love between Sierra and Ty is never questioned. She alone still considers him a hero during his second prison sentence (248) and their reunion after that sentence is the only time during which Tierwater is depicted as a genuinely happy member of society with no ulterior motive other than enjoying life along with his daughter (252). Following the tone of the narrative, this brief episode of happiness is abruptly taken away when Sierra ascends the redwood, when "they lifted his daughter up into the shattering light-struck reaches of that tree and everybody cheered, everybody, the whole mad circus, but Tierwater, alone in himself, felt nothing but hate and fear" (256).

While she is always described as a deeply determined eco-activist, Sierra's climb into the redwood tree marks an "ascension" (152) not only in the physical, but also a far more spiritual sense. Atop this tree, on her small platform, Sierra is transformed into an ideal, a symbol for ecological activism that can be read as a countermodel to the 'ecological superman' and which is characterized primarily by personal sacrifice. Mayer identifies the 'ecological superman' as "one of the latest manifestations of […] the most powerful concept of masculinity in the U.S. since the beginning of the nineteenth century, namely that of the self-made man", who is usually "'young, married, white, urban, northern, heterosexual, Protestant, father, of college education, fully employed, of good complexion, weight, and height, and [has] a recent record in sports" (228-29). Aside from her ethnic background and basic college education, Sierra ultimately sacrifices each of these attributes with her ascension. Despite her having had heterosexual relationships in college, Tierwater calls her a "sacrificial virgin" (*FE* 152), and repeatedly emphasizes the fact that she "never had children, […] never had a friend or lover", she "[n]ever went to grad school" and sacrificed even the most basic comforts of urban life as well as her youth and health to her cause (222).

Importantly, in this role of a superhuman exemplar, Sierra is extremely successful and becomes a highly respected and sought-after idol for the ecological movement, entailing "pilgrimages to the shrine of her tree", statues and poems created in her name and "as many as a thousand letters" (261) sent to her in a single week. According to her father, "she was a shining symbol high up in the tower of her tree, she was immovable, unshakable, Joan of Arc leading her troops into battle, with nothing to lose but the bones of her flesh" (223). This

transfiguration of Sierra via religious terminology again connects back to Mike Hulme's support for the idea of climate change as "'an issue for the world's faith communities'" (David Miliband qtd. in Hulme 143). As this quasi-religious figure, Sierra is described not only as having become an "idol of thousands" (*FE* 263) but also actually succeeds in making the lumber company "[turn] its back on the whole business" (262) and thus represents a potential model for eco-activism that is neither harmful to the general public like Tierwater's, nor in danger of conforming too closely to the general mainstream to remain impactful.

However, similarly to how Tierwater sacrifices his moral integrity on his way to becoming an "animal man" (1) who condemns his entire race to "collective guilt" (241), Sierra sacrifices not only her personal privilege, comfort and health, but in her transfiguration also loses her ability to relate to other humans on her way to become an "arboreal creature" (190). Ultimately, she loses her connection to humanity to a degree where Tierwater suspects "she'd forgotten what she was doing up there in that tree to begin with" (263):

> Sierra had begun to take on the trappings of the mad saint, the anchorite in her cell, the martyr who suffers not so much for a cause but for the sake of the suffering itself. She became airier, more distant. She'd been studying the teachings of Lao Tzu and the Buddha, she told me. She was one with Artemis, one with the squirrels and chickadees that were her companions. There was no need to come down to earth, not then, not ever. (262)

It is left unclear as to whether Sierra's activism could have had the potential to prevent the climate catastrophe the world is facing in the future arc, as her untimely death violently ends her campaign after three years. This marks the final loss in Tierwater's life and the spark that ultimately sends him over the edge towards attempted mass murder. Notably, this death comes just as suddenly as Jane's, but also shares characteristics with her fellow 'superhuman', Teo. Teo and Sierra have both acted as figureheads for the environmental movement and, before he became financially successful, he was the only other character who is connected to martyrdom in the entire novel (32). Finally, while Sierra's death is not as unexpected as being hit by a meteor, she also slips mid conversation, during what has become an everyday situation for her, feeling in no perceived danger at all (264-65), and, like Teo, the narration of her actual death takes up less than a single page.

Overall, both the societal model of activism pursued by Teo and Andrea, as well as the sacrificial one pursued by Sierra, are narrated as being potentially far more effective than

Tierwater's violent crusade, although the realization of catastrophe in the future arc ultimately presents each of the models as having entirely failed.

4.2.4. A Lifetime of Failure: Tierwater's Future on a Dying Planet

A Friend of the Earth's future arc is set in a time where Tierwater's active days as an eco-radical are long gone. While the reader is given important information about Tierwater's and Sierra's past in the form of several flashbacks, the focus clearly rests on depicting a dystopian future for humanity 25 years after the novel's publication and illustrating the various coping mechanisms society has undertaken to deal with this future.

Where the past storyline is a collection of various events within the eight and a half years of Tierwater's life from July 1989 until Sierra's ascension in December 1997, the future storyline encompasses a relatively short timespan of only 9 months between November 2025 and July 2026, with occasional flashbacks of Sierra in between. Despite this comparably brief timeframe, the future arc is further subdivided into three main sections. The first one, beginning with the novel's prologue, establishes Tierwater's life as a zookeeper for eccentric multi-millionaire Maclovio Pulchris and serves as exposition for the devastated state of Planet Earth in the year 2025. This crisis-ridden dystopia is momentarily discontinued in the second section, in which the entire cast of characters flees from the weather into Mac's decadently luxurious mansion. This section is characterized by an experience of comfort and luxury reminiscent of the long line of "age[s] of excess" that preceded the current crisis (118). Nevertheless, the absurd cohabitation with the remnants of Mac's private menagerie serves as a permanent reminder of the outside catastrophe. When this absurdity breaks lose in the form of Mac's violent death at the paws of one of his beloved lions, the temporal haven of Melisma House crumbles (226). The third and final section once again has Ty and Andrea forced to make do in the hostile outside world, but also presents a possible, if uncertain future for the couple and likewise humanity as a whole.

Within the very first pages of the novel, Tierwater is established as a broken man on a dying planet, thus cementing the utter failure of any yet-to-be-narrated efforts he and his companions at E.F.! have gone through in their violent quest to save the earth. The reader is immediately introduced to Earth as a "worn-out planet" (2), on which marine life has basically

ceased to exist, “except maybe zebra mussels” (4). Catastrophic weather events have become so common that “nobody’s insured for weather anymore and any and all lawsuits are automatically thrown out of court” (2) – a scenario which closely mirrors Beck’s prognosed collapse of the private insurance industry (138). The weather in Santa Ynez, the future arc’s main location, alternates between devastating, landslide-inducing rainfalls (*FE* 78) and unbearable, river-evaporating heat waves (186). While the illusion of a working society is still upheld – supermarkets do still exist, for example – their supplies have been “stripped down to the bare shelves – nothing left but cornstarch and pickled beets” (191). The risks of climate change are not only reflected in bad weather and catastrophic food challenges, however. Given the increased exposure to radiant sunlight, Tierwater has had to have more than twenty carcinomas removed, a process which appears to have become such a regular event that it is only briefly mentioned by Andrea in a single line of dialogue (187).

In general, humanity appears to have adapted to the extremes of the situation, not in terms of overcoming or fending them off, but in the sense of normalizing the new – worse – conditions of life and carrying on. Nobody appears to take issue with the lack of insurance, the lack of food, weather conditions, or constant danger of epidemics. The only person to constantly acknowledge their disgust at the terrible conditions, to, in a sense “liv[e] in [his] senses while [dwelling] within environmental crisis” (F. Buell 205), is Ty himself. Even though he enjoys the benefits of working for one of the few truly rich people left, Ty repeatedly calls out the sad truths and macabre facts of life in the year 2025: His last can of Alaskan snow crab might well be the last forever, as the animal is now extinct (*FE* 4). One of the few profitable investment ideas remains “Bolt-A-Roof”, a company providing steel cables for relative roof security in times of regular storms, “Triple AAA guaranteed” (8).

Ironically, despite his cynicism and the misery of his situation, Tierwater has arguably accomplished greater things for the planet than he had during his active days as an ecoterrorist. One example that depicts Ty’s difficulties in aligning the work of E.F.! with the projected goal of protecting the natural world during his days as an activist can be seen in his emotional outburst against Andrea and her growing focus on publicity stunts and legal political work: “How many species you think were lost when we were running around bare-assed in the mountains? Tell me that,” […] “How many did we save in those thirty days? And how many roads were built, how many trees came down?” (239). In contrast with this conflict, in his work

for Mac, Ty plays an active and important part in saving species of animals on the verge of extinction and puts in effort to ensuring their survival beyond the scopes of Mac's private menagerie. He is cooperating with zoos and the duo has even achieved the means to clone those animals that can no longer be impregnated, "ad infinitum", if necessary (11). The contrast between these two lives is strongly highlighted in the encounter with the media after Mac's death: Within four pages, the reader is first introduced to Ty's greatest crime and venture into terrorism in the Cachuma Incident (217-18), and is shortly afterwards presented with a deeply emotional Ty explaining his and Mac's investment in saving the animals:

> 'You want a book, I'll give you a book. Not just about Mac or my daughter, but about me and what I've been through trying to save this woebegone planet and the, the' – there it is again, the involuntary contraction at the back of my throat – 'the animals.' And here I have to pause a minute to collect myself. My heart is heavy. My mind is numb. There's moisture gathering in the desiccated corners of my old man's eyes and I have to pinch it away with two trembling fingers.
>
> 'That's what we were trying to do here, Mac and me,' I say, and I'm pleading with him, I can't help myself, 'save the animals. It's too late for the earth. Or for us. But the animals, if only we can keep them from extinction until we're gone – they'll adapt, they will, and something new will come up in our place. That's our hope. Our only hope!' (221)

In a sense, his work in Mac's private menagerie has thus become a way for Ty to regain his agency to actually change the world, albeit on a relatively small scale and on the back of his famous, rich and eccentric benefactor. As such, both cases of Tierwater's undertakings to save the planet are funded by the unsustainable representatives of the very society he despised so much: the remains of his father's crumbling shopping empire and a glamorous rockstar living off his former glory. This aspect is further built upon when a massive flood forces both humans and animals to relocate from the surrounding area into Mac's mansion.

4.2.5. A Fallback into Excess: Melisma House as a Makeshift Ark

In what has been a recurring theme over the analyzed novels, the flood acts as a caesura for a relatively stable status quo, although following the novel's darkly comic nature, in this case the event is a source for parodical humor. In a bizarre rescue mission parodying the entry of the animals into Noah's Ark, the lions and other animals are paraded into the "island" (111) that Melisma House has become.

Although the house is obviously not suited to host a multitude of dangerous wild animals, the sheer overabundance of material wealth present in this “city under a roof” (118) suffices to cover this fact for a relatively long time. This situation works as an analogy for a frequent hope of our time: The idea that the natural world and the excesses of peak human development in the second modernity can someday be consolidated sustainably, despite obvious evidence to the contrary. Naturally, this vision of possible continued human development without any need for any renunciation provides a comfortable perspective on the future, especially in societies of the global north. Ty evaluates the situation in similar fashion within the first paragraph in the new setting. Having traded his moldy dwelling in the guest house for a meticulously clean “room bigger than a bus station” covered in satin sheets with Andrea at his side: “Do you want to define cozy? This is it.” (105).

Similarly, Andrea and April are highly content with the situation that has ensued. In their desire to exploit Mac’s riches for their personal gain, they are now locked together with their target in both a comfortable as well as intimate setting, to the extent that April rapidly begins an affair with Mac (193). The group enjoys the luxurious foods and beverages around the house and even festively decorates the house for Christmas celebrations. Despite Tierwater only cooperating halfheartedly and in his typically cynical fashion, the trio also continues to work on Sierra’s biography. Despite all these amenities, the outside catastrophe constantly looms over the setting, both from the animals inside, as well as the outside world. From the inside, the constant threat of holding dangerous predators in regular – if oversized – human living rooms is repeatedly mentioned and manifests itself in several instances. The internal threat of the animals was already foreshadowed when Petunia, the Patagonian fox escaped her enclosure in the first section of the future arc: “Of course, this is a fox we're talking about here. Not a normal fox, maybe — a fox the size of a wolf — but a fox for all that. It's not as if one of the lions got loose. Or Lily, who could crush your spine and rip out your intestines with a single bite” (41).

This permanent threat is also addressed by Ty multiple times, and when Mac absent-mindedly leaves open Lily the hyena’s residence in the “gift-wrapping room” (147) the shock and panic that the incident instills in the residents of Melisma house underlines the grave danger of the situation, despite the house’s illusion of shelter and comfort. Ty is sent through the house carrying Philip Ratchiss’ Nitro Express rifle, a relic of his radical past (146), and while nobody

encounters the roaming animal in the house, its presence transforms this relatively secure shelter into a potential deathtrap to any human inside.

In addition to this threat from within, the group also has to deal with the external risk of a new, widespread *mucosa* epidemic. First mentioned by Andrea as the potential "crash we've been talking about all those years" (72) in order to convince Ty to join in restarting E.F.!, the virus becomes a concrete topic again in Melisma House, when Mac demands everyone wear gauze masks as a "precaution" at all times (112). Described as a "sort of super-flu spread by casual contact" that causes its victims suffocate from their hyperactivated bodily secretions (113), the virus also already killed Tierwater's last wife Lori in an outbreak three years prior to the future arc (4). Indeed, Mac is so scared of the infection that he turns away the inhabitants of the surrounding condo buildings, who have lost their homes to the flood, despite feeling obligated to help (150).

Ultimately, though, both threats turn out to be red herrings. Lily only appears once more in the novel, while Mac turns away the condo inhabitants. Within three sentences, the hyena emits a "barely audible" chuff and, with "a simple flexion and release of the appropriate muscles", she disappears into the rain (151). Ty immediately bolts the door behind her, effectively locking out both the predator as well as the potentially *mucosa*-carrying condo inhabitants. The isolated status of Melisma House is emphasized in the fact that both the *mucosa* as well as the wild hyena now roaming the house's surroundings and threatening its inhabitants are never mentioned again. In the outside world with all its uncontrollable risks, these new threats no longer seem to factor, a fact underlined by the fact that the two solicitors at Mac's door are not wearing gauze masks (150). While the threat of a new virus for which no vaccines exist is maintained as a potential cause for societal breakdown (72), the dreaded *mucosa* epidemic is later revealed to have simply been "an especially virulent strain of the common cold", leading to some deaths among the "old-old", but still "only a cold" (187).
The aftermath of Lily's escape has the humans in Melisma House experience several peaceful months, narrated in uncomfortable interview sessions between Tierwater and April Wind and a comfortable spring breakfast, accommodated by a radical improvement in weather. While the humans are able to enjoy the luxuries of their accommodation again, this time, the animals suffer from the risks of their makeshift enclosures: All fourteen warthogs have succumbed to what is believed to have been a sort of swine flu, and among various other casualties, the

spectacled bear unknowingly poisons herself with a gallon of antifreeze (185). Despite the losses among the animals, things are looking up for the group; Mac is planning to rebuild the permanent animal enclosures, a more fitting guesthouse for Ty and Andrea, and is plotting to leave his home again on business.

These most optimistic moments in this section are immediately broken by the catastrophic realization of the animal risk, however. Following the extensively recounted hyena escape, which had remained largely free of consequence, the male lion Dandelion enters the dining room through the dumbwaiter and mauls his main benefactor Maclovio Pulchris (194-95), his bodyguards and the service personnel in one fell swoop, throughly cementing the incompatibility of untamed nature and second-modernity humanity.

The aftermath of this tragic outcome once again underlines the utter disregard society holds for the ecological perspective in the future, as well as the strength with which it clings to the mechanisms of the past in the face of systemic collapse. Tierwater cynically sums it up in one sentence: “The first one to show up, aside from the county sheriff and the coroner, is a lawyer, and if that isn't emblematic of what we've become, then I don't know what is” (215). The lions are quickly put down by the authorities without much hassle (219) and of the journalists who interview the remaining inhabitants, only one recognizes Tierwater as the “ecoradical” from the past, and even he is neither interested in Ty’s or Sierra’s biography nor any ecological message.

> The environment is a bore. And nobody wants to read about it-nobody wants to hear about it — and, for all April Wind's machinations (and Andrea's), nobody wants to hear about Sierra either. Or me. No, what they want — and it comes to me with a clarity I can only attribute to the neurobooster cap I popped earlier this morning-what they want is to know if the weather will ever go back to normal and what Maclovio Pulchris' sex life was like. (222)

Within a week, the surviving inhabitants are evicted from the mansion by a consortium of Mac’s heirs (226), leading to the dissolution of the group. April Wind embraces society’s longing for raunchy star-cult, gives up working on Sierra’s biography and moves to New York to make a short-sighted career out of her affair with Mac. Chuy, Ty’s mentally challenged zookeeping assistant is underhandedly given Mac’s vintage Dodge Viper and a little cash and sets out to live within the remains of society, while Tierwater releases all remaining animals save for Petunia into the wild. Like the lion’s parade into the mansion at the beginning of the

second part, the animal's exodus into the wild again displays a strong resemblance to the narrative of Noah's Ark: "Two honey badgers, one male, one female" (232) are the first of the group to venture into a world in which their natural habitat has long vanished. Typical of the risk narrative of catastrophe, while the prospects for the honey badgers are grim and any remnants of their native environment are lost forever, their future is left untold. In reminding himself of their fierce, omnivorous nature, Tierwater even entertains the possibility that they might thrive in this chaotic future in which "the whole world is Africa now, and India, Bloomington, Calcutta and the Bronx, all wrapped in one", and names the potential subspecies the pair might sire in Mac's honor (ibid.).

Similar to the uncertain future of *Mellivora capensis pulchrisia* and the other remaining animals, among them Egyptian vultures and peccaries, Tierwater and most of the survivors are thrown into a hostile world from the comfort of Melisma House. Not only does Tierwater's final act towards the animals he has carefully tended to for decades literally spell out as "[l]et them go and hope for the best" (ibid.), he himself has lost all perspective, security and income. This downward spiral of Tierwater feeling "scared-rudderless, incomeless, Social Security-less and soon to be homeless" (220) has to be broken by Andrea, who, together with April Wind, appears to be the only person in Melisma House to have made at least crude plans for a potential future without Mac's support. Whene the survivors have to leave the estate on short notice, even scraps of its riches provide significant support for them to start a new life outside. While April Wind has long forsaken her enthusiasm for Sierra's story in favor of monetizing her newfound prominence as Mac's final affair, Andrea's pragmatic approach of pawning off relics from Mac's private collection provides an income for her and Ty on their journey back to the Appalachians (228-29). Their plan is to eke out a new life there, kickstarted only by the remnants of Mac's possessions.

4.2.6. Picking up the Pieces: A Possible Future in the Ruins of the Past

This third and final section of the future arc also marks the first time that Tierwater revisits locations which were shown in the past story arc, further showcasing the transformation the earth has undergone over the decades. In many senses, this concluding segment acts as a final verdict for Tierwater's life's work and the future of the planet. The first impressions on the trip show Tierwater reminiscing their life as the Drinkwaters, "the tall trees and the sweet breath of the nights up there and the good times we had", a stark contrast to the seething 131

degrees Farenheit they are facing now and the devastated woods that, after “a quarter-century of floods, droughts, beetles and windstorms”, have been reduced to “nothing but salvage timber” (257).

At the same time, Tierwater has not only lost the planet of his youth, he has also lost his place in the remaining society. Not only are they removed from Melisma house and their story marginalized in favor of saucy gossip about Maclovio Pulchris’ affairs, he and his entire generation are seen by the younger generations as an unnecessary burden. When faced with discriminatory service at a road restaurant, he realizes that “we of the Baby Boom who areas young and vital in our seventies as our parents were in their fifties, we who had all the power and *invented* the hits of the sixties, have suddenly become invisible, irrelevant, window dressing in an overpopulated, resource-stressed world” (259). Despite being well aware that he could live well beyond the age of one hundred years, the combination of ecological devastation, a lack of perspective and societal rejection leaves Tierwater devastated and longing for a return to older days: “I don't want to live in this time. I want to live in the past. The distant past” (260).

Within this context of feeling both spatially and socially out of place, the duo arrives at Big Timber, where three decades earlier, Penny Pines Plantation had gone up in a devastating forest fire after Tierwater’s first major felony (140). While the surrounding environment has been radically altered due to – aside from extreme climate change – the rapid development of surrounding settlements and infrastructure, within the small camp, and especially within its Big Timber Bar and Mountain Top Lodge, time appears to have stood still over the past decades (266).

Inside this ramshackle bar, the encounter with his old insurance investigator Declan Quinn finally provides closure to Tierwater’s unsteady, violent life spent in protection of animals and his search for agency in and impact on the world. At the end of a tragic chain of criminal activity, many years spent in jail, a plethora of personal crises and numerous tragic losses, Tierwater finally comes clean about his initial arson at Penny Pines to Quinn, who had suspected him all along back in the day but was unable to prove it. 35 years later, Tierwater’s confession has little consequence but “to satisfy an old man’s curiosity” and providing personal closure for himself. He emphasizes he would “do it again. Gladly”. However, upon further questioning, must admit that the arson, combined with any of his other efforts and

sacrifices have accomplished “Absolutely nothing” in the face of devastated Earth (270). It is this final verdict of Tierwater’s life upon which the main narrative ends. “Absolutely nothing” are the final words of the novel’s final pre-epilogue chapter and draw a depressing conclusion for the future of mankind.

However, while the narrative concludes in devastating fashion for Tierwater as the “animal man” and “human hyena”, the same does not stand for him as a human. As has been established before, one of the defining characteristics of the risk narrative in general is its lack of permanent closure. While the epilogue provides far from a happy ending, it firmly establishes the fact that a future exists, both for Tierwater and Andrea in particular, as well as humanity in general. Under Andrea’s more hands-on approach of “take on the world and let’s see what shakes out this time” (258), the duo manages to fix up Ratchiss’ dilapidated cabin, albeit acknowledging having to “live out of the back rooms in winter” (272-73) due to the irreparable damage the roof has suffered. “Considering […] [t]he end of the world[, c]ollapse of the biosphere [and r]uination of the forest and everything that lives in it” (272), the duo manages to “mak[e] a life, minute by minute, hour by hour” (274), and in doing so, finds the agency that Tierwater had been chasing throughout his life. This newfound agency is most prominently shown on the novel’s very last page, when Petunia the Patagonian fox (whom Tierwater had repeatedly reminded himself, was not a dog, but a wild animal (265)) is not only described as sleeping at the foot of Tierwater’s bed with no more need for muzzle or cage, but even meekly follows his command to heel (275). In this final success, “[t]hat’s when the girl appears”. Thirteen or fourteen years old by Tierwater’s estimate, “dressed in all black“ with a “thin silver ring punched through her left nostril” and a “chirp to her voice that brings [Tierwater] back thirty-seven years” (ibid.), the girl strikingly resembles Sierra at the same age (20, 161). The couple accepts the symbolic nature of this encounter. While Andrea reaccepts her role as Tierwater’s wife by introducing them as “the Tierwaters”, Ty ultimately overcomes his past as an animal man and closes the novel by expressing his identity as “a human being”.

4.3. Losing Everything: Radicalization and Tragedy in *American War*

Sylvia Mayer identifies the risk narrative of catastrophe as characterized by the exploration of "what it means intellectually, emotionally, and spiritually to live in a dramatically changed dystopian world" ("Risk Narratives", 108). My previous analysis has shown that this exploration can not only be found in the risk narrative of catastrophe, but also in the risk narrative of transformation, if only to a certain degree. However, while the risk narrative of transformation approaches the issue of a dystopian future from a societal perspective, the protagonists in the analyzed risk narratives of catastrophe are forced to face the challenges of their respective worlds as individuals.

These individual journeys are characterized by a tragic descent into radicalization, as opposed to the moment of potential societal change created in the risk narrative of transformation. *A Friend of the Earth* presents an interesting edge case, in which the potential moment of change characteristic for the risk narrative of transformation is narrated but ultimately rejected as a failure. On the individual level, however, Ty Tierwater manages to overcome his radicalization and ultimately achieves a new perspective with the potential for a peaceful life with his wife in his small mountain community. This late chance for redemption is omitted in *American War*. Akin to *A Friend of the Earth*, *American War* combines its protagonist's tragic descent into violent extremism with a background of environmental collapse. Unlike in *A Friend of the Earth* however, these two ideas are combined into a single narrative that culminates in the protagonist's death at the moment of her greatest crime, leaving no room for her redemption, thus marking *American War* as the purest risk narrative of catastrophe analyzed in this study.

The main narrative of *American War* closely follows Sarat Chestnut's tragic life and radicalization which leads to her ultimately unleashing the "Reunification Plague" (4) upon the entire United States. The main narrative is divided into four parts of roughly equal length that chronologically narrate four episodes of Sarat's life in 2075, 2081, 2086 and 2095 respectively. This narrative is encased in the story of her nephew Benjamin, a historian, discovering Sarat's diaries approximately fifty years after her death and thus becoming the first person to learn of her responsibility for the plague. Suffering from "moderately ravenous" terminal cancer (5), Benjamin finally reveals his knowledge of Sarat's story, which is predominantly narrated in third person. Within the main narrative, the narration only shifts to Benjamin's first person

after Sarat returns from Sugarloaf and the two characters meet in person for the first time. From this point onward, the narration switches between first and third person depending on whether Sarat and Benjamin are together or whether she is alone, with Benjamin having "learned all about the moments that filled in the blanks between those things [he]'d witnessed with his own eyes" from her diaries (267).

As such, the narrative features two primary focalizing instances in Benjamin – both in the prologue and final chapter, as well as during the times when he is directly observing Sarat as a six-year-old boy in the main narrative's final episode – and Sarat herself, when Benjamin is not around. Sarat's mother Martina acts as a third focalizer in a few short instances until her death in Camp Patience (32, 46, 90-91), and Benjamin's mother Karina represents a fourth focalizing instance at the beginning of the novel's third episode (175-87).

In addition, the narrative is interrupted several times with excerpts from fictional primary and secondary sources providing additional information about the period of the Second Civil War, such as interviews with veteran soldiers, protocols of committee hearings or 'censored' letters, as they might have been used as primary sources by Benjamin and other historians in their studies on the war.

4.3.1. 'Purple Country': The Multiplicity of Risks in *American War*'s South

Unlike in all other narratives from my corpus, none of the characters in *American War*'s main narrative are particularly concerned about the climate catastrophe or the environment in general, although the degradation of nature is mentioned on various occasions. However, despite the characters' disregard for the climate, the novel's entire premise is based upon the consequences of runaway climate change and the opening pages make that abundantly clear. The novel's first page immediately sets the narrative in a radically altered future U.S.: Titled "The United States, circa 2075", a map depicts the contiguous United States, with the entirety of Florida, New York City and parts of the entire U.S. coast having been swallowed by rising sea levels, and the federal capital having moved to Columbus, Ohio. While the Canadian border remains unchanged from the contemporary real-world equivalent, Arizona as well as most of California, Nevada, Utah, New Mexico and Texas have fallen under the "Mexican Protectorate" and east Texas is marked as a war zone. In addition, the remains of Alabama,

Mississippi and Georgia have united into a singular, secessionist "Free Southern State" (FSS from hereon) and the entirety of South Carolina is marked as the "South Carolina Quarantine Zone (2). A second map provides a more detailed image of the novel's setting in the FSS and its bordering regions.

In his introduction, set roughly fifty years after the end of the main narrative, an adult Benjamin explains his nostalgia for "the 2030s and 2040s, the last decades before the planet turned on the country and the country turned on itself", before "the Southwest […] turned to embers" and "the Inland Exodus filled [the Midwestern plains] with the coastal displaced" (3). In addition, it is revealed that it "hasn't snowed in years" in "New Anchorage", Alaska, a replacement city for the sunken state capital that has itself "moved further inland over the years" (5). Even several decades earlier, during Sarat's childhood in 2075, summer in Louisiana now "burn[s] from March through mid-December" (10) and her twin sister Dana dismisses her mother's tales of ice and snow as outright "fairy tales" (17). Sarat's story is full of short references to the collapsed climate, from her realization that "America looked bigger" in her old geography book *The Changing Earth* (19) to the observation of the "brown remains of farmland" plastering the family's route to Camp Patience (53) and the fact that traditional farming had become next to impossible "on account of the heat and the storms" (291).

The "decades of adverse climate effects" which had taken effect even before the start of the narrative (22) provide the background from which the multitude of risks dominating the United States in the 2070s and thereafter are derived. First and most obviously, this is a climate in which barely any plants aside from sorghum and yucca shrubs can grow (11, 51) and traditional agriculture fails to nourish the population, leading to the development of vertical farms. These huge structures that exist both in the North and South reek of manure and are worked only by the humiliatingly desperate. A "bleak procession", resembling early-industrial labor conditions, walks each day from the Atlanta slums to the adjacent farms (232). In the North's "post-prohibition fossil belt", desperate young people from the "ruined Dakotas" are joining the army "to dodge a life spent soldering the backs of solar panels or wading ankle-deep through shit in the vertical farms" (187).

Aside from this immediate environmental consequence, however, *American War* also connects various political, economic and military risks to the overarching context of the climate catastrophe.

The first chapters of the novel's main narrative present the Chestnuts as a poor but functional family living in a container home in southeastern Louisiana in 2075, roughly half a year after the FSS declaration of independence. Their location puts the family right between the warfronts of the Second American Civil War in the east and the U.S. conflict with Mexico in the "Battles of East Texas" in the west (2). The home is not located at any direct combat frontline, but the "Purple country" (57) of Louisiana is economically triturated between the two conflicting U.S. nations. While the entire North American economy has steeply declined from its hegemonial position in the 2020s, the Northern states are still portrayed as a vastly superior economic and military power over the secessionist South. The "cocoon" of border states to the FSS formed by Arkansas, Tennessee, North Carolina and Louisiana, while still official members of the North, are presented as second-class people. Those wanting to move further north, to "the real heart of the Blue country" (18), require a special permit, which Sarat's father Benjamin has repeatedly and unsuccessfully attempted to obtain (16).

In the FSS itself, the economic situation is even more precarious, as the secessionists never found an alternative to their naturally abundant fossil fuels, which once

> were a worthwhile currency, valuable enough to keep the Louisiana ports and Texas refineries economically viable, even if not flush with cash like in the previous century. But as the rest of the world learned to live off the sun and the wind and the splitting and crashing of atoms, the old fuel became archaic and nearly worthless. The refineries were shuttered and the drills were abandoned, even as the rebel states chose open warfare over prohibition. Now, with the South on the losing end of the conflict and its resources running dry, its people came to rely more and more on the massive ships that arrived every month from the other side of the planet stocked with food, clothing, and other human necessities. (25-26)

The FSS's economic impotence also reflects in the poor state of their soldiers' equipment, consisting of "tattered uniforms of no consistent color or style, composed of whatever was available", their "weapons […] smuggled in, or else salvaged from the attics and basements of parents and grandparents – the guns often older than the boys who carried them" (36). Marching to certain defeat, the young soldiers still prefer to die fighting over the "slower kind of death […] at the hands of poverty and boredom and decay" in the "dead-end towns where they were born" (ibid.).

The unreliability of their own equipment is far from the worst threat the FSS-soldiers are facing, however. During the shift from fossil fuels to renewable energy, military technology

has also adapted, resulting in a new type of self-sufficient combat drones which are only ever referred to as the "Birds" (41). Originally remote controlled by Northern troops, a successful Southern attack on the controlling server farm early in the war has permanently rendered the drones directionless. In a continuous interaction with the idea of unknowable risks, the entirely self-sufficient machines now fly "rogue, abandoned to the skies, their targets and trajectories random" (ibid.). For more than ten years after their deployment, the rogue Birds have created a new normality of random drone-flyovers that, on rare and unpredictable occasion, "rain[…] down death at random" (187) on unsuspecting civilian targets, ultimately resulting in the death of Sarat's twin sister Dana (240-42).

An even greater invocation of new risks developing out of society's successes is presented in the forms of biological warfare and viral diseases such as polio having made their return "on the saddle of war" (89). In an attempt at "pacifying the population of the country's first rebel state" (95), the North released a genetically engineered virus in South Carolina, expecting it to plunge the state into harmless lethargy for "a few months" and then dissipate (ibid.). Quickly turning out to instead induce an incurable, highly infectious genetical disease, both the North as well as the remaining secessionist states found no alternative to erecting a permanent quarantine wall around the entire state and leaving its inhabitants to a slow, unavoidable death. In addition, in his tireless effort to develop a cure for his failed creation, one of the scientists responsible for the disease unwittingly creates an even more virulent and deadly disease in "the Quick" (96), which ultimately results in over one hundred million deaths on the American continent (4). Both examples depict terrible iterations of unsuspected side effects of technological progress resulting in terrifying new risks.

In addition to the FSS secession, the United States faces multiple domestic political crises that are primarily irrelevant to the story but underline the state of decay that the United States have entered in 2074. Aside from the military conflict with Mexico, which has put the Southwest under foreign control, the Northwest is "constantly threatening to declare the independence of the proud, pacifist Cascadia" while "[i]n the Midwest the old-stock nativists harbored a barely restrained animosity toward the millions of coastal refugees who descended onto the middle of the country to escape rising seas and severe storms" (18). Despite its irrelevance for the overarching plot, this section perfectly illustrates that the individual risks produced by climate change as a global phenomenon are not only greatly

varied in nature, but are also closely intertwined and hard to separate. While the entirety of *American War* is set in the area of today's United States, the impact of climate change is mentioned on a global scale with special regards to the newly formed Bouazizi Empire, a newborn superpower that has risen to hegemonial status together with China (26). Officially, the Bouazizi empire maintains friendly diplomatic status with the U.S. (144-45), while secretly prolonging the Second Civil War to permanently topple the United States and firmly establish its empire status. To that end, Bouazizi agents supply Sarat and other rebels with weapons, and ultimately provide her access to the "Reunification Plague" (306).

Woven together, the combination of environmental, economic, military and political risks makes the Southern United States of 2074 to 2095 a space ridden with both the instigating causes of inequality and instability as well as the permissive factors of prevalent military and paramilitary violence, a negligent state and deep societal divide.

4.3.2. A Life of Tragedy: Sarat's Radicalization

This context of a dramatically altered world, filled with various risks that emerged out of climate change must be considered when reading this tragic narrative of Sarat Chestnut's life and descent into terrorism. Born to a poor but functional family in the remains of southern Louisiana, Sarat shows a fascination with toughness even at the early age of six. Having replaced her "impotent" given name "Sara" with the mispronunciation "Sarat", a moniker that "snapped shut like a bear trap" (10), she is a "*tomboy"*, "stubborn, hard and undaunted by calamity" (12, emphasis in original). During this first section of the narrative, where Sarat and her siblings felt their "purest instances of childhood joy" (11), the family's struggles are narrated as demanding but manageable. Behind the house, a small, "emaciated coop of chickens" provides eggs and occasional poultry, the pantry cabinet is stocked with "sweet potatoes, rice, bags of chips and sugar cereal, pecans, flour and pebbles of grain" from the nearby sorghum fields (ibid.) and the living area is neatly divided into space for adults, children and the kitchen area, respectively. Despite the obvious inconvenience of living in a one-shipping-container-home with the "peace" between the children sharing the middle compartment growing "more and more uneasy by the day" (ibid.), the house is well-kept,

decorated and Martina even managed to save an iron reserve of several hundred dollars in the various American currencies (44).

This life of relative stability in crisis is tragically taken away by the realization of a terrorist risk, though. When the family's father Benjamin becomes the civilian casualty of a Southern suicide bomber, the fragile peace the Chestnuts had carved out for themselves yields to the violence of the Second Civil War. The fatality of the situation is emphasized even further by the fact that the following day, after major troop movements from both Northern and Southern armies, artillery shelling closes in on the Chestnut home, so near that the family is kept up the entire night. In desperation, Martina spends the entirety of her savings to relocate to the refugee camp "Patience" in northern Mississippi, marking the first of three great tragedies which send Sarat's life down a path similar to that of the young Tyrone Tierwater. While Tierwater had even fathered a child at the point where his personal spiral of radicalization began, Sarat is sent on this path from the age of six onward. This is reflected on years later, when Karina recalls "from experience that there existed no soldier as efficient, as coldly unburdened by fear, as a child broken early" (180-81).

In cruel irony, the tragedy of Sarat's entire life is amplified even further, when the narrator coldly informs the reader about the meaninglessness of her relocation to Camp Patience, where Sarat's further radicalization is set in motion: "What [Martina] couldn't have known that morning was that the rebels, the federal troops, and the Mexican militias ultimately fought to a stand-still; the violence never inched any further into Louisiana than it did on that brittle April day when the Chestnuts left their land" (46).

While her father's catastrophic death and their subsequent relocation to Camp Patience leave a lasting impact on Sarat, the first catastrophe in her life does not immediately lead to her radicalization, primarily due to her young age. While the circumstances are entirely different, the event leaves Sarat at a similar loss of direction in life as Jane's death did for Tierwater. Within the "huge tent favela" that is Camp Patience (64), most people just "sit day after day till they bury us here" (77), especially those who have lived there for an extended amount of time (84). Few people follow any meaningful activities, or even find occasions to dress up in the "last vestiges of older, better lives, […] except for Christmas or Southern Independence Day" (87). A few individuals, among them Sarat's beautiful and outgoing twin sister Dana, their mother Martina and Lenny, a seventeen-year-old "fixer" (75), manage to keep themselves

industrious doing various paperwork or cooperating with journalists of both conflict parties. Simultaneously though, the aura of hopelessness encasing the camp also provides an important recruiting ground for the various rebel groups of the South, loosely organized guerilla squadrons whose members fight the North with means ranging from supply line raids to homicide bombings. Their recruitment strategy is first introduced in an excerpt from the fictional secondary source *These the Calls of our Blood: Dispatches from the Rebel South*, which interrupts the narrative right after the report of Benjamin Chestnut's death.

> They knew how to find the ones who were most likely to do it. They kept watchers in the hospitals, where they looked for suicide attempts, and in the schools, where they looked for outcasts, and in the churches, where they looked for hard-boiled extremists feverish with the spell of the lord.
>
> From these, they forged weapons. (32)

Reading this strategy in connection with Renard's analysis of radicalization, the rebel recruiters are indeed searching for individuals whose biographies include instigating causes such as a childhood marked by loneliness or religious extremism, permissive factors such as experiences of violent adversity, and even precipitant events such as the circumstances of suicide attempts. In addition, the promises given to Julia Templestowe invoke Kruglanski's significance quest: "They'll remember you forever […] When this is over, they'll build cities in your name" (32).

Sarat's brother Simon is first among the Chestnuts to be recruited into the rebels' ranks. Three years her senior, the boy had already been emotionally aligned with the rebels' cause back in Louisiana, where he was convinced "they're on our side in the war against the North" (35), while his first encounter with an armed rebel left him entirely "hypnotized" (52). By the age of fifteen, Simon has gained the rebels' attention and, against his promise to Martina and despite knowing that they recruit their homicide bombers from among the refugees (93), he ends up joining the "Virginia Cavaliers" (128). Simon's personal significance quest is heavily influenced by his pursuit of the masculine ideal he saw in his late father (15), ironically leading him to join one of the very rebel groups whose terrorist attacks killed his father in the first place (128).

The process of Simon's recruitment to the rebels is only briefly touched upon in remarks by Sarat and the arguments with his mother, until he is shown as an accepted member of the

Virginia Cavaliers (154). Sarat's interactions with her enigmatic recruiter Albert Gaines, on the other hand, are depicted in great detail. Importantly, from the first chance encounter between Gaines, who acts as a mixture between recruiter and ambassador for the Southern rebels, and Sarat, their relationship is both deeply personal, but still closely mimics the process described in *These the Calls of our Blood*. Where the recruiters are said to have "looked for outcasts" (32) in the schools, Gaines takes an interest in the girl sneaking around the camp alone at nighttime and immediately offers her a lucrative errand upon learning she had jumped into "Emerald Creek" on a simple dare (112). When Sarat fulfills the errand to his satisfaction, including breaking the nose of the recipient's aggressive son in a quarrel, Gaines invites her to "late dinner" and from this point on becomes her personal teacher in all matters of interest, from history to politics, religion and geography (116). Despite her Louisiana origins, Sarat considers herself a Southerner and the North an enemy to her people even before meeting Gaines, referring to the South and its representatives as "us" and to the North as enemies (107) and forming relationships with Southern military (83). Under Gaines' tutorage however, this sentiment is amplified manifold. Behind the mask of fatherly attention, nostalgic gifts and the promise that she will "make a place for [her]self in this world" (123), Gaines instills in Sarat a sense of pride for her heritage, Southern identity and, most of all, disdain for the ways of the North. Shortly after starting her lessons, Sarat tells her best friend Marcus "[a]bout all the things they've done to us over the years. All the times they've put what's good for them ahead of what's good for us" (134). The rebel recruiters are described to "forge[…] weapons" (32) from their carefully selected targets – an analogy that reflects sharply in the knife Sarat is given by her mentor. Gaines repeatedly tells Sarat that "resistance and stress" is all it takes to transform the "dull" tool into a sharp weapon – a process that is only completed "when it does what you need it to do" (143).

In its intimately personal interaction, Gaines' recruitment method closely resembles what Gerwehr and Daly call the "private and proximate" quadrant of terrorist recruitment techniques (82), a method using the "power of one-on-one persuasive communication" to directly manipulate "targeted individual" recruits (83). Among others, this strategy lists as factors relevant to successful recruitment as being a "high level of current distress or dissatisfaction" and "[c]ultural disillusionment" (85), factors that connect both to Renard's instigating causes and permissive factors, as well as to Sarat's disappointment in the inhabitants of Camp Patience: "They're liars and cowards, all of them. They pretend like this

is normal, like it's normal to live this way. But it's not normal. Your dad's right. We're just waiting to die, waiting for the Blues to come over that fence one day and kill every last one of us" (107). Interestingly, while Sarat's relationship with Gaines is utterly hierarchical, the recruiter goes to great lengths to gain her sympathy and trust, revealing intimate details about himself in the process. Despite the fact that Sarat later learns that Gaines had lied to her on many occasions (278), the information he had given her about his family appears to have been truthful (314). This layered approach mimics the excerpt of the fictional source *Found Cause: Diary of a Former Southern Recruiter*, according to which "a lie slipped in with the truth" was the best method to reach through to the "smarter" recruits (260). It is also notable that their closest relatives fear both Simon and Sarat will be turned into homicide bombers when they get involved with the rebels (93, 151), and both children avoid that fate. For Simon, it is never mentioned whether he was asked to do it, wheras Sarat actively declines Albert Gaines' offer to "make herself a weapon" out of concern for her twin sister, although "it didn't scare her to consider it" (189).

Sarat's work for Gaines improves her standing in the camp's social hierarchy and he makes sure his admiration for her is known among the rebels (156). However, unlike Ty Tierwater's desire for recognition or Simon's desire to prove himself as a man, Sarat's significance quest has little to do with her reception in the eyes of others. An outlier in both personality and physiology from an early age, the desires of other children are "alien" to her (86) and she rarely engages with them, unless catalyzed by Dana. The dare of jumping into the camp's sewage to avoid being marked as a coward is one exception to this rule. Even in this interaction, however, Sarat's choice to take the bet underlines her defiance of the other children's social conventions (105). Despite her disregard for public appreciation, Sarat's struggle for agency in a hostile world has strong parallels with Tierwater's. Her personal understanding of significance is built around actively influencing the situation of the South, which is first reflected in her plan to work with the government of the FSS (150) and in the belief in her ability to "do something" about the perceived injustice between the North and South (121).

The education and indoctrination Sarat experiences at the hands of Albert Gaines are designed to send the young girl on a path towards radicalization. While Gaines succeeds in stoking her disdain for the North, Sarat does not show any desire to immediately take up arms and directly

fight the Northerners herself. This transformation is induced only by the Camp Patience Massacre, a catastrophic precipitant event that arises out of her brother Simon's greatest success as a rebel fighter. When the Virginia Cavaliers manage to ambush a supply transport headed by General Pearson, "commander of half the troops along the Tennessee line" (157), they plunder the remains for high quality food, including steak Sarat cannot remember ever having had during the years in Camp Patience (155). This jubilant and exceedingly rare triumph for the rebels turns into tragedy a mere two days later, when an unlisted death squad, the "'Twenty-first Indiana'", ravages the camp and proceeds to massacre its populace over the course of the next 24 hours (170).

This attack marks a permanent shift in Sarat's perspective on the Northerners. While she had always assumed them to be of "a different breed, a different species", akin to the tall and muscular figures seen on TV (164), she soon realizes that the attackers "looked no different than anyone Sarat had ever seen" and were "of the same species, of the same breed" (166). This realization together with the heinous crimes Sarat witnesses firsthand leads her to imagine them "not as men, not even as human, but as a dark, daylong season: a primal winter" (ibid.). The Camp Patience Massacre, in which Sarat both loses her mother and witnesses her brother reduced to a childlike invalid by a severe head injury, marks the precipitant event that sends the young teenager over the edge into violent radicalization:

> 'Stop talking about them,' Sarat said. 'I don't wanna hear about them anymore. I don't wanna read about them or memorize their capitals or learn how they did us wrong.'
>
> 'Then what do you want to do?' Gaines asked.
>
> 'I want to kill them.' (170)

At this point, Sarat enters a mindset similar to Tierwater's pure focus on revenge immediately before attacking Judge Duermer (*FE* 209). As compensation for their losses, the surviving twins are allotted one of only 30 charity houses in the FSS and a caregiver for the traumatically injured Simon. FSS politicians regularly visit the family "to present the Chestnuts with plaques and framed declarations of solidarity and to have their pictures taken with the survivors of the Camp Patience Massacre" (*AW* 189). From this position of relative independence, Sarat continues her work on "the only thing that still mattered: revenge, the unsettled score" (ibid.) against the North both in action as well as ideology. She decrees that "the house only run on prohibition fuel", and bans the use of any renewable energy applications on her property

(178). This rejection of climate-friendly technology also marks one of the only instances where Sarat directly engages with the phenomenon of climate change, although the rule is clearly established in rejection of Northern policies, without any thought on the climate in mind.

Supplied by 'Joe', an agent of the Bouazizi Empire and old friend of Albert Gaines and the United Rebels, and trained by Gaines himself, seventeen-year-old Sarat becomes an active combatant in the war (189). Upon receiving her personal sniper rifle from Joe, for the first and only time in the novel, Sarat shows admiration for a fellow fighter similar to Tierwater's admiration for the 'Fox' and the 'Arizona Phantom'. She names her rifle "Templestowe", after the homicide bomber who, with her assassination of U.S. President Daniel Ki, had caused one of the "war's key precipitating events" (22) and whom Sarat considers the "first true rebel of the Second Civil War" (190). This part of the novel also strongly engages with the injustice and deficiencies of traditional gender roles and their perception from a female perspective. Even as a child, Sarat attributes the menacing, overbearing behavior of most teenage boys back in the camp as a "mask atop fear" (103) worn by "deeply damaged […] fragile boys" (104). A more detailed analysis is provided by Simon's nurse Karina shortly after the family has moved to Charity House 27, however. Following the visit of the three widows who regularly pay religious respect to Simon's miraculous survival, Karina ponders her feelings regarding the contrast between the passivity of socially acceptable female mourning to the far more active, traditionally male counterpart:

> Karina hated to see the widows in black. They struck her as relics of their own making, frozen in permanent deference to reckless or foolish or simply unfortunate men who were nontheless dead and sealed in the earth forever.
>
> Husbands never wore black. Husbands were never confined to that kind of passive declaration, were never compelled to sulk across the world for the remainder of their lives, walking signposts of mourning. Husbands were permitted rage, permitted wrath, permitted to avenge their loss by marching out and inflicting on others the very same carnage once inflicted upon them. It seemed to Karina further proof that wartime was the only time the world became as simple and carnivorously liberating as it must exist at all times in men's minds. Some of the women she met never used their own names again – she knew them only as the Widow This or the Widow That – but she'd never met a Widower Anything (183).

In her continuous striving for agency and revenge, Sarat provides a strong counterexample for this stereotype, as do many women over the course of the narrative. Julia Templestowe, the only rebel fighter revered throughout the FSS aside from Sarat is also a woman. Earlier in the

narrative, Sarat's mother Martina manages to save her children from the approaching war and provides for her children entirely on her own. After the Patience survivors have moved to their new home, both Dana and Karina as well as Layla Denomme and Layla jr. are portrayed as independent and confident characters capable of fending for themselves under the unfavorable circumstances of life in the FSS.

If Tierwater's daughter Sierra acted as a female counterpart to the 'ecological superman' in *A Friend of the Earth*, Sarat can be read as an equally opposed but more sinister antithesis to Sierra's example. Neither male, "married, white, urban, northern, heterosexual, Protestant, [mother], of college education [nor] fully employed" (Mayer "Encounters with the Abject" 228-29), Sarat nevertheless embodies many ideals connected to the masculinity of this archetype. Her towering frame has her wearing male clothes from her early teenage years on, her curiosity and intellect enable her to solve problems in unconventional ways and her tenacity, toughness and marksman abilities make her a formidable combatant. Sarat's embodiment of these traditionally masculine attributes is also recognized among respected male members of the community. From the twin sisters being greeted as "the only real goddamn men in Augusta" (200) to the leader of the United Rebels admitting to Sarat that there is "not one of my men as man as you" (235), Sarat's identity and standing in the community are wholly based around these ideals and her personal agency. This goes so far that she downplays even her successful assassination of General Weiland, the "single most significant Southern victory since the beginning of the war" (229), as "one man dead. They got plenty more still living" (ibid), until learning that the attack had also led to the suspension of ongoing peace talks (230). This struggle for agency is further underlined by Sarat's recurring nightmare, which traps her in a situation of utter helplessness: "every night she closed her eyes and was confined to the empty well, powerless and blind and alone" (219).

In contrast to her own fighter identity, Sarat perceives many of the male characters as weak and insecure. Beginning with her realization that boys overcoat their deep insecurities with menace back in Camp Patience (104), Sarat soon understands the quarrels and in-fighting of the Southern parties as "all nonsense, the petty turf wars of insecure men" (204). The sole exception to this perception is her mentor Albert Gaines, who in his own terms, teaches her about the helpless craving for youth that pushes old men to the brink of war. Essentially, the entire war is framed as an impossible attempt by of both sides' powerful old men to force the

world back to the state of their youth (237-38). This understanding of the war easily connects to the challenges of climate change, with the Northerners' belated attempt to preserve the planet of their youth, while the South is taking up arms to preserve the environmentally harmful lifestyle of old. Sarat frames this as Northern aggression, fighting "tooth and nail […] just to keep us from having a country of our own and doing things our own way" (238). The unsustainability of the latter attempt is, however, underlined by the fact that even before the FSS's secession, the economic viability of the Southern refineries had been rapidly declining as "the rest of the world learned to live off the sun and the wind and the splitting and crashing of atoms", to a point where "the old fuel became archaic and nearly worthless[, t]he refineries were shuttered and the drills were abandoned, even as the rebel states chose open warfare over prohibition (25-26). This is further illustrated by the vivid depictions of poverty and scarcity in the South's former economic centers, where the main economic enterprises now consist of "electronics sweatshops and […] shirt factories". (232). On top of this sharp economic decline, the South is obviously losing the military conflict with "the impotent Southern navy [having] long ago surrendered the ocean to the Blues" (199) and "everybody[…] just waiting on the Blues to push past Tennessee" (186).

Within this context of Southern demise, Sarat's successful assassination provides a significant break in development for both herself and the FSS. To the losing South, the death of a high-ranking opposing general can be marketed as the first military success since Julia Templestowe's assassination of Northern President Ki before the war's actual outburst. Sarat, on the other hand, experiences for the first time that her actions have the power to truly change the situation in the entire South. Not only is she solely responsible for the desired suspension of the peace talks between North and South, but her attack also puts her in a position to stand up "to the man whose whims turned the currents of the Southern rebellion" (236). However, similar to the South's losing war having been sparked by Julia Templestowe's successful homicide attack, Sarat's greatest success also provides the ground for her two ultimate losses. First, Sarat's regained agency is immediately proven insufficient to protect her loved ones. When she returns home from a talk to the United Rebel leader Adam Bragg sr., Sarat immediately learns that her twin sister Dana was fatally wounded in a random bird attack (240).

Immediately following the loss of her beloved sister, Sarat is then violently stripped of every bit of agency she had fought for when she gets caught by Northern operatives in a raid carried out as retribution for General Weiland's death (242). Without being suspected of any specific crime, Sarat is incarcerated at the Sugarloaf detention facility on a small island, the last remnant of the sunken state of Florida. In this location, she and the other detainees are systematically tortured using methods that mirror those reported from various torture scandals throughout U.S. history, most infamously the detention facility in Guantánamo Bay (Calveiro 101). Almost mirroring the list of real-world torture methods given by Calveiro (105-07), Sarat is subjected to sensory overload via permanent lighting (*AW* 251), exposed to extreme heat and forced stress positions for twenty days in the "light room" (250), and forced to endure loud noise (251) and, eventually, asphyxia via waterboarding (256) during her detention. While her experience under torture far exceeds Ty Tierwater's conditions in a regular U.S. prison, the camp evokes in her a similar sense of inevitable enmity towards her captors. Where prison leads to Tierwater identifying "the system, [… t]he machine. Progress" as his ultimate opponents (*FE* 200), Sarat arrives at a point where she can "no more imagine negotiating better treatment from her captors than negotiating the stinger away from a scorpion" (*AW* 253). Clinging to even the smallest possible fraction of "agency, control" in self-starvation (ibid.), Sarat finally breaks after waterboarding torture reignites her innate fear of drowning (256-57). Over the seven-years of her captivity, not only is Sarat's mind broken into confessing to everything her captors charge her with, her strong body is also ruined to a degree where she can do little more than "shuffle[…] on stiff knees" (267), her body too ruined to ever fight again (274). In addition to the destruction of her mind and body, the seven years in Sugarloaf see Sarat return to a home that has become alien to her. From her brother having married his caretaker Karina (289) to the land she used to know having been transformed further by the growing river (266), the world has changed dramatically during her absence. Even the unifying hate for the Northerners and the glorification of the rebellious fight has subsided to a degree where the peace process between the North and the FSS has all but concluded. The pathetic remains of the United Rebels are no longer a factor in FSS politics and their base of operations has relocated to the easternmost outskirts of Atlanta (309).

4.3.3. Always a Chance: Potential Redemption at the Chestnut Estate

Incidentally, however, what constitutes Sarat's loss of familiar home on the one hand represents the only traces of potential redemption for the Southern United States. Whereas the defiant use of fossil fuels constituted a part of Southern identity during the years of hot war, in 2095, combustion engines have been completely replaced by modern, solar powered vehicles (278). Back in Sarat's childhood, solar motors had been weak to the extent that even Northern marine captains regularly fell back on their "'backup'" fuel engines for pure convenience (29). In 2095 however, the new generation solar engines make Bragg's powerful fossil sedan look "sluggish" in comparison (278). Simon and Karina's success as farmers is another indicator of a potential revival of the South. Working from the same imported soil Sarat had once ordered using her influence with the United Rebels (271), the couple has earned a "special kind of royalty" status (291) at the farmer's market in Lincolnton for the quality of their produce. While the "old small-batch farming" has become borderline impossible "on account of the heat and the storms" (ibid.), the Chestnuts and a few other families prove that the method is still feasible and keep making improvements despite having to "constantly war[…] with the land" (295). The new Chestnut estate with its chicken coop and greenhouses that grow asparagus (269), "eggplants as big as limbs" (282) and strawberries, "thick as fists, dark and bursting with juice" (315) recall pastoral farm images, albeit with the addition of futuristic technology such as transparent solar panels (ibid.).

Over the first five months after Sarat's return to the Chestnut estate, her severe trauma greatly exacerbates her reintegration both into society in general and the remains of her family. Dana's death immediately preceding her incarceration has made Simon and Karina her the only remaining relatives and neither fit her understanding of family anymore. Simon, despite having made significant healing progress over the years, has been reduced to a largely passive, simpleminded and childlike man due to the brain damage he received during the Camp Patience massacre. Karina, on the other hand, never had Sarat's trust in the first place on account of her noncommittal perspective on the war (198) and her not being "family" (239), an attitude that has not changed even with Karina having become her sister-in-law. In addition, Karina herself has great difficulties accepting the traumatized guest in her house out of fear for her family's safety (286). The only family member Sarat can relate to is Simon and Karina's son Benjamin to whom she can relate based on his childish curiosity and fascination

with her. Only in the aftermath of the emotional quarrel following Benjamin's arm fracture do Sarat and Karina reconcile their differences, leading to Sarat slowly making "more frequent appearances in the house" and even staying for joint dinner with the family (295). The final sign of Sarat finally starting to overcome her trauma occurs in the last weeks of May, when she takes her recovering nephew swimming in the river. Only under great efforts does she manage to "bury" the "demon" that had haunted her since the waterboarding in Sugarloaf (297), but when she finally summons the courage to enter the water, Benjamin notices her "violent euphoria" and understands that the river did not heal, but "cauterize[…]" her wounds (298). The triumph of having overcome this traumatic experience and being able to teach her nephew to swim in the river the same way she had swum many years before elicits an eruption of positive feelings and laughter in Sarat that marks the only description of entirely positive emotion after her incarceration (ibid.). From this point on, Sarat and Benjamin's relationship grows closer, they interact more frequently and swimming in the river becomes a regular activity (302). Similar to the "miracle" of Benjamin's slow recovery from his headshot wound (289), the love of her family and the peaceful life on the Chestnut estate appears to provide Sarat a chance to process and possibly overcome her traumatic life experience. Similarly, a somewhat optimistic possibility of a future within a world suffering from devastation was the end point of the narrative in *A Friend of the Earth*.

4.3.4. No Rest for the Broken: The Inevitable Fall of Those Stuck in the Past

American War on the other hand, lets this chance at redemption remain a short-lived and theoretical possibility. Initially, over the month following the breakthrough with Benjamin in the river, his and Sarat's bond is strengthened by their mutual activities becoming a regularity (302), repeated emotional conversation and Benjamin's confession of familial love for his aunt (303). However, despite the temporary successes, the idea of redemption immediately loses its importance to Sarat, when Joe intercepts her and Benjamin after one of their trips to the river. When he provides Sarat with the hitherto unthinkable opportunity to "line up" "every man" (305) whom Sarat holds responsible for her fate, her desire for total vengeance is reawakened and she once again withdraws completely from her family (307). In Joe and his ultimate plan, the various global aspects of risk are ultimately showcased for the final time. Revealing himself as a high-ranking agent of a rival superpower (306), Joe provides Sarat with

a biological weapon capable of wiping out humanity on a continental scale, powerfully underlining the threat that even a single individual can pose wielding the tools of Beck's second modernity. In what can be read as a textbook example of the incomprehensible threats of the world risk society, the virus that becomes the novel's final catastrophe has ultimately been developed from a cascade of unwanted and unforeseeable byproducts of the war over the "Sustainable Future Act" (22): When the Northern states attempted to pacify the "fiery core of the Southern rebellion" (95) in South Carolina via the spread of an apparently harmless sedative, the substance turned out to carry terrible side effects that doomed the state's entire population to mind-numbed ruin under the effects of "the Slow" (ibid.). In his attempts to correct his failure and develop a cure, the responsible scientist then inadvertently cultivates the even more devastating, excessively virulent "Quick" (96), which ultimately enables Sarat, a singular broken and disillusioned terrorist, to devastate the North American continent and produce over one hundred million casualties.

Even this tragic development does not constitute an end to life in an apocalyptic sense though. As risk fiction, *American War* does not reduce its world into nothingness, it only opens up an even darker future for the survivors of the catastrophe – one that was born in any sense out of their own actions, both in Sarat's life of tragedy and in the development of the virus.

Within its highly complex and constructed causalities that ultimately lead to an intelligent girl from a loving family growing up to seal the fate of the most powerful nation of our time, *American War* artistically illustrates central consequences of the world risk society. The closer the world grows through its manifold global networks, the harder the separation of individual risks stemming from it becomes. Ulrich Beck's distinction between environmental, financial and terrorist risk still provides an important analytical perspective. However, both the analyzed novels as well as the observation of reality point to the conclusion that the risks which beget each other in the second modernity can frequently overcome these artificial parting lines. Environmental risks and their realization beget risks of terrorism as well as those of the global markets; terrorist attacks can devastate the environment as well as the stock exchanges, all in addition to their immediate target. The change of the planetary climate stands above all these, as the global phenomenon connecting each of the individually complex risks and their equally complex interrelations.

The narrative only offers a little information on the course and aftermath of the Reunification Plague, but the small amount given emphasizes the concept of permanent crisis in the face of constantly shifting risks in the world risk society. While the devastating Reunification Plague has brought North America to ruin (328), it does not act as an apocalyptic end to the story. Faced with an entirely new set of risks, those who survived have adapted – life continues under different, more adverse circumstances. The reader learns that while the plague never appears to enter Alaska, the state's capital had to be relocated further inland "time and time again" over the years, with "[f]ierce storms" regularly happening "without warning" (5). Additionally, the population is living in fear of immigrant "terrorists and criminals" (327) threatening to import the virus and overburdening the country. Meanwhile, in the South, Layla jr. and her partner had to live in their storm shelter for eighteen months, forced to live off canned food stockpiled from "every store from here to three towns over", while relieving themselves "in a little makeshift bucket [they] carried out once a week in the dead of night" (331). Under these harsh circumstances, Benjamin managed to pursue an academic career as a historian of the Second Civil War, living to be older than his parents (332), although he is also preparing for a premature death in his late fifties (5). The only other mentioned survivor, Layla jr., had a son with whom she still occupies her old family farmhouse among "a large dirt parcel out front and a barren lake bed out back" in the ravaged remains of her old hometown (329). In its final lines, the narrative quotes the first page of Sarat's first diary, recreating the image of young Sarat and her family living in "*a small house by the Mississippi Sea*" (333, italics in original) and finishing the narrative with the first line of the main story, "*I was happy then"* (9, 333, italics in original). The irretrievable loss of this happiness, both via the death of its focalizer and the destruction of its location, thus marks the pessimistic final point of this risk narrative of catastrophe.

4.4. Conclusion

The risk narratives of catastrophe analyzed in this chapter showcase the duality of influences the world risk society exerts on the individual. On one hand, the plethora of global, uncontrollable risks puts the fates of people, communities and eventually the entire planet at the whim of unknowable uncertainty, and leaves the individual in a state of impotent helplessness. On the other hand, the tools of second modernity can simultaneously be used by willing individuals to empower them to threaten society on an unprecedented scale. Exploiting the same complex connectivities that lead to the rise of the world risk society in the first place, these individuals or small groups obtain the potential to manipulate and crash the value of global corporations and financial networks, unleash deadly pandemics or even nuclear disaster. Engaging with this duality provides a unique perspective on the world risk society. The paradox of simultaneously experiencing feelings of extreme helplessness and great power transposes the general paradox of second modernity to the individual level. While Beck argues that humanity's greatest triumphs have also brought forth its greatest self-produced dangers, the great opportunities theoretically available to the individual simultaneously overwhelm him/her. The fictional interpretations of this dichotomy in the risk narrative of catastrophe provide valuable insights into this idea, especially with regards to the fact that the tremendous potential agency individuals can acquire in the world risk society is mainly used for destructive purposes. For the executing individual, this power might hold some twisted form of justice, but the potential for the betterment of society remains unexplored. As such, the question of justice that represented one of the key elements of the risk narrative of transformation is significantly altered in the risk narrative of catastrophe. The issue of injustice as incurred and perceived by its characters is still highly prevalent in these novels. However, whereas the risk narrative of transformation uses a collective sense of injustice to create moments of potential societal change, the moment for such transformation is disregarded in *A Friend of the Earth* and *American War*. Both novels do indeed feature strong engagement with the various injustices faced by the characters, however, these engagements either fail, like EF!'s attempts to fight climate change and Sarat's childish ambitions to "do something" about the injustice between North and South (121), or they are not directed at bettering society but on personal revenge.

From a societal perspective, the risk narratives of catastrophe engage with the idea of unequal risk distribution from the point of society's collapse. Over long stretches, both narratives reinforce Beck's claim of the "fatal attraction between poverty, social vulnerability, corruption and the accumulation of dangers" ("Beyond Class" 693). Wealthy and powerful characters experience the collapse of society in far greater comfort than those less fortunate. Ultimately however, neither the extreme wealth of the Atlanta slumlords or Maclovio Pulchris, nor the political influence of either side's politicians are enough to protect them from every single risk, leading to their premature deaths from risks they had a large role in creating in the first place. Thus, when engaged from the endpoint of these catastrophic scenarios, Beck's early and heavily disputed claim regarding the "*equalizing* effect" of risk can be reconciled with its inherent injustice (Beck, *Risk Society* 36, emphasis in original).

The difference in the story's culmination then provides an important distinctive point between the risk narrative of catastrophe and the risk narrative of transformation. Where the risk narrative of transformation puts society on a straight path towards collapse, over the course of the story, this path is rejected by increasingly large groups of the population. Ultimately, a potential alternative societal approach is introduced, showcasing a potential turning point away from further collapse – however unlikely its successful implementation may be. Both risk narratives of catastrophe analyzed here also introduce such as a potential chance in the political success of the environmental movement in *A Friend of the Earth* and the promising peace talks between the North and the FSS in *American War*. In contrast to the former narratives, the story does not culminate at the potential turning point, leaving its conclusion to the reader, but is utterly rejected instead. Despite its short-term political success, the environmental movement's work has left no trace in the world of 2026, and the ultimate triumph of peace in the Reunification Day celebrations ends up becoming the ultimate spreading event for the plague. In contrast to an unlikely but possible change for the better, the remains of the risk narrative of catastrophe are survivors forced to adapt to their new environment and accept their worsened living conditions.

The final distinctive point for the risk narrative of catastrophe lies in the different approaches to describing the environmental changes in the world. Both analyzed risk narratives of transformation featured catastrophic weather events connected to the beginning of their story's respective social transformation processes. Mitchell Zukor paints his upcoming worst-

case scenarios in apocalyptic colors, and *the citizen* sarcastically illustrates the transformative processes of the first and second pulses. Remnants of this can be found in Tierwater's deeply cynical post-factum commentary on his actions during the 1980s and 90s, where his storyworld still held potential for redemption. In the novel's future arc, as well as the entirety of *American War*, the description of environmental change is emphasized far less. Tierwater's descriptions of canned meat of animals long extinct or of the mold accumulating in his house from the constant rain is bitter and cynical, focusing on the abject nature of his new life, but does not evoke any feelings of alarm or drive for change. Similarly, the catastrophic state of American nature is little more but side information in *American War*. Devastating weather events and collapsing food production are still happening, however the characters have simply accustomed to their new environment and are truly dwelling in crisis. Where the risk narrative of anticipation primarily revolved around education about the status quo and the risk narrative of transformation evokes a strong moment of radical change, the risk narrative of catastrophe embraces resignation. It ultimately uses the power of fiction to illustrate the sense of dread and demise that await the world risk society if the countermeasures are not taken or prove ineffective and thus carries a sense of inevitability that is, in itself, alarming.

Conclusion

"I risk therefore I am" was the quote I chose to open this study, in order to underline both the significance and presence of the analytical category of risk and its transformative force within the context of our globalized society (Beck, *World at Risk* 5). I am convinced that a look at the global developments of the last decades through the lens of global risk can provide important insights into these developments, whether they manifest in ever-accelerating climate change, volatile financial markets or worrying developments in national and international politics. Over the course of my study, I hope to have shown how the global risks of our time are never as one-dimensional as their immediate origins may suggest and how they permeate nearly every aspect of our lives.

Focusing on the contributions of scholars such as Ursula Heise, John Tomlinson and Paul Slovic, I set out to prove how fiction can provide valuable insights into the complexity of risk experiences in the world risk society. Applying the concept of risk, fictional narratives can imagine the potential realization of risk much more freely than any nonfictional approach. Risk research based in mathematics, science, journalism and other fields is of undeniably great importance for the understanding of the concept, yet even approaches grounded in these fields occasionally leave room for the lens of imaginative fiction, as Kaplan and Garrick's "Scenario N+1" illustrates (15). Kim Stanley Robinson even goes so far as calling "all scientific papers […] narratives in much the same way short stories are", despite relating to their subject material "in different forms and relations, so that the narrative element […] is obscured" (*FARSIGHT*). Aside from these elements of imagination in nonfictional media, the realm of fiction has much to give for the analysis of risk on its own, however.

Robinson regards science fiction[28] as "the realism of our time" ("How Science Fiction") in the way that it can "tell the human stories implied by scientific discoveries, and venture from descriptions of what is, to speculations about what ought to be (or what we ought to avoid)" ("The Realism of our Time"). In the same sense, the speculative freedom and personalization of risk fiction serve as an important bridge from the mentally challenging, great and abstract risks of our time towards their individual perception through the lens of narrative. As such, they play an important part in the staging of real-world risks and enable open-minded

[28] Specified as "just one type of science fiction, one subgenre within the larger genre" that is characterized by "a historical relationship that runs back to the present moment" ("The Realism of our Time").

approaches to potential solutions. As Mayer puts it: “Fictional narratives do not only develop projections *of* the world, but also models *for* the world. They offer orientation to social and political actors and encourage them to rethink and act” (“Klimawandelfiktionen” 368, my translation, emphasis in original).

Throughout my theoretical work, I explore the relationship between risk, anticipation, transformation and catastrophe and the challenges risk studies had to face since the rise of second modernity. Key points here lie in the combination of the unfulfillable expectation for absolute knowledge and the non-compensatability, deterritorialization and controversy of global risks. I then illuminate the unique potential of fiction to engage with these challenges by offering new perspectives on this second-modern world and the transformative processes it undergoes in Beck’s “three ‘logics’” of global risk, namely environmental crises, global financial risks and terrorist threats (*World at Risk* 13). The complex relations between these logics and the world risk society are explored in the interaction between an interdisciplinary corpus of scholarship and the selected novels, contextualizing them within the overarching phenomenon of global climate change. In doing so, I contribute to the idea that climate change as a global risk has long outgrown its definition as an environmental problem and must instead be read as a multifaceted phenomenon permeating nigh all areas of life.

Chapter one first examines the development of traditional risk calculus and, alongside a reading of Stanley Kaplan and B. John Garrick’s attempt towards “the quantitative definition of risk” (1), its disruption in the face of the delocalized, non-compensatable, reflexive threats of the world risk society. This collapse of traditional risk calculability immediately brought forward the challenge to identify among the myriads of existing risks those of which to primarily act upon, which provides the main reason for the inherent controversy of risk. Beck’s answer to this problem, the concept of staging, is then connected to the controversy imbued into the debate on global climate change, as presented in Mike Hulme’s writing on climate disagreement. The rapidly shifting dynamic of risk discourses at any given time and the vastly different action impetuses, depending on the dominant discourse(s), heavily underline the understanding of risk as a transformative force exerting its power on our society.

Numerous scholars have provided insight into the relationship between risk, globalization, and the societal developments that both resulted in and were born from the rise of second modernity. While I draw from Authors such as Frederick Buell and Anthony Giddens, my

primary framework consists of the works of Ulrich Beck and Mike Hulme, whose risk logics and reasons for climate change disagreement I map onto the topical foci of my corpus in the three analytical chapters. From this framework, I work out fiction's potential to generate new insight into the cultural discourse revolving around the self-created future of second modernity and global climate change as one of its primary incarnations.

In an attempt to systemize the various stages of risk realization within my corpus, I build on Sylvia Mayer's distinction between risk narratives of anticipation and catastrophe. I develop this binary system into a spectrum bordered by the risk narratives of anticipation and catastrophe and containing the risk narrative of transformation, thus allowing for a simple but effective structuring framework for future research on risk narratives. This spectrum of risk narratives identifies three key aspects of risk that may be used to identify and further categorize risk fiction texts. First among them is the anticipatory aspect that explores the "precarious, certainly indeterminate and unstable cultural moment" (Mayer, "The Controversially Real" 36) of a society in uncertain expectation of a risk that has yet to realize itself. The second aspect is the exploration of the enormous transformative power that risk can unleash during the process of its realization, whereas the aspect of catastrophe provides the farthest outlook into a potential future and focuses on the uncertain consequences of risk realization and the infinity of new risks emerging from the outcomes of their predecessors. Applying these insights of risk theory to practice, I then organize the analytical chapters of my study along this spectrum.

Chapter two analyzes the two texts *Carbon Dreams* by Susan M. Gaines and *Flight Behavior* by Barbara Kingsolver. As risk narratives of anticipation, global climate change has not had a massively transformative effect on their storyworlds yet, even though the eponymous, erratic flight behavior of the monarch butterflies in Kingsolver's novel is correctly interpreted as a result of climate change by several characters. In this context, the global risk of climate change still plays out primarily in the risk logic of the environment, while some elements of financial risk are shown.

Both novels greatly emphasize the difficulty of communicating and staging global risks in a way that is engaging to the general public while simultaneously remaining scientifically accurate. They employ elements of the Bildungsroman, highlighting the necessity for personal growth as a means to overcome the challenges of a globalized society and its multitude of

complex connectivities. Public desire for simple answers to multilayered, normative questions from research that was never designed to fulfill such demands is identified as a key problem, leading to a communication gap between the scientific community, the lay public and policymakers. The critical role of the media as masters of risk staging is central to both novels analyzed in this chapter and underlines the necessity for careful, precise and accessible risk narration in the second modernity.

In the third chapter, I examine the novels *Odds Against Tomorrow* by Nathaniel Rich and Kim Stanley Robinson's *New York 2140* with regard to their depiction of the relationship between market capitalism, social justice, and climate change. I classify both novels as *risk narratives of transformation in* which societal change is initiated within the context of drastic climate change events. Both narratives forego the aspect of scientific study of climate change in favor of engaging with its economic impacts in Beck's second logic, that of global financial risks.

Starting from Nicholas Stern's iconic evaluation of climate change as "*the greatest and widest-ranging market failure ever seen*" (1), I arrive at Mike Hulme's notion that the valuation of different "*activities, assets, constructs and resources*" varies widely across individuals (112), and thus, financial aspects of the climate risk are highly controversially staged. To better understand the degree to which the global financial system is interwoven with all aspects of society, I further draw on Jason Moore and his reinterpretation of the Anthropocene epoch as the *Capitalocene*, correcting the implication that all humans were equally responsible for the rise of second modernity and underlining the power of unchecked market capitalism. The incompatibilities of unregulated capitalism with a just and sustainable society are the central theme of this chapter. The transformative moment of these risk narratives of transformation is initiated simultaneously from the underlying systemic tensions such a system necessarily includes, as well as a precipitant event stemming from a climate risk realization.

Both novels analyzed in this chapter reimagine their storyworlds in a spatial and a societal manner, by transforming either the entirety or parts of New York City in an unprecedented flooding event and by linking this flooding event to a social movement promoting an alternative, non-capitalist lifestyle in the Flatlanders and the Jubilee, respectively. In doing so, these narratives question the suitability of our modern, capitalist society as a viable model for the future, while explicitly noting the instability and insecurity of their proposed alternatives, emphasizing the uncertain character of a world dominated by risk.

Chapter four connects climate change with the global risk logic of terrorism in the risk narrative of catastrophe. For this purpose, I analyze the two novels *A Friend of the Earth* by T.C. Boyle and *American War* by Omar El Akkad. Linking two concepts as ostensibly unrelated as the climate and terrorism illustrates how deeply climate change as a global risk has permeated society, to a point where it "can only be grasped through appreciation of its ethical dimensions" (Hulme 174).

The risk of terrorism goes beyond the atrocity of a deliberate, targeted and spatially defined terrorist attack and focuses instead on the staging of potentially falling victim to such an attack at any time and place. I then link this terrorist risk and climate change in two ways. In the case of ecoterrorism, as depicted in *A Friend of the Earth*, terrorist acts are used as a means to enforce a political agenda aimed at either preventing or combating climate change. As exemplified by the theories of Christopher Manes or the crimes of the 'Unabomber' Theodore Kaczynski, radical environmentalists can use the destructive means of second modernity to violently force their agenda and thus both evoke and go up in the terrorist risk. Outside of ecoterrorism, I examine how climate change can itself act as an instigating factor for terrorism in acting as a "*threat multiplier*" (50), increasing the risks for radicalization and terrorism in places they already exist, such as the American South of *American War*.

The risk narratives of catastrophe analyzed in this chapter not only depict a world deteriorated by climate change, with societies in a state of collapse and scarcities, illness and violence running rampant. At their core, they also depict the overwhelming feeling of helplessness the world risk society imposes on the individual. The characters in these novels are desperately striving for agency to impact a world spiraling out of their control. Despite the exceedingly powerful tools second modernity has put at their disposal, they are unable to utilize them to meaningfully better their lives. Instead, they either perish in a final attempt to destroy their perceived foes like Sarat or embrace the deteriorated conditions of their new world and attempt to make the best of them as the Tierwaters do. In both ways, the terrorist risk in the risk narrative of catastrophe most overtly emphasizes the reflexivity of second modernity, in that their central danger emanates directly and immediately from humanity itself.

My approach illuminates the fact that climate change as a global risk has long outgrown its roots in environmental concerns and has since exerted influence over all aspects of life, from economics to politics, social geographics and even terrorism and warfare. Relations of power,

hegemony and domination that surround exposure to different risks, from the perspectives of individual characters as well as that of communities, peoples and nonhumans are explored, twisted and reinvented in ways that shed new light on the political and social structures in the existing world, as well as on concepts lingering in society's consciousness.

The varying degrees to which risk narratives focus on the comprehension of risk, the performative act of transformation they evoke during their realization, or the various realities brought forth by their potential consequences allows for a new way of categorizing and understanding risk narratives. In this study, I have concentrated on climate change and climate change novels as the focal point of my analysis. Given its interconnection with the various other risks that have been described as crucial for modern society, climate change serves as a prime example for the types of risks that are brought forth by the world risk society. The framework I developed for my analysis is freely applicable to other variants of global risk, however. In addition to being a useful tool for the analysis of climate fiction, the spectrum of risk narratives may well be applied to narratives focusing on other (global) risks. The current surge in importance of neural networks, 'artificial intelligence' and similar technologies appears to provide a multitude of research opportunities in this regard, for example. Other opportunities may be found in narratives relating to the shift in and apparent reorganization of international political power relations.

While the spectrum of risk narratives promises fruitful research in areas outside the realm of climate change, further work on climate change narratives is also required, however. The continuously rapid acceleration of climate change is shaping the world and our perspectives on it to a degree that mandates constant monitoring and evaluation through every analytical perspective available. The deterritorialized violence inflicted upon an ever-growing number of regions through the concrete effects of climate change only increases the demand for the eco-cosmopolitan stance developed by Ursula Heise and continued in ecocritical research (Mayer, "Environmental Risk Fiction" 148). To a similar degree, the continuous debate regarding the relationship between climate change, the necessity of energetic transformation and the entailing risk realities promises significant potential for analysis from the perspective of the energy humanities (150).

Similarly, my choice of the novel as the form of fictional narrative on which to conduct my analysis is by no means an exclusive one. The spectrum of risk narratives is applicable to

various text types, both regarding classical literary genres and regarding visual formats such as films or video games. With the concept of agency being a key point in the risk narratives of transformation and catastrophe, an analysis of the interaction between player agency and the agency of characters within video games that employ such risk narratives appears especially promising.

In closing, this study has shown that the analysis of risk narratives in climate fiction offers a powerful lens for understanding the cultural work of storytelling in the second modernity. By situating novels within the broader currents of risk theory and ecocriticism, and by connecting their narrative strategies to the lived and imagined realities of the globalized world, the vital role of fiction in shaping the horizons of possibility and responsibility becomes apparent.

The risk narratives mapped in this study do not offer easy answers or happy endings, but they do invite to imagine, to contest, and to act. In a world defined by uncertainty and interdependence, the stories we tell about risk may be among our most important tools for survival and transformation.

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Deutschsprachige Zusammenfassung

Bei der vorliegenden Dissertation handelt es sich um eine Untersuchung von sechs zeitgenössischen nordamerikanischen Klimawandelromanen, die im Hinblick auf das Konzept globaler Risiken und deren Auswirkungen auf unsere Gesellschaft betrachtet werden. Mein Korpus besteht aus den Werken *Carbon Dreams* (2001) von Susan M. Gaines, *Flight Behavior* (2012) von Barbara Kingsolver, *Odds Against Tomorrow* (2013) von Nathaniel Rich, *New York 2140* (2017) von Kim Stanley Robinson, *A Friend of the Earth* (2000) von T.C. Boyle und *American War* (2017) von Omar El Akkad.

Die Arbeit analysiert die Darstellung des anthropogenen Klimawandels als globales Risiko in einer Auswahl zeitgenössischer Romane und beleuchtet dabei die Bedeutung der Konzeption globaler Risiken im Bereich der Geisteswissenschaften. Ich untersuche die sich ständig verändernde Landschaft der Risikowahrnehmungen und -erzählungen und betone deren tiefgreifenden Einfluss auf individuelle und kollektive Werte in unserer modernen Gesellschaft. Dabei unterstreiche ich die einzigartige Rolle, die fiktionale Narrative bei der Vermittlung komplexer Risikoszenarien an ein breiteres Publikum spielen können. Die bestehende Forschung hat sich in der Untersuchung von Risikonarrativen bisher hauptsächlich auf Sachquellen konzentriert, so dass die einzigartigen Einblicke, die fiktionale Erzählungen zum Verständnis globaler Risiken bieten können, bislang nur unzureichend erforscht wurden. Ich argumentiere vor dem Hintergrund der einzigartigen Perspektiven, die sie bieten können, für die Relevanz der Beschäftigung mit fiktionalen Texten, um einen nuancierteren und ganzheitlicheren Blick auf diese kritischen Themen zu gewinnen. Jeder der sechs untersuchten Romane bietet ein einzigartiges Objektiv, durch das untersucht werden kann, wie Erzählungen verschiedene Facetten des globalen Risikos einbeziehen und darstellen, um innerhalb ihrer fiktionalen Welten Bedeutung zu konstruieren.

Die theoretische Grundlage dieser Studie ist das Modell der Weltrisikogesellschaft des deutschen Soziologen Ulrich Beck, in welchem die globalen Risiken unserer Zeit in die drei „Logiken“ Umwelt, Finanzen und Terrorismus aufgeteilt werden. Als zweites ordnendes Element ziehe ich die Arbeit des britischen Geographen Mike Hulme heran, dessen Studie *Why we Disagree about Climate Change* die Kontroversen analysiert, die dem Klimawandel als gesellschaftlichem Phänomen innewohnen. Auf literaturwissenschaftlicher Seite arbeite ich

mit dem Konzept der *risk narratives of anticipation* und *risk narratives of catastrophe* von Sylvia Mayer und entwickle es in zwei Punkten weiter. Zum einen führe ich als dritte Kategorie den Begriff des *risk narrative of transformation* ein, in dem ein transformatives Element die Welt des Romans im Verlauf seiner Handlung deutlich verändert. Zum anderen verstehe ich die Unterscheidung zwischen diesen Typen von Risikonarrativen nicht als absolute Einordnung sondern als Spektrum, da die untersuchten Werke zwar häufig Elemente verschiedener *risk narratives* enthalten, diese allerdings stark unterschiedlich ausgeprägt sind.

In der theoretischen Einführung erarbeite ich die Konzepte von Risiko, der Weltrisikogesellschaft und der „zweiten" oder „reflexiven Moderne", also einer Moderne, deren zentrale Herausforderungen aus den Erfolgen ihrer eigenen Errungenschaften entstehen. Ich setze diese Konzepte vor den Hintergrund der Globalisierung und des Klimawandels und beleuchte, wie der Klimawandel in der fiktionalen Literatur verarbeitet wird.

Der analytische Teil der Studie gliedert sich in drei Kapitel, die jeweils der Analyse von zwei Romanen gewidmet sind und sich thematisch an jeweils einer der genannten Risikologiken nach Beck sowie einem Grund für *disagreement* zum Klimawandel nach Hulme orientieren. Darüber hinaus ordnen sich die Untersuchten Werke entlang des Spektrums der Risikonarrative den Kapiteln folgend zunächst im Bereich der *risk narratives of anticipation*, dann der *transformation* und zuletzt der *catastrophe* ein. Die drei Hauptforschungsfragen meiner Analyse lauten:

Welche Elemente des globalen Risikos ‚Klimawandel' werden in den analysierten Romanen prominent hervorgehoben?

Auf welche Weise wird der Raum der erzählten Welt dargestellt und durch unterschiedliche Manifestationen des Klimawandelrisikos beeinflusst und verändert?

Wie werden diese Risiken von einzelnen Figuren, Gemeinschaften und den dargestellten Gesamtgesellschaften wahrgenommen, inszeniert und wie wird mit ihnen umgegangen?

Kapitel eins entwickelt die theoretische Grundlage des von mir verwendeten Risikobegriffs. Zunächst wird der über die Jahrhunderte mit verschiedenen Bedeutungen beladene Risikobegriff von seinen Wurzeln in den Gefahren internationaler Handelsschifffahrt im alten

Griechenland hin zu seiner Aufnahme in die englische Sprache, parallel mit dem Aufkommen der mathematischen Risikoanalyse im siebzehnten Jahrhundert, erörtert. Aus dieser Zeit stammt auch die Vorstellung, über mathematische Modelle ein absolut wahres Bild der Welt, und letztendlich auch der Zukunft erschaffen zu können. „*The ideal was to objectify and control the future*“ (Arnoldi 33). Diese Vorstellung vollkommener Kontrollierbarkeit wurde durch die Gräuel zweier Weltkriege, die unvorstellbare Zerstörungsgewalt der Atombombe sowie die in der Nachkriegszeit spürbar werdenden Effekte der globalen Industrialisierung zunehmend in Frage gestellt. In den späten 1970er und den 1980er Jahren führten der Reaktorunfall in Three Mile Island 1979, die Katastrophe von Bhopal 1984 und die Nuklearkatastrophe von Tschernobyl im Jahr 1986 die Traditionelle Risikoanalyse an einen Scheideweg. Auf der einen Seite versuchten Wissenschaftler wie Stanley Kaplan und B. John Garrick, die neuen Unsicherheiten in die Modelle der traditionellen Risikoanalyse einzubauen und so das Ideal einer quantitativen Risikodefinition aufrechtzuerhalten. Dabei bedienten Sie sich einer Art ‚mathematischen Taschenspielertricks‘ und erdachten das hypothetische Szenario „N+1“ als stellvertretende Variable für alle im Modell unbedachten Risikoszenarien. Auf diese Weise lässt sich ein mathematisches Risikomodell so behandeln, als enthielte es auch die Gesamtheit aller unbekannten Szenarien (Kaplan und Garrick 15).

Auf der anderen Seite stehen die Arbeiten weniger mathematisch denkender Wissenschaftler, die den traditionellen Risikobegriff im Angesicht der Globalisierung und Ihrer galoppierenden Komplexität als gescheitert ansehen und ihn nun mit einem wesentlichen Bezug auf die sozialen Prozesse der individuellen Risikowahrnehmung verstehen. Ulrich Becks Modell der (Welt)risikogesellschaft ist ein zentrales Konzept für dieses neue Verständnis von Risiko. Ursprünglich 1986 publiziert und in den folgenden Jahrzehnten stets weiterentwickelt, begründet Beck das Scheitern des traditionellen Risikoverständnisses in drei Haupteigenschaften moderner, globaler Risiken. Diese sind erstens aufgrund ihres beispiellosen Schadenspotenzials im Katastrophenfall nicht durch Geldwerte kompensierbar, können also nicht durch klassische Ersatzzahlungsmodelle erfasst werden. Zweitens sind diese Risiken durch ihre Eigendefinition – sie entstehen als unerwartbare Nebeneffekte des gesellschaftlichen oder technologischen Fortschritts – buchstäblich unberechenbar und sprengen auch auf dieses Weise die Erwartung absoluter Kalkulierbarkeit. Drittens sind die Risiken der zweiten Moderne „delokalisiert“: Sie sind räumlich, zeitlich und gesellschaftlich von ihrer Quelle entkoppelt: Die Nuklearkatastrophe von Tschernobyl belastet auch fast 40

Jahre nach dem Vorfall weiterhin Wildpilze in Deutschland, und die Menschen, die bereits jetzt am härtesten unter dem menschgemachten Klimawandel leiden sind nicht diejenigen, die ihn hauptsächlich herbeigeführt haben. In Abgrenzung zu wirtschaftswissenschaftlichen Herangehensweisen definiert Beck sein Risiko daher als

> *the perceptional and cognitive schema in accordance with which a society mobilizes itself when it is confronted with the openness, uncertainties and obstructions of a self-created future* (*World at Risk* 4)*.*

Zentral für dieses Verständnis ist die Tatsache, dass die Wahrnehmung und Priorisierung der vielfältigen Risiken dieser „*self-created future*" höchst individuell passiert. Im Prozess des „*risk staging*", oder auch der „Realitätsinszenierung" (10), werden die verschiedenen Risikoszenarien in gesellschaftlichen Diskursen gegeneinander abgewogen und die verschiedenen Interessengruppen, aber auch Individuen ermitteln für sich den aus ihrer Sicht am überzeugendsten ‚inszenierten' Diskurs. Die Bedeutung dieser individuellen Perspektive für die Bewertung verschiedener Risiken spiegelt sich auch in der Bedeutung globaler Gerechtigkeitsfragen und deren Einfluss auf die Risikoverteilung wider.

Zunächst wird der Prozess der Globalisierung dahingehend untersucht, dass die Faktoren, die die individuelle Risikobewertung beeinflussen auf die gleiche Art delokalisiert sein können, wie die Risiken selbst. Entscheidungen die so insignifikant wirken wie der Kauf eines günstigen Kleidungsstücks einer beliebigen Fast-Fashion-Marke tragen, wenn auch in sehr geringem Maß, zur Validität von Sweatshop-Fabriken in Ländern des globalen Südens und damit etwa zur Kontamination des dortigen Grundwassers mit giftigen Färbemitteln bei. Auf die gleiche Art lässt sich eine Kurzstreckenfahrt mit dem Auto mit der Zerstörung von Lebensraum durch den Klimawandel verknüpfen. Die „*complex connectivities*", wie John Tomlinson diese Verbindungen zwischen lokalem Verhalten und globalen Konsequenzen nennt (25), tragen daher dazu bei, bestehende Machtgefälle zwischen den globalen Regionen zu verstärken. Gleichzeitig fällt es jedoch schwer, die Verantwortlichkeiten für diese Effekte zu verinnerlichen. Dadurch, dass individuelle Handlungen wie eine Autofahrt oder der Kauf eines Billigprodukts in ihrem Effekt quasi nicht messbar und ihre Konsequenzen darüber hinaus sowohl zeitlich als auch örtlich delokalisiert sind, kann die Verantwortung nur als „*cumulative responsibility*" (Velayos-Castelo 99) aller globalen Akteure verstanden werden. Ursula Heise postuliert als Lösung für diese Problematik einen „*environmentally inflected cosmopolitanism*"

der eine nachhaltige Auseinandersetzung mit verschiedenen Kulturen mit systemischem Verständnis der globalen Ökologie kombiniert (Heise, *Sense of Planet* 159).

Die Delokalisierung von risikoverstärkendem Verhalten und dessen Konsequenzen tritt bei kaum einem Phänomen so deutlich hervor wie bei dem des globalen Klimawandels. Auch deswegen ist der Umgang mit diesem zentralen Risiko der reflexiven Moderne so stark von Kontroversen geprägt. Der britische Geograph und Klimatologe Mike Hulme ordnet die verschiedenen Kontroversen im Umgang mit dem Klimawandel in seinem Werk *Why we Disagree about Climate Change* in verschiedene Kategorien ein. Er argumentiert, dass das Phänomen des globalen Klimawandels schon lange kein rein ökologisches Phänomen mehr sei, sondern in einer Matrix aus ökologischen Interaktionen, Machtbeziehungen, kulturellen Diskursen und Materialflüssen die politischen, sozialen, ökonomischen und persönlichen Bereiche des Lebens durchdrungen hat (362). Als zentrale Gründe für Kontroversen im Zusammenhang mit dem Klimawandel lese ich aus seinem Werk die Unzufriedenheit mit der Arbeit der Wissenschaft (74), die unterschiedliche Wertbemessung für Aktivitäten, Vermögen, Konstrukte und Ressourcen (112) sowie Unterschiede im Verständnis unserer Pflichten gegenüber anderen, der Natur und der Religion (144) heraus. In den drei folgenden Analysekapiteln verknüpfe ich diese drei zentralen Gründe mit Becks zuvor genannten Risikologiken und ergründe, aus welcher Perspektive die verschiedenen Romane das Problem des Klimawandels beleuchten, welche Werkzeuge der Fiktion sie anwenden und welche Rückschlüsse auf die Welt sie erlauben.

Das zweite Kapitel analysiert ausführlich die beiden Texte *Carbon Dreams* von Susan M. Gaines und *Flight Behavior* von Barbara Kingsolver. In beiden Romanen hat der globale Klimawandel noch keinen massiv verändernden Effekt auf die Handlungswelt, auch wenn das namensgebende Flugverhalten der Monarchfalter in Kingsolvers Roman von verschiedenen Figuren korrekt als Zeichen für seine Existenz gedeutet wird. Hier spielt sich das globale Risiko des Klimawandels noch primär in der Risikologik der Umwelt ab. Vor diesem Hintergrund charakterisiere ich beide Werke als *risk narratives of anticipation.* Als *lab-lit*-Romane (Rohn, „Experimental Fiction“ 269) legen beide Narrative darüber hinaus großen Wert auf die korrekte Darstellung wissenschaftlicher Praxis und beleuchten auch verschiedene ihrer Problematiken, sowohl innerhalb der wissenschaftlichen Gemeinschaft als auch in ihrer Interaktion mit der Außenwelt, bzw. deren Mangel. Diesen Aspekt verknüpfe ich mit Hulmes

These „*science is not doing the job we expect or want it to*" (74), die auf verschiedene, kaum, bzw. nicht erfüllbare Erwartungshaltungen der Gesellschaft an die Wissenschaft abzielt. Beide Romane kontrastieren das idealistische Wissenschaftsverständnis von einem intrinsischen Streben nach Erkenntnis mit der Entwicklung hin zu einem zielgerichteten Streben nach monetarisierbaren Ergebnissen. Darüber hinaus wird die Schwierigkeit thematisiert, mit der sich Wissenschaftler konfrontiert sehen, wenn sie nicht nur haltbare, quantifizierbare Antworten geben sollen, sondern auf deren Basis auch normative Aussagen, wie etwa die Definition von ‚richtigem' Verhalten von ihnen erwartet werden. In hochkomplexen Risikoszenarien tritt hier wieder Ulrich Becks Theorie der Inszenierung in den Vordergrund, die eine einzelne, objektive Antwort in diesen komplexen Fällen nahezu unmöglich macht.

Sowohl *Carbon Dreams* als auch *Flight Behavior* vermitteln ihre Erzählung durch eine einzelne, weibliche Fokalisierungsfigur, die im Verlauf der Handlung durch engen Kontakt mit einem Vertreter der anderen Seite die soziale Kluft zwischen Wissenschaftlern und Laien erlebt und zumindest teilweise überwindet. So ist Dr. Arenas, Protagonistin von *Carbon Dreams*, zu Beginn des Romans eine stereotype Bewohnerin des sprichwörtlichen akademischen Elfenbeinturms, der erst durch ihren Kontakt zum Landwirt Chip gewahr wird, dass die Bevölkerung Erwartungen an die Wissenschaft stellt, die diese im Hinblick auf eindeutige Antworten unmöglich erfüllen kann. Gleichzeitig wird Tina vor Augen geführt, dass ihre Vorstellung einer völlig von der Außenwelt abgekoppelten Wissenschaft im Angesicht globaler Risiken nicht haltbar ist. Die Erzählung unterstreicht die Herausforderungen des öffentlichen Diskurses und der effektiven Kommunikation im Zusammenhang mit globalen Risiken. Sie macht die gesellschaftlichen Spaltungen zwischen verschiedenen Interessengruppen deutlich, darunter Wissenschaftler, Industrievertreter, Medienvertreter und Regierungsstellen. Der Roman schließt mit einem eindringlichen Aufruf zur interdisziplinären und integrativen Kommunikation als Mittel zur Bewältigung der komplexen Herausforderungen, die der vom Menschen verursachte Klimawandel mit sich bringt.

Auch *Flight Behavior* stellt die Kommunikation zwischen Wissenschaftlern und Laien ins Zentrum seiner Geschichte. Da die Protagonistin Dellarobia Turnbow jedoch keinen akademischen Hintergrund hat, steht zunächst die Interaktion ihrer ländlichen Dorfgemeinschaft mit einem für sie unerklärlichen Phänomen im Mittelpunkt. Viele der wissenschaftlich ungebildeten Dorfbewohner interpretieren das Auftauchen eines Schwarms

Monarchfalter im Waldstück der Turnbows als göttliches Zeichen und schlagen so einen Bogen zur ursprünglichsten Interpretation globaler Risiken. Durch den stärkeren Fokus auf die Dorfbevölkerung als Mitglieder der Arbeiterklasse tritt zudem die Problematik der individuellen „stagings“ verschiedener Risiken in den Vordergrund. Auch nachdem das auftretende Wissenschaftlerteam um den Ökologen Ovid Byron den Klimawandel als hochproblematische Ursache für das Phänomen offenlegt, haben viele der armen Bewohner andere, unmittelbarere Sorgen, als sich um das für sie deutlich nachgelagerte globale Risiko zu kümmern.

Beiden Romanen ist zudem eine äußerst kritische Haltung gegenüber den Massenmedien gemein, deren Jagd nach sensationellen Schlagzeilen einer seriösen Wissenschaftsberichterstattung entgegensteht und die so eine umfassende Information der Gesellschaft deutlich erschweren. In beiden Darstellungen führen Versäumnisse, sich aus der Isolation zu befreien, Ignoranz und ineffektive Kommunikationsversuche zu Rückschlägen. Gleichzeitig identifizieren sie die erfolgreiche Interaktion von Wissenschaftlern mit der Öffentlichkeit in Verbindung mit einem durchdachten Medienengagement der Schlüssel zu einem positiven Umgang mit den hochkomplexen Risiken der reflexiven Moderne.

Im dritten Kapitel untersuche ich die Romane *Odds Against Tomorrow* von Nathaniel Rich und Kim Stanley Robinsons *New York 2140* im Hinblick auf ihren Umgang mit der Beziehung zwischen Marktkapitalismus, sozialer Gerechtigkeit und Klimawandel. Ich klassifiziere beide Romane als *risk narratives of transformation*, in denen im Kontext einschneidender Klimawandelereignisse ein gesellschaftlicher Wandel angeregt wird. Beide Narrative stellen den Aspekt der wissenschaftlichen Untersuchung des Klimawandels in den Hintergrund und befassen sich zentral mit dessen ökonomischen Auswirkungen und entsprechend der nach Beck zweiten Logik, den globalen Finanzrisiken. Der Klimawandel, laut dem britischen Wirtschaftsprofessor Nicholas Stern „*the greatest and widest-ranging market failure ever seen*“ (1), stellt Ökonomen durch seine zeit- und ortsversetzte Wirkung vor ein Generationenproblem. Dadurch, dass ein Großteil der als ‚Kosten‘ abbildbaren Effekte klimaschädlichen Handelns potenziell weder am Ort, noch zu Lebzeiten der Akteure anfallen, fällt es schwer, sie in vollem Umfang den potenziellen Profiten gegenüberzustellen, die mit diesem Handeln erwirtschaftet werden können. Gleichzeitig stellt Mike Hulme in seiner zweiten Hauptbegründung für Uneinigkeit im Angesicht des Klimawandels heraus, dass die

Bewertung verschiedener "*activities, assets, constructs and resources*" individuell höchst unterschiedlich erfolgt (112) und begründet damit indirekt ein weiteres Mal, warum dieses globale Risiko auf so unterschiedliche Weise inszeniert wird. In diesem Kapitel ziehe ich darüber hinaus Jason Moore heran, der das Anthropozän als vom Menschen geprägtes geologisches Zeitalter in ein *Capitalocene* umdeutet und so die Wirkmacht des Großkapitals als besonderen Faktor hervorhebt. Diese Unverträglichkeiten eines ungebremsten Kapitalismus mit einer sozial gerechten und zukunftsfähigen Gesellschaft sind zentrales Thema der beiden hier analysierten Werke.

Odds Against Tomorrow rückt die Kommerzialisierung von Risiko besonders deutlich in den Vordergrund: Nachdem ein gigantisches Erdbeben die Stadt Seattle dem Erdboden gleichmacht und so eine ganze Generation junger Amerikaner in steter Antizipation weiterer Katastrophen aufwachsen lässt, geht Protagonist Mitchell Zukor als frisch examinierter Wirtschaftswissenschaftler nach New York City. Seine Besessenheit von verschiedensten Untergangsszenarien führt ihn zu *FutureWorld*, einem Beratungsunternehmen, das vorgibt, zahlungskräftige Großkunden vor allen nur denkbaren Risiken schützen zu können, in Wahrheit aber nur eine Gesetzeslücke ausnutzt, um die Kunden im Katastrophenfall nicht haftbar zu machen. Mitchells einziger Kontakt außerhalb seiner Firmenblase ist eine ehemalige Kommilitonin, die mit einem potenziell tödlichen Herzfehler in einer alternativen Kommune lebt. Als jedoch eines seiner Szenarien überraschend Wirklichkeit wird und ein Hurrikan New York City in nie dagewesenem Ausmaß überflutet, stürzt das Kartenhaus zusammen und die Hilflosigkeit der Berater im Auge einer realen Katastrophe wird offenbar. In der folgenden Reise Mitchells durch die Ruinen seines New York und seinem anschließenden Versuch, in einem völlig zerstörten und zur Verwilderung freigegebenen Landstrich gleich seiner Kommilitonin eine alternative Gemeinschaft aufzubauen, lässt der Roman offen, ob das transformative Moment, das durch den Hurrikan angestoßen wurde, letztendlich Bestand haben wird.

In *New York 2140* wird durch die sieben verschiedenen Fokalisierungsinstanzen ein deutlich breiterer Querschnitt der Gesellschaft abgebildet. Zwar gehen der Handlung im New York City des Jahres 2140 bereits zwei große Flutkatastrophen voraus, die das Bild der Stadt und des Globus deutlich verändert haben, die Gesellschaft ist jedoch in der Hochzeit des Kapitalismus stehengeblieben. Die überflutete Stadt vermarktet sich als *Super Venice*, und der

Hauptunterschied zum heutigen New York besteht darin, dass die Bürger der Arbeiterklasse sich mit Fähren oder zu Fuß über Brücken zur Arbeit bewegen, während die Oberschicht auf luxuriösen *hydrojets* oder privaten Luftschiffen ihrem hedonistischen Lebensstil frönt. Auch hier steht mit Franklin eine Figur im Mittelpunkt der Handlung, die ihre überlegenen Kenntnisse der Finanzsysteme ausnutzt, um aus globalem Risiko – hier der Grundstücksspekulation mit den nicht mehr bewohnbaren Großstadtruinen, die durch den gestiegenen Meeresspiegel in der Gezeitenzone liegen – enorme Gewinne zu erzielen. Auch in *New York 2140* gibt eine Naturkatastrophe den Anstoß für eine gesellschaftlichen Umbruchsbewegung, die hier jedoch, repräsentiert durch die sieben fokalisierenden Figuren, aus der gesamten Gesellschaft heraus getragen wird.

Vergleichbar mit den in Kapitel zwei analysierten Werken wird auch in den *risk narratives of transformation* ein gesamtgesellschaftlicher Diskurs angeregt, über den die Gefahren der reflexiven Moderne als globale Herausforderung begriffen und beantwortet werden können. Anders als in Kapitel zwei wird hier jedoch nicht auf eine gemeinsame Suche nach Erkenntnis hingearbeitet, sondern die Eignung der kapitalistischen Gesellschaft als tragfähiges Modell für die Zukunft in Frage gestellt. Die Narrative können hier Transformationsprozesse anstoßen und lesbar machen, die außerhalb der fiktionalen Welt nicht oder nur schwer durchführbar wären. In den Risikonarrativen wird jedoch bewusst auf ein ‚happy end' verzichtet, und mehrfach die Fragilität des sich andeutenden Wandels betont.

Kapitel vier verbindet den Klimawandel mit der globalen Risikologik des Terrorismus. Hierzu analysiere ich die beiden Romane *A Friend of the Earth* von T.C. Boyle und *American War* von Omar El Akkad. Die Verknüpfung dieser beiden vordergründig in keinem Zusammenhang stehenden Konzepte verdeutlicht, wie tief der Klimawandel als globales Risiko die Gesellschaft durchdrungen hat. Sie verlangt jedoch auch eine gründlichere Einordnung. Zunächst ist der Terrorismus von den anderen Risikologiken dahingehend abzugrenzen, dass es sich bei einem Terroranschlag im Gegensatz zu den Gefahren der Umwelt- und Wirtschaftsrisiken um einen vorsätzlichen, zumindest teilweise gezielten und räumlich definierten Angriff handelt. Das Konzept des globalen Terrorrisikos geht jedoch über diese einzelnen Anschläge hinaus und behandelt die Inszenierung der Gefahr, jederzeit potenziell Opfer eines solchen Anschlags werden zu können. Diese Inszenierung beeinflusst bereits heute weltweit Sicherheitsmaßnahmen, internationale Beziehungen und militärische Interventionen, aber

auch individuelles Verhalten massiv. Der globale Terrorismus und der Klimawandel können über zwei wesentliche Wege miteinander verbunden werden. Zunächst befasse ich mich mit dem Konzept des Ökoterrorismus, bei dem terroristische Handlungen als Mittel zur Durchsetzung einer politischen Agenda eingesetzt werden, die entweder auf die Verhinderung oder die Bekämpfung des Klimawandels abzielt. Diese Untersuchung unterstreicht das Potenzial radikaler Umweltschützer, die zerstörerischen Mittel der zweiten Moderne einzusetzen, um ihre Ziele zu erreichen. Zweitens untersuche ich, wie der Klimawandel selbst als anstiftender Faktor und Nährboden für die Radikalisierung zum Terrorismus dienen kann. Der Zusammenbruch von Gesellschaften, der sinkende Lebensstandard und die zunehmende soziale Instabilität, die durch den fortschreitenden Klimawandel verursacht werden, schaffen einen fruchtbaren Boden für Radikalisierung und das daraus resultierende Risiko eines globalen Terrorismus. Diese doppelte Sichtweise ermöglicht ein umfassendes Verständnis der Beziehung zwischen Klimawandel und Terrorismus und erkennt an, dass es sich dabei um ein vielschichtiges Phänomen mit unterschiedlichen zugrunde liegenden Motivationen handelt, eine Tatsache, die auch durch Mike Hulmes drittes zentrales Argument gestützt wird: „*Far from being a simple problem of science […] or of Economics […], there is a deepening appreciation that climate change – both in the way we frame it and the way we define our response – can only be grasped through appreciation of its ethical dimensions*" (174).

Beide Romane dieses Kapitels spielen – zumindest zu großen Teilen – in einer Welt, die durch den Klimawandel massiv zum Negativen verändert wurde. Die Erforschung, Vermarktung oder Bekämpfung seiner Effekte spielt zwar im als Rückblick gekennzeichneten Erzählstrang von *A Friend of the Earth* noch eine zentrale Rolle, im Erzählstrang der 2020er Jahre dieses Romans und dem gesamten Narrativ von *American War* sind diese Ideen jedoch bedeutungslos geworden – die Menschheit muss sich mit den massiv verschlechterten Lebensbedingungen auf der Erde abfinden und in, mit bzw. gegen diese neue Umwelt überleben. Daher identifiziere ich beide Romane als *risk narratives of catastrophe*, wobei *A Friend of the Earth* hier an der Grenze zum *risk narrative of transformation* steht.

A Friend of the Earth beschreibt in seinem ersten Erzählstrang den Weg der Radikalisierung des hedonistischen Supermarkterben Tyrone Tierwater zum radikalen Ökoterroristen und im zweiten Strang, ca. 30 Jahre später seine figurative Läuterung vom zynischen, verbitterten Ex-Sträfling zum zufriedenen Überlebenskünstler. Dabei parodiert das Werk in beiden

Erzählsträngen das Erbe der *„age[s] of excess“* der modernen Gegenwart (118), die den Planeten zu dem gemacht haben, was er in der Zukunft des Romans geworden ist.

Tyrone Tierwater ist in seinem verzweifelten Kampf für den Umweltschutz im ersten Erzählstrang am Ende bereit, die Wasserversorgung der Stadt Santa Barbara mit hochgiftigen Bakterien zu verseuchen und damit potenziell zehntausende Menschen im Namen der Rettung des Planeten zu töten. Die Radikalisierung von Sarat Chestnut, der Protagonistin in Omar Akkads *American War* geht noch deutlich weiter und ist in ihrer Motivation weniger direkt mit dem Klimawandel verknüpft. Umittelbar ist Sarats Radikalisierung auf die von ihr erlebten Traumata durch die Gräuel des Bürgerkriegs, in dem sie aufwächst und an dem sie als Kämpferin der unterlegenen Seite aktiv teilnimmt, verknüpft. Diese Umstände in einer kriegsgebeutelten Version der Vereinigten Staaten führt *American War* jedoch auf den Klimawandel und die radikal ausgefochtenen Konflikte um den Umgang damit zurück: Der Bürgerkrieg beginnt mit einer Sezession der Bundesstaaten South Carolina, Georgia, Alabama und Mississippi in Reaktion auf ein von der Regierung ausgerufenes Verbot von fossilen Brennstoffen, der von Seiten des unterlegenen Südens mit wachsender Verzweiflung geführt wird. Als eine der letzten aktiven Kämpferinnen des *Free Southern State* bedient sich Sarat einer laborgeschaffenen Biowaffe, um ihre Feinde zu vernichten. Am Ende ihrer tragischen, von zahlreichen Niederschlägen und Grausamkeiten geprägten Reise setzt sie am Tag der Friedensfeiern zum Ende des Krieges, der ihr Leben geprägt hat, ein Virus frei, das ein Drittel der amerikanischen Bevölkerung auslöscht und den Großmachtstatus ihrer ehemaligen Nation endgültig beendet.

In ihrem Umgang mit dem Klimawandel zeichnen die beiden *risk narratives of catastrophe* das bei weitem pessimistischste Bild, in dem der Kampf gegen ihn als bereits verloren dargestellt wird. In der Lesart als warnende Illustration steht jedoch auch hier eine positive Handlungsaufforderung im Zentrum des Narrativs. Darüber hinaus wird in diesen Narrativen die Reflexivität unserer Moderne am deutlichsten hervorgestellt, indem die zentrale Gefahr hier direkt und unmittelbar vom Menschen ausgeht.

Im Schlusskapitel greife ich meine einleitende Forschungsfrage und zwar, wie Klimawandelromane den Klimawandel in ihren jeweiligen Welten darstellen, wie diese durch ihn verändert werden und wie seine Risiken von den verschiedenen Akteuren wahrgenommen und inszeniert werden, erneut auf.

Ich betrachte die theoretischen Grundlagen des ersten Kapitels im Kontext der Analysen in den folgenden drei Kapiteln und erörtere, wie sich der Erkenntnisgewinn dieser Analysen in der Theorie niederschlägt. Durch die analytische Verknüpfung von sechs Romanen, die dasselbe Oberthema aus verschiedenen Blickwinkeln erzählen, stößt die vorliegende Dissertation neue Perspektiven des Nachdenkens über globale Risiken im Allgemeinen und den Klimawandel im Besonderen an und schafft somit einen Mehrwert für den *Ecocriticism*, die ökologisch orientierte Literatur- und Kulturwissenschaft.