Invisible Dangers:

The Presentation of Modern Environmental Threats and the Anthropocene in Contemporary German Literature

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Abstract

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This dissertation project examines how contemporary German literary texts depict modern environmental threats that are characteristic for the new age of the Anthropocene. Joining the larger conversation in environmental literary studies, and the Environmental Humanities in general, this project focuses on how written narratives overcome the visual obstacles that are a significant part of the environment and its current perils. Divided into thematical chapters, the dissertation analyzes narratives that deal with climate change (Ilija Trojanow, Liane Dirks), the nuclear threat after the catastrophe in Chernobyl (Christa Wolf, Gudrun Pausewang), and extinction (Marlen Haushofer, Max Frisch). The fourth and closing chapter summarizes the narrative characteristics evident in the German texts and compares them to the distinct aspects in Anglophone literary texts (Margaret Atwood, Barbara Kingsolver). This concluding, comparative analysis demonstrates that the depiction of the environmental hazards is not only specific to literature, but peculiar to a specific culture.

My analysis identifies three characteristics that accompany the depiction of invisible environmental threats in contemporary German literature: First, literary texts have transformed into hybrid narratives that resemble the conditions of the environment as neither solely natural, nor urban, nor technological; instead, they can be regarded as a mesh in which countless influences interact and intersect. The boundaries of literary genres have become less stable as more and more texts include the features of several generic literary traditions, most prominently, travel, autobiographical, and disaster writing. The emergence of these hybrid literary texts affects their presentation of place and time within the narratives. For instance, in order to show the slow progression of environmental threats, these texts frequently make use of analepses in order to highlight the hazardous developments in the environment over time. Second, the first-person-narrators become the stories' focalizers who are depicting the literary plot through their highly subjective lenses. These human individuals from whose perspectives the texts are told are in most cases ordinary people with no scientific background or deeper understanding of the environmental threat. Similar to their readers, they are only witnesses of the changing climate or the nuclear contamination of their home's environments. Therefore, they document their inner personal thoughts and attempt to describe what is happening, even though it might not be perceptible to their human senses. Additionally, these texts are often arranged in the form of written reports that resemble traditional diaries, hence strengthening the highly personal character of these texts. Third, as the environmental threats remain mostly invisible and imperceptible to these focalizers, they employ language to describe what remains hidden to them. Here, they use established and familiar words and expressions that capture and compare the environmental dangers to everyday occurrences and events. This strategy involves the semantic broadening of individual terms, as well as metaphors and analogies.

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Nobody ever said that writing a dissertation will be easy. Throughout this last year though more than the usual "curveballs" have come my way as we all experienced and continue to experience a devastating pandemic, fights for social and racial justice, and the effects of climate change. All too often I thought to myself that the issues I have been writing about are becoming all too real when they have developed into highly visible aspects of our own lives. Despite the apparent negative consequences, the growing severity of these issues fueled my personal motivation in writing and finishing this dissertation, because it proved to me that what we are doing in the Humanities matters.

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Table of Contents

Introduction

During the past decade, we have seen devastating environmental catastrophes in all regions of the Earth. Among the most prominent and well-known ecological disasters are the Deepwater Horizon oil spill in the Gulf of Mexico (2010), the nuclear fallout at the Japanese power plant Fukushima Daiichi (2011), the tropical Hurricanes Harvey and Maria (2017), and the wildfires in Australia (2019). Less well known due to a lack of coverage in Western mainstream media was the occurrence of cyclone Idai (2019); one of the worst tropical cyclones to hit Africa in recorded history, it resulted in the death of more than a thousand people and caused widespread destruction in Mozambique, Zimbabwe, and Malawi.[1] This list of environmental events represents only a fraction of the ecological processes and incidents that have posed a threat to the well-being of humans, non-human entities such as animals, plants, and rocks, and the environment in general. Often, environmental dangers remain largely hidden. For example, in 2019, the environmental news outlet *The Revelator* reported that more than two dozen animal species were declared extinct or nearly extinct, among them, small species like the Hawaiian tree snail as well as large mammals such as the Sumatran rhinoceros (cf. Platt). This loss of animal and plant species alike is, compared to the listed environmental disasters, a slower, more subtle process that often goes unnoticed. And there are countless other changes within the environment that remain mostly invisible, too. The wildfires in Australia, for instance, were the result of a long period of drought and intense heat, both of which are consequences of a global climate change. Like the extinction of animal species, this process advances very slowly, making it impossible for humans to witness its progression in real time.

Invisibility, or at least a high degree of visual non-perceptibility, is one of the defining characteristics of current environmental risks and threats. Humans are unable, for example, to see

[1] See Rodgers et al for a detailed description of the severe weather event and visual documentation of the destruction caused by the tropical cyclone.

the movement of radiation and chemical pollutants in the air, or watch synchronously the increase of global median temperatures and resulting effects, such as the rise of worldwide sea levels, or the melting of glaciers. According to sociologist Ulrich Beck, this invisible trait of modern-day (environmental) perils is a byproduct of Western societies' transformation into what he calls *risk societies*.[2] In these industrial nations, the economy has become dependent on technological and scientific innovations in order to increase societies' affluence (cf. Beck 10-15). However, this progress produces risks that in time can transform into threats significantly different from past perils. Beck explains, "it is nevertheless striking that hazards in those [past] days assaulted the nose or the eyes and were thus perceptible to the senses, while the risks of civilization today typically escape perception and are localized in the sphere of physical and chemical formula" (21). Nuclear radiation is one example of these modern-day invisible hazards.[3] While the invention of nuclear energy originally promised to be an alternative form of energy production autonomous from fossil fuels, the fallouts in Three Mile Island, Chernobyl, and Fukushima have proven that this form of power production bears high risks that can lead to hazardous consequences.

[2] Western capitalist societies' dependence on science and technology in their production of wealth is, according to Beck, the predominant characteristic of these risk societies. He explains that "[…] while in classical industrial societies the 'logic' of wealth production dominates the 'logic' of risk production, in the risk society this relationship is reversed. […] The gain in power from techno-economic progress is increasingly overshadowed by the production of risks. In an early stage, these can be legitimated as 'latent side effects.' As they become globalized, and subject to public criticism and scientific investigation, they come, so to speak, out of the closet and achieve a central importance in social and political debates. This 'logic' in risk production and distribution is developed in comparison to the 'logic' of the distribution of wealth. At the center lie the risks and consequences of modernization, which are revealed as irreversible threats to the life of plants, animals, and human beings. Unlike the factory-related or occupational hazards of the nineteenth and the first half of the twentieth centuries, these can no longer be limited to certain localities or groups, but rather exhibit a tendency to globalization which spans production and reproduction as much as national borders, and in this sense brings into being supra-national and non-class-specific global hazards with a new type of societal and political dynamism" (12-13).

[3] Throughout my dissertation I will focus on nuclear energy when discussing the invisible hazard of radiation. The interplay between benefits and risks though is evident in other examples where radiation is used. For example, the use of radiation in medicine proves its double-edged sword character. While radiation is used as a cancer treatment in chemotherapy, an over-exposure to radiation has simultaneously been linked to cancer diseases.

The increased production of risks (and the acceptance of creating eventual hazards) stands in relation to Western societies' emphasis on the future. In his book *Runaway World* (2002), published less than a decade after the English translation of Beck's *Risk Society*, sociologist Anthony Giddens points to the correlation of modern-day risks and time. He explains,

> Risks refer to hazards that are actively assessed in relation to future possibilities. It comes to wide usage only in a society that is future oriented – which sees the future precisely as a territory to be conquered or colonised. Risk presumes a society that actively tries to break away from its past – the prime characteristic, indeed, of modern industrial civilisation. (22)

Giddens' understanding of risks differs from Beck's in that he regards them as calculated future disadvantages rather than as unknown hazards that develop slowly, and invisibly. Instead, in a modern society, benefits and risks from science and technology co-occur; the acceptance of prospective risks is calculated based on the advantages created by scientific and technological innovation. Moreover, as Gidden points out, "science and technology are inevitably involved in our attempts to counter such risks but they have also contributed to creating them in the first place" (3). Risks and technology are therefore inextricably linked: from their creation and their causation to the point of solution. Unlike processes in the past, their cause-and-effect relationship often remains hidden and only becomes visible at an unknown point in the future. That is to say, human actions in the present shape the future in anticipated, but also unforeseen, invisible ways.

In *Runaway World,* Giddens distinguishes between two kinds of risks: external risks and manufactured risks. External risks refer to past perils not created by human action. Giddens defines them as "[…] risks experienced to be coming from the outside, from the fixities of tradition and nature" (26). Examples of external risks include earthquakes, or volcanic eruptions; these hazards can happen at any time and are of natural origin. In contrast, Giddens characterizes manufactured risks as "[…] risks created by the very impact of our developing knowledge upon the world. Manufactured risks refer to risk situations which have very little historical experience of confronting" (26). Examples that fall under this category include environmental risks such as

climate change. While the consequences of climate change become detectable in rising global median temperatures or severe weather events such as hurricanes, their origin is no longer entirely natural. Instead, human actions – like the production of greenhouse gases and their release into the planet's atmosphere – have begun to alter the climate irreversibly. What was once deemed natural and out of humankind's power, has now become our responsibility. Or, as Giddens puts it: "[…] we started worrying less about what nature can do to us, but what we have done to nature. This marks the transition from the predominance of external risk to that of manufactured risk" (26).

Humankind's growing influence over nearly every aspect of Earth, including nature and the environment, has triggered transformation on a planetary scale. Giddens describes that we now live after the "end of nature," where "there are few aspects that haven't been in some way affected by human intervention. Much of what used to be natural isn't completely natural anymore, although we can't always be sure where the one stops and the other begins" (27). This inability to recognize, or see where anthropogenic changes have already occurred, is yet another form of invisibility that accompanies modern environmental perils. Without the help of science, such as meteorology or climatology, individuals are incapable of detecting how climate change has occurred as a consequence of their behavior. They cannot, for instance, witness how emissions of greenhouse gases have caused the warming of the atmosphere and the resulting slow but gradual increase of global median temperatures. Instead, the processes that drive climate change remain largely invisible to humans; it is only after some time that the consequences become noticeable in the form of severe weather phenomena. Weather, once regarded as a natural aspect of life, has been altered by humans. These anthropogenic changes are, however, not traceable with our human eyes; individual weather events, such as rain or snow, have not yet changed and retain the appearance of entirely natural events.

This big break in humankind's influence on the events and processes on Earth, metaphorically speaking from holding a supporting role to receiving the leading role, has been

described with the concept of the Anthropocene. The term Anthropocene was first coined in 2000 by atmospheric scientists Paul Crutzen and Eugene Stoermer, who sought to "[…] emphasize the central role of mankind in geology and ecology […]" (Crutzen and Stoermer 484) during this moment in Earth's history. The idea of humankind as the dominant influence on Earth's processes is not entirely new. As early as the nineteenth century, philosophers and scientists were beginning to reflect on the supposed superiority of humankind.[4] However, it was not until the publication of Crutzen and Stoermer's text that such discussions began to formally recognize the power of human influence on the planet's processes with the declaration of a new geological age. They explain it was during that time period when "[…] the effects of human activity have become clearly noticeable. This is the period when data retrieved from glacial ice cores first revealed an increase in atmospheric concentrations of several 'greenhouse gases,' in particular CO_2 and CH_4" (484-485). Compared to previous geological eras in Earth's history, such as the Pleistocene, the Anthropocene only covers a relatively short time span. Crutzen and Stoermer nevertheless predict that the human impact on the planet's system will be long lasting. They state,

> Without major catastrophes like an enormous volcanic eruption, an unexpected epidemic, a large-scale nuclear war, an asteroid impact, a new ice age, or continued plundering of Earth's resources by partially still primitive technology […] mankind will remain a major geological force for many millennia, maybe millions of years, to come. (485)

Only the occurrence of major future disasters, which could emerge out of manufactured but also external risks, to use Giddens' terminology, have the potential to disrupt humankind's dominance on Earth and possibly even threaten human survival.

The formation of the Anthropocene Working Group in 2009, an interdisciplinary research cluster of scientists, was intended to determine if the Anthropocene could be considered a formal geological time unit according to the standards of the ICS-produced International Chronostratigraphic Chart. Their research confirmed the "geological reality" (Zalasiewicz et al, 10)

[4] See Zalasiewicz et al, 4-11, for a detailed overview of the historical origins of the Anthropocene.

of the Anthropocene as a formal time unit.[5] However, the group proposed a different start date than Crutzen and Stoermer, stating that the Anthropocene came into existence around the beginning of the nuclear age, in the mid-twentieth century. Here, the discovery of bomb test radionuclides in biological entities such as stones and soil supports their claim and functions as yet more proof of humankind's dominant role in this new era (cf. Zalasiewicz et al, 10).

Their proposed evidence also emphasizes the interdisciplinary character of the Anthropocene, which suggests an expansion of what is traditionally regarded as significant for the natural sciences. They explain, "this debate about the driving forces of the Anthropocene and the role of different modes of human, social, technological and political behavior are scientific questions of deep importance; […]" (Zalasiewicz et al, 15). This interplay of numerous different factors and spheres in the formation of the Anthropocene explains its interdisciplinary relevance and the interest in the Anthropocene from non-scientific fields such as the humanities and the social sciences (cf. Zalawiesicz et al, 5-6). The Anthropocene Working Group explains, "the Anthropocene represents a remarkable episode in the history of the Earth, a narrative that is unfinished but that has empathically begun, and one that is of no little consequence for present and future communities" (Zalawiesicz et al, 4). The fitting analogy of the unfinished narrative matches the interest of authors and literary scholars in the topic of the Anthropocene and its overall growing relevance in the humanities.

While the study of literature and the environment and the acknowledgment of ecocriticism as a formal theoretical field have grown significantly among scholars since the early 1990s,[6] the emergence of the Anthropocene has led to a new perspective within the discipline. Scholars such as

[5] The decision of the Anthropocene Working Group to view the Anthropocene as a formal geological time unit was not met with unanimous approval among the geological scientific community. Stanley Finney and Lucy Edwards, for instance, criticize the relative brevity of the Anthropocene as well as its many novel features that made it difficult to formally confirm its geologic reality (cf. Finney and Edwards, 4-10).
[6] See Bühler, 27-46, for a historical overview of the development of ecocriticism.

Adam Trexler and Gabriele Dürbeck argue that literature about the Anthropocene is different than literature about the environment. Trexler coins the term *Anthropocene fictions* in order to generally describe literary works of fiction that deal with the topic of anthropogenic climate change, one of the main defining features in the Anthropocene. Trexler explains that the use of the term Anthropocene over environment, or climate change,

> […] emphasizes the emergence of its subject from a scientific to a geological process reflected in the atmosphere, oceans, ecosystems, and societies. […] Anthropocene indicates that warming is not merely a theory but a phenomenon that has already been measured and verified across scientific disciplines and conclusively linked to human emissions of fossil fuels. Thus, Anthropocene productively shifts the emphasis from individual thoughts, beliefs, and choices to a human process that has occurred across distinct social groups, countries, economies, and generations […]. (4)

Representations of topics characteristic of the Anthropocene not only influence the themes and plots of literary texts but also their overall genre. Trexler explains,

> More often than not, the narrative difficulties of the Anthropocene threaten to rupture the defining features of genre: literary novels bleed into science fiction; suspense novels have surprising elements of realism, realist depictions of everyday life involuntarily become biting satire. (14)

The previously stable boundaries of literary genres have begun to crumble in the age of the Anthropocene, owing to the fact that depictions of the topics pertinent to this geological age are considerably more complex, often requiring the modes and features of more than one established literary genre. Here, the emergence of hybrid literary genres stands in direct relation to the emergence of the Anthropocene.

Gabriele Dürbeck focuses her explanation of Anthropocene literature on the role of the narrative when she identifies five defining plots that characterize literary texts about the Anthropocene. Here, she distinguishes between catastrophe and apocalyptic narratives ("Katastrophen- beziehungsweise Apokalypsennarrative"), justice narratives ("Gerichtsnarrative"), narratives of great transformations ("Narrative der 'Großen Transformation'"), (bio)-technological narratives ("(bio)technologische Narrative"), and interdependence narratives ("Interdependenz-Narrative") (cf. Dürbeck 2018, 13). Like Trexler, she notices that some texts cannot be categorized

exclusively into only one type, but that they have overlapping features that match more than one of these Anthropocene narratives (cf. Dürbeck 2018, 17). Despite their narratological differences, she explains that it is the topic of the Anthropocene that also unites them. Dürbeck states,

> Bei aller Unterschiedlichkeit haben die fünf Narrative jedoch eine gemeinsame Struktur, und zwar der (teilweise auch) kritische Bezug auf die Gefährdung der Welt durch die Menschheit als Plot, eine tiefenzeitliche Perspektive auf Vergangenheit und Zukunft, einen planetarischen Bezugsrahmen, eine Aufhebung der kategorialen Grenzen zwischen Natur und Kultur im Horizont des Erdsystemkonzepts und schließlich die Thematisierung der ethischen Verantwortung für die Verminderung weiterer Umweltzerstörung und das Überleben der menschlichen Zivilisation. (Dürbeck 2018, 17)

(These five narratives have, despite their differences, a common structure, and here specifically the plot of the endangerment of the world by humankind, the perspective of past and future influenced by the concept of deep time, a planetary scale, the abolishment of the nature and culture divide due to the idea of the Earth as a complex system, and finally the depiction of the moral responsibility to prevent further environmental destruction and to ensure the survival of human civilization.)

While these points are developed in varying degrees in these Anthropocene texts, it is once again the topics of this modern age that hold their respective literary works together. In addition to the efforts of establishing Anthropocene literature, or Anthropocene fictions as an independent genre, other scholars have pointed to this new overarching planetary interconnectedness. Timothy Morton identifies so-called *hyperobjects,* which he defines as "[…] things that are massively distributed in time and space" (1). According to Morton, examples of *hyperobjects* include tangible objects such as a water bottle, but also abstract issues like climate change (cf. 1-2). Here, the appearance of these *hyperobjects* is directly linked to the emergence of the Anthropocene; for humans, the inconceivable scale of time and space creates difficulties of representation and complicates the ability to raise awareness of their overall existence.

The difficulty in recognizing the reality of the Anthropocene is further impeded by a general invisibility that conceals many of the ongoing processes in the environment; this characteristic more than any other is what distinguishes this new era from earlier time periods. While natural disasters such as earthquakes and volcanic eruptions continue to occur, the sheer number of human-made environmental threats has grown significantly. However, it has become increasingly

difficult to identify these hazards due to their often multifaceted, discreet nature. Rob Nixon describes this feature in his homonymous book as *slow violence*. He defines the concept as "[…] a violence that occurs gradually and out of sight, a violence of delayed destruction that is dispersed across time and space, an attritional violence that is typically not viewed as violence at all" (2). This new kind of violence differs significantly from the traditional understanding of the concept. Nixon further explains that slow violence is "[…] neither spectacular nor instantaneous, but rather incremental and accretive, its calamitous repercussions playing out across a range of temporal scales" (2). He identifies the time delay as the most striking difference between his understanding of slow violence versus traditional violence. Consequences of human actions are not immediately recognizable but are instead time-deferred. This makes it more difficult to identify the relationship of cause and effect and to understand how human behavior contributes slowly and over a long period of time, as with changes to the global climate. According to Nixon, climate change is just one example of slow violence; other examples of environmental hazards that capture the character of slow violence include toxic pollution and extinction (cf. Nixon 3).

The comparison of contemporary environmental threats such as climate change, extinction, or toxic and nuclear accidents reveals significant differences in the modes of their respective forms of invisibility. We therefore need to distinguish between the different levels of invisibility that accompany these modern environmental perils: namely, between material, temporal, and spatial invisibility. First, I define material invisibility as a character trait of environmental hazards that makes them imperceptible to the human eye. Based on its physical composition, for instance, nuclear radiation falls under the category of material invisibility; it cannot be seen (or recognized via other human senses such as smell or touch) without the help of technological devices or scientific experiments. In the case of nuclear radiation, the Geiger-Mueller counter is used to measure the existent radioactive fallout in the environment. Thus, in order to overcome material invisibility, we rely heavily on science and technology to understand a threat that is otherwise

invisible. Here, measurements become an important tool for the representation and/or visualization of a peril that cannot be perceived with human eyes.

Second, I describe temporal invisibility as a time-deferred form of imperceptibility. The relationship between cause and effect is delayed as the consequences of certain actions become visible only after an indefinite period of time. Climate change is one example of an environmental hazard that possesses temporal invisibility. While the emission of greenhouse gases into the atmosphere started with the onset of industrialization in the second half of the eighteenth century, its effects did not become noticeable until the twentieth century when scientists such as Gilbert Plass, Hans Suess, and Charles Keeling discovered their link to Earth's rising median temperatures.[7] Even today, the consequences of global warming, or climate change as I will refer to it throughout my dissertation, cannot yet be equally experienced, or seen, in all parts of the world. This feature constitutes the third form of environmental invisibility, which I define as spatial invisibility. Here, the visible consequences of particular threats are not uniformly distributed, or they are dislocated from the places they have originated; Climate change alters the environmental conditions in Antarctica where glaciers are melting due to the increase in median temperatures. The disappearance of glaciers from Earth's southern most regions cannot be observed in real time because of the gradual nature of the loss, as well as its geographic remove from the centers of human civilization and industrialization. This distance to densely populated places where greenhouse gases are largely produced demonstrates the ability of environmental threats to migrate. In the example of climate change, the greenhouse gases that lead to the melting of Antarctica's glaciers are produced not in Antarctica but predominantly in industrialized countries

[7] See Weart, 19-37, for a detailed description on how Charles David Keeling and others discovered the connection between the existence of the so-called greenhouse gases and the continuous rise in global temperatures in the 1950s and 1960s.

across the globe. Thus, the threat travels from the place of origin to other locations, making it impossible to geographically contain the hazards and restrict their consequences.

The idea that modern environmental hazards are hardly perceptible to us as humans is relatively new and has not yet been extensively studied. Among the few scholars who noticed the lack of visual perceptibility of these modern-day environmental threats is social scientist Barbara Adam who acknowledged that perils such as ozone depletion, or air and water pollution are:

> […] phenomena where the impact of actions works invisibly below the surface until they materialize as symptoms – some time, somewhere. At the point of materialization, however, they are no longer traceable with certainty to original sources. That is to say, these industrially produced phenomena and processes are characterised by invisibility and periods of latency. (9)

Adam describes what I defined as temporal and spatial invisibility when she explains how environmental issues progress unnoticed for an indefinite period of time before becoming perceptible. Adam's explanations, as well as my previous examples, illustrate that the environmental invisibility of time and space are often closely connected, making it difficult to differentiate between these two concepts when looking at complex modern hazards such as climate change. Moreover, instead of distinguishing between the individual forms of environmental invisibility, it is more important to acknowledge the difficulties of visual perception and to develop strategies to overcome this obstacle. Adam explains that we require "new theoretical tools and strategies" (9) in order to be alert to these modern-day environmental threats and to promote a greater awareness for conservatism and the environment in general.

The lack of visibility stands in contrast to the increased influence and significance of images and visual media in the present age. Now more than ever, we receive news and information from a photo, a visual graph, or, in the context of social media and text messaging, from a Graphics Interchange Format, short GIF. This also applies to reports about environmental issues. In his overview of twentieth- and twenty-first-century environmentalism in the United States, historian

Finis Dunaway argues that "images […] have helped make environmental consciousness central to American public culture" (1). Dunaway supports his argument with a multitude of images that have gained prominence through their repeated use in mainstream media, such as the first photograph of Earth from the moon in 1969, or images from the 1989 Exxon Valdez oil spill off the coast of Alaska. Other contemporary threats, such as nuclear disasters or extinctions, cannot be easily captured with the lenses of a camera, because of the invisibility that surrounds them. While Dunaway mentions the impact of Al Gore's documentary *An Inconvenient Truth* (2006) in promoting awareness for global climate change in the United States and worldwide, he argues that the film's most effective image is a slideshow that includes, among others, a graph of the increased carbon dioxide emissions and rising median temperatures (cf. 265-266). Here, it is the scientific mediation instead of a realistic photograph that seeks to represent the ongoing slow progression of climate change.

This environmental invisibility and, consequently, the dilemma of representation, poses the question of how these modern environmental threats can be depicted. While the numbers of fictional and non-fictional literary texts about the environment are on the rise, the question arises as to how these narratives depict threats that cannot be seen. While consisting of words rather than images, how does the text convey what remains hidden to human eyes? What significance is bestowed on the literary narrators who mediate the unseen? And how can literary texts and their narrative structure offset the dislocation and temporal deferment of these hidden hazards? These research questions are relevant, as the importance of environmental literature as one form of environmental communication has increased significantly in the twenty-first century.

In the beginning stages of my research, I assumed that the language used to refer to these invisible threats would play a significant role in their representation. For instance, I expected an increased use of stylistic literary devices such as metaphors and hyperboles to create comparisons between familiar visually perceptible processes on the one hand, and unseen and often unknown

environmental dangers on the other. However, while the textual level plays an important role in their representation, the invisibility also impacts the generic and narrative features of these texts. Thus, I identified three characteristics that accompany the depiction of these unseen threats in contemporary German literature. First, literary texts have transformed into hybrid narratives that resemble the conditions of the environment, which are neither solely natural, nor urban, nor technological; instead, they can be regarded as a mesh in which countless influences interact and intersect.[8] The boundaries of literary genres have become less stable as more and more texts include the features of several generic literary traditions, among others, and most prominently, travel, autobiographical, and disaster writing. The emergence of these hybrid literary texts affects their presentation of place and time within the narratives. For instance, in order to show the slow progression of environmental threats, these texts frequently make use of analepses – a flashback in time within the narrative – in order to highlight the hazardous developments in the environment. Second, the first-person narrators become the stories' focalizers, those who are depicting the literary plot through their highly subjective lenses. [9] These individuals, from whose perspectives the texts are told, in most cases are ordinary people with no scientific background or deeper understanding of the environmental threats. Similar to their readers, they are only witnesses to the changing climate or the nuclear contamination of their home environments. They attempt to describe what is happening, but what cannot be seen remains entirely imperceptible. Thus, the narrative focus is on their personal feelings and their subjective understanding of the invisible environmental threats. The literary environmental discourse differs from the coverage of these

[8] Literary scholar Timothy Morton coins in his work *Dark Ecology* the term of the *mesh* to describe the conditions of the Anthropocene. According to him, in this new geological epoch all living forms are interconnected, which does not lead to a celebratory union of all living entities but rather to a problematic and "dark" perspective (cf. Morton 16).

[9] See Genette, 212-230, for a detailed description of the term. He first coined the term in his prominent work *Narrative Discourse*. Therein, he defines focalization as a form of restriction imposed on the information provided by a literary narrator. Genette distinguishes between three forms of focalization, zero, internal, and external, that is dependent on the access to the psychological insight of the other characters in the text.

topics in the media or the information available in scientific journals, because literature about environmental perils from the Anthropocene intertwines with the stories and feelings of human individuals. The texts' subjective aspects are often further strengthened by narrative forms that resemble personal diaries or notebooks. Third, as the environmental threats remain mostly invisible and imperceptible to these focalizers, they employ language to describe what remains hidden to them. Here, they use established and familiar words and expressions that capture and compare the environmental dangers to everyday occurrences and events. This strategy involves the semantic broadening of individual terms, or the creation of metaphors.

My literary analysis is divided into four thematical chapters in which I analyze literary narratives that center on nuclear catastrophes, climate change, and extinction. I conduct my analysis of these narratives through close readings of selective text passages as well as a study of their form, which is critical to understanding the narrative structure as well as the role of the focalizers. While the first three chapters focus exclusively on contemporary German literary texts, the fourth and last chapter seeks to compare the findings from the previous chapters with an analysis of two works of North American environmental fiction. This comparative analysis is essential in understanding environmental invisibility and its connection to culture-specific views of ecological hazards. In short, the way people living in the United States describe and communicate climate change, for instance, differs significantly from how it is viewed in Germany despite the hazard's global magnitude. Here, sociologists and anthropologists conducted some insightful research studies that demonstrate the different culturally contingent ways of communicating environmental dangers.[10] These cultural differences are also evident in literary texts and contest

[10] Kari Mari Noorgard examines in her book *Living in Denial: Climate Change, Emotions, and Everyday Life* the public view of climate change in Norway. Her research is inspired by her overall assumption that our cultural background influences the way we perceive particular environmental issues, such as climate change: "cognitive traditions, or collective patterns of thinking differ from one 'thought community' to another. How we think is part of culture and marks our perception in community" (6).

current notions that environmental literature needs to be read as global literature due to their worldwide relevance.[11]

The first chapter presents an analysis of German literary responses to the nuclear catastrophe in Chernobyl (1986), the first major environmental catastrophe that was marked by a high degree of invisibility due to the radiation's gaseous character. Additionally, the nuclear radiation could not be contained and, carried only by the wind, began moving outward from the power plant. Reports about increased nuclear radiation levels in Central Europe, South East Europe, and parts of Scandinavia first emerged a few days after the actual accident, sparking a growing concern about the possible (health) effects among exposed populations. The responses in East and West Germany differed. However, especially in the Federal Republic of Germany, a country in which the anti-nuclear movement had gained growing support for more than twenty years,[12] the population responded with alarm and fear towards the hazards that they could not see. In the aftermath of the catastrophe in Chernobyl, two German literary works subsequently rose to prominence; Gudrun Pausewang's *Die Wolke* (*Fall-Out*) and Christa Wolf's *Störfall: Nachrichten eines Tages* (*Accident: A Day's News*) were both published only one year after the fatal nuclear accident. These literary texts by two female writers from both sides of the then still-divided Germany demonstrate the troubled reactions after Chernobyl and the unprecedentedness of this environmental disaster.

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[11] Due to the increasing significance of globalization in humans' everyday lives and the universal nature of environmental threats, Ursula Heise in her prominent work *Sense of Place, Sense of Planet: the Environmental Imagination of the Global* (2008) has coined the term eco-cosmopolitanism in order to view human individuals and groups as part of a larger "planetary community" (Heise 61). Moreover, she promotes the practice of deterritorialization, which she describes as a conscious detachment of cultural routines, identities and epistemologies from their origin, in order to develop a global understanding of our human existence (cf. Heise 60-65). This eco-cosmopolitanism can also be part of ecocritical scholarship when viewing environmental narratives as "[…] ways of imagining the global that frame localism from a globalist environmental perspective" (Heise 9).

[12] See, Milder, particularly 1-18, for an overview of the origins and history of the anti-nuclear movement in West Germany.

In my close reading of these two literary works, I point to the ways in which they refer to the invisible nuclear danger and the possible consequences of nuclear contamination. In both narratives the actual nuclear disaster is not depicted and the texts focus instead on its consequences. Wolf's *Störfall*, narrated from the perspective of an anonymous female first-person narrator, depicts the events of a single day shortly after a nuclear catastrophe, emphasizing here the immediate uncertainty and confusion whether the nuclear radiation could pose a threat to her well-being. As the gaseous and invisible materiality of the radiation makes it impossible to detect visual proof of its existence, the unknown female narrator relies on the media to receive information. While the text is entirely free from any explicit references to Chernobyl, it is often read as an East German literary response to the disaster in which the credibility and verity of the media was commonly viewed with great skepticism. This two-layered invisibility initiates the reflections of the first-person female narrator who seeks to describe with words what might be occurring unnoticed in her own backyard. Pausewang's text describes the aftermath of a fictional nuclear disaster in West Germany over the course of a longer period of time. While the news of the nuclear accident leads to tumult and chaos as people flee from the approaching radiation, the young adult novel also describes how the country and society seek to recover in the aftermath of the catastrophe. While, once again, the nuclear danger from which people are fleeing approaches unseen, the consequences of the catastrophe are clearly detectable: thousands of deaths (among others, the entire close family of the text's teenage focalizer Janna-Bertha), an exclusion zone that has been deemed uninhabitable due to the contamination, and the fact that many people exposed to high radiation levels experience prolonged hair loss. When the state of emergency is lifted months later, many people want to return to the old normal and thus seek to cover up the consequences of the nuclear catastrophe. This moving on, without reflecting or changing the origins of the disasters, can be read as another form of invisibility, this time created by society's behavior.

I argue that in both texts the narrator and focalizer play crucial roles in describing the invisible nuclear danger. Moreover, the female narrator in Wolf's *Störfall,* and Janna-Bertha, the young teenage girl who functions as the focalizer in Pausewang's *Die Wolke*, are widely excluded from the public discourse in which politicians, scientists, and journalists discuss the severity of the danger and the handling of the hazard. The literary texts offer these excluded voices a platform to share their perspective on the nuclear threat. As they are unable to describe the appearance of the danger, their narratives overcome this visual obstacle by way of generic composition and their use of language. In order to create hybrid literary texts that mirror the conditions of the environment, their narratives mesh multiple influences by combining the conventions of established literary genres such as personal diaries, stream of consciousness writing, and, in Pausewang's case, children's literature and young-adult fiction. Even after the nuclear catastrophe, and despite the invasion of nuclear contamination, the familiar environments remain visually unaltered. And while the human eyes remain unable to detect the radioactive particles, Wolf's narrator and Pausewang's focalizer begin to envision the threat with the help of language, comparing it to familiar words and concepts, such as the cloud ("die Wolke"). In this way language becomes the most efficient tool when referring to the nuclear hazard that cannot be seen.

The second chapter centers on the environmental threat of climate change and examines Ilija Trojanow's *EisTau* (*Lamentations of Zeno*) and Liane Dirks' *Falsche Himmel* (*False Skies*) and their depictions of this peril. Unlike Chernobyl disaster, climate change is a process rather than a single event; its presentation is complicated by its spatial displacement and its slow progression rather than by its material invisibility. These narratives, therefore, create settings in which the consequences of the changing climate have become clearly noticeable. In addition to the problem of representation, the age of the Anthropocene has made it difficult to differentiate between climate and weather. Historically, weather has been defined as a short-term condition of the atmosphere, while climate has described recurring weather patterns (such as seasons) over a longer period of

time.[13] The reality of climate change in the present day makes it difficult to distinguish if, for instance, a series of severe Atlantic hurricanes in 2017 signal a mere series of extreme weather events or more regularly occurring climatic patterns. Not surprisingly, scholars Amanda Lynch and Siri Veland declare weather and climate to be the "[…] front line of the Anthropocene symbols for urgency" (6).

The German texts this second chapter focuses on utilize literature's ability to travel in time and space. Ilija Trojanow's *EisTau* is written from the perspective of the first-person narrator Zeno Hintermeier, a former glaciologist who now works as a scientific guide on board a cruise ship to Antarctica. In these polar regions of the Earth, the effects of ongoing climate change are more visible than in other parts of the world. Divided into separate entries all along the journey, Trojanow's text resembles a diary in which Zeno as the primary narrator reflects on the climatic conditions in Antarctica and his experiences during his most recent journey. His perspective is pessimistic as he is able to recognize the degradation of the glaciers and the apparent negligence of his peers, predominantly represented in the behavior of the cruise ship passengers. Liane Dirks' *Falsche Himmel* is also written from the perspective of a human first-person narrator and describes the perceptible changes in Earth's climate at an unknown time in the future. The anonymous woman depicts how, over the course of her lifetime, the weather has transformed from a mere backdrop in human lives to a deciding factor with regards to where and how humans live. In this imagined future the irreversibly altered climatic conditions, in particular hot temperatures and elevated ozone levels, have forced people to move to areas that remain cooler, or they hold out, like her, in protected places until they run out of food supplies and access to water. The narrator herself observes the changes from an abandoned office high rise in a once bustling urban environment. In its form, her narrative also resembles a diary as it is divided into individual entries in which she

[13] See Stehr and von Storch for a more detailed explanation on the difference between climate and weather.

records the current climatic conditions and describes the events of individual days in her new life. Due to their forms and the strong focus on a single human perspective, both narratives qualify as what I call Anthropocene chronicles. These narratives, just like reports or personal diaries, consist of individual entries written from the point of view of a human first-person narrator; they meticulously document perceived changes in the environment by writers without access to elaborate scientific information or technological devices. Hence, their written texts become manifestations of the changes that have come with the emergence of the Anthropocene.

While the age of the Anthropocene is the age in which humans have become the leading influence on Earth's processes, their new dominance could also have detrimental effects for their own future. But what would a world without humans look like? The third chapter explores this question by analyzing Marlen Haushofer's *Die Wand* (*The Wall*) and Max Frisch's *Der Mensch erscheint im Holozän* (*Man in the Holocene*). In both narratives, an extraordinary event isolates a human individual from the comfort of civilization and their human peers. This solitude initiates a deeper reflection about their own human identity and their place in the larger history of the Earth. Unlike the narratives in the previous chapters, these literary texts were written prior to the emergence of the concept of the Anthropocene. However, even without the knowledge of this term and its presupposition of humankind's dominant planetary influence, both literary texts acknowledge the human desire for preeminence over other non-human beings and entities on Earth. Without the presence of other humans, the narratives begin to question humankind's superiority.

Similar to the narratives discussed in the previous chapters, Frisch and Haushofer's works are depicted from the perspective of a singular individual. The nameless man in *Der Mensch erscheint im Holozän* is trapped in his secluded mountain cabin in the Swiss Alps when a mud slide blocks the only route to the valley and the nearby cities. The heavy rainfall that precipitated the mudslide causes the man to reflect on the prevalence of such weather events in the alpine region,

and triggers a search for related facts within his personal library. His initial desire to find out more about the regional weather patterns and special weather events leads to a deeper dive into his available research materials; he soon begins to realize that the timeline for human existence on Earth is extremely short when compared to the history of the entire planet as well as the presence of other living beings. Haushofer's *Die Wand* imagines the end of humankind marked by the appearance of a mysterious but clear border in the Austrian alps, the homonymous *wall*. While all life outside of the boundary appears to have ended (or at least stands still), within the perimeter of the wall a nameless woman has survived. She retrospectively describes her life during the three years since the wall first appeared, and describes how she has survived in her isolation. The absence of other human beings also prompts her reflections on what it means to be human. These thoughts are amplified by the company of her animals, and in particular a dog that becomes her closest companion. However, it is even before her dog dies that she begins to feel a desire to describe her long-lasting isolation and survival in the Austrian mountains, and begins her report.

In both works, once again, the first-person narrators and focalizers bear significance as the events that have unfolded are depicted from their point of view. Their similar isolation stems from causes that were out of their control; in Frisch's narrative it is a severe weather event that led to the mudslide, while the reasons for the appearance of the mysterious wall in Haushofer's text remain unknown, although the female narrator speculates it was human (technological) wrongdoing that created the boundary. Without the presence of peers, their reflections on the significance of humankind feed into the discourse of the Anthropocene as they attempt to understand their involvement in these disasters and the potential consequences the end of humankind will bring about. Their accounts are critical when they acknowledge their peers' responsibility for the degradation of the environment, as well as and their own demise. Because they regard themselves as the last survivors of their kind, they feel a responsibility to leave evidence of their existence and that of their species; they turn to writing to document their last days.

The fourth chapter strengthens the preceding findings, offering another cultural perspective on these invisible environmental threats with an analysis of two contemporary works of North American environmental literature. Here, I look at Barbara Kingsolver's *Flight Behavior* and Margaret Atwood's *Oryx and Crake*, the first book of Atwood's prominent *MaddAddam* trilogy. In contrast to the German texts, which tend to focus on one specific environmental problem, these works demonstrate the interconnectedness of modern-day invisible environmental threats to various aspects of life. Kingsolver's work discusses climate change while showing its impact on the living conditions of animals, specifically the monarch butterflies that are threatened by extinction due to climate changes in their usual habitats. In *Oryx and Crake*, Atwood describes a future world in which technology and science have gained dominance as they are able to offer solutions for recent problems such as a general food shortages and new human diseases. Moreover, the power of science appears absolute as scientific corporations have replaced political governments, and human prosperity and quality of life is dependent on an ability to afford and access these technological innovations. In Atwood's future, conservation efforts and initiatives for environmental-friendly behavior have failed. Instead, the entire future of humankind is dependent on scientific and technological innovations.

Unlike the German works, these North American narratives comment on the role of science and technology in responding to these pressing environmental threats. In Kingsolver's narrative, the surprising migration of the rare monarch butterflies to Feathertown, Tennessee, is regarded as a wonder by the locals; their sudden appearance draws the interest of outsiders and turns their small town into a thriving tourist destination. However, when scientists begin to investigate the unexpected arrival of the butterflies, they discover that changing climatic conditions in the butterflies' native habitat have forced their migration northwards. But in Tennessee, the cold winters of ice and snow threaten the survival of the already endangered species. Presented from the perspective of the young stay-at-home mother Dellarobia, the text discusses the controversy of

believing in the existence of climate change and consequently trusting science in a way that is characteristic of US American discourse on environmental issues. Dellarobia, who never attended college and instead worked on her husband's family farm, is influenced by her environment and at first remains skeptical about the findings of the biologists. It is only when she begins working as an assistant in their makeshift laboratory that she gains access to information that was previously inaccessible to her. Here, the concept of invisibility exceeds climate change and also describes the access to scientific information that has the power to fundamentally change people's understanding of the situation, as seen in the example of the text's protagonist and focalizer. Dellarobia undergoes a personal transformation when she begins to regard climate change as a pressing threat rather than a hoax.

In Atwood's *Oryx and Crake,* it is the combination of the text's narrator and its generic composition that illustrates the role of science and technology in solving these environmental threats in the future. The narrative is often characterized as science-fiction, or speculative fiction due to its futuristic setting and the significance of science in its plot. In interviews discussing her work, Atwood explained that the way she envisions our future is informed by actual scientific facts. Thus, her work offers a look into a possible future if humans continue to rely on science and technology as the answer to modern-day threats. Moreover, science and technology have also created and contributed to the progression of anthropogenic environmental hazards, and the tendency to solve these perils with the same means that created them only postpones the ultimate collapse of the planet. Thus, the narrative questions the significance of science and technology and points to the shared responsibility of science and technology for the current state of the planet. While a return to a pre-technological era seems impossible, the destructive potential of science and technology is already apparent in the present day. Atwood's work serves as a cautionary tale for humankind, one that describes what can happen if we put our entire trust in science and technology without questioning its destructive potential for both humanity and the environment.

The discussion of science in North American works of contemporary environmental fiction marks the starkest contrast with their German counterparts. While the works from both traditions utilize hybrid genres and present the narrative from the perspective of first-person human narrators or focalizers, the discussion of science is widely absent in the German texts. Instead, the focus lies on the contemplations of lay people who reflect on their difficulties to perceive and envision the invisible environmental hazards that threaten their well-being. With the exception of Zeno, the narrator in Trojanow's *EisTau*, these human individuals have no connection to science and are widely excluded from official public environmental discourse led by scientists and politicians. Moreover, Zeno bemoans the fact that despite his scientific evidence for the existence of climate change and its destructive effects, his research was widely ignored and he was unable to change people's behavior or facilitate an overall greater awareness. Without the incorporation of science and scientific information, the focus in the German texts instead lies on the subjective emotions of their first-person narrators and their individual means of envisioning invisible environmental threats.

The relevance of understanding the changes in our environment, especially those that are invisible and yet threaten to impact the continuation of life on Earth, appears to be one of the most pressing challenges of the modern day. For literary scholars, analyzing the way we communicate about perils such as climate change or extinction is relevant now more than ever; this is also true for the growing fields of Environmental Humanities and interdisciplinary Environmental Studies. My analysis of contemporary German literary works and their depiction of invisible environmental threats demonstrates how the ecological conditions of the Anthropocene influence literature and the ways in which we represent these perils in written narratives. Traditionally, literary analyses of environmental literature have predominantly focused on the texts' topics and their contributions in

informing about ecological issues.[14] Intertwining the analysis of the topics depicted in the literary texts with an examination of their form and structure is a rather new angle in scholarship on environmental literature.[15] Moreover, in the age of the Anthropocene with its invisible threats, these topics have influenced the form and structure of literary narratives in a lasting way. Hybrid texts, depicted from the perspective of human individuals, have emerged in contemporary German and North American literature to describe the yet unseen alterations of the Anthropocene. While the features of the Anthropocene remain imperceptible, this overall invisibility creates new forms of texts that represent and communicate what is happening in this new geological era. Understanding these narratives and their function in representing the Anthropocene is crucial to the advocacy of interdisciplinary research between the natural sciences and the humanities, a necessity for further investigation of this new and yet widely unknown epoch.

[14] See Glotfelty and Fromm, XV-XXXVII, for a definition of ecocriticism, the study of literature and the environment and the features of this new literary theory.
[15] For example, Erin James and Eric Morel's edited collection *Environment and Narrative: New Directions in Econarratology* contains contributions that analyze the form and structure of environmental literature and film.

Chapter One

Nuclear Narratives after Chernobyl: Envisioning the Nuclear Danger via Language in Wolf's *Störfall* and Pausewang's *Die Wolke*

More than thirty years after the nuclear disaster at the Chernobyl power plant in the town of Pripyat in the former Soviet Union, HBO has dramatized the man-made catastrophe in the homonymous limited series *Chernobyl* (2019). While numerous documentaries have covered the nuclear accident and its aftermath, the popularity of the most recent miniseries reveals a continued interest in the nuclear calamity. Widely based on eye-witness accounts collected in Svetlana Alexievich's book *Voices from Chernobyl*, the limited series was praised for its realistic reconstruction of the largely unseen accident that nevertheless posed a major threat to large parts of the world. In his review for *Forbes,* James Conca offers praise: "The acting was fantastic, the script, scenes and props gave a realistic feel of the collapsing Soviet Union, and there were awesome set designs, especially of the control room and the explosion itself" (Conca).[16] One scene in particular masterfully captured the invisible nature of radioactivity, showing the deadly radioactive ash raining down over the city and the spectators who looked on. Not recognizing the nuclear threat, the people of Pripyat are directly exposed to the shower of radioactive ash particles that cover their streets, their houses, and their bodies. Only today's audience is aware of the imminent threat to the onlookers, who at the time were uneducated about the nuclear risks and ignorant of the danger posed.

The widespread ignorance of the danger inherent in radioactivity is related to the unique nature of the event. At the time of the Chernobyl disaster nuclear fission had been utilized for the

[16] While the miniseries was particularly popular among the general audience, film critics generally disapproved of *Chernobyl*'s dramatization of the nuclear catastrophe. In his review James Conca criticized the series' general anti-nuclear perspective which excluded scientific research on nuclear energy and its actual risks. Other commentaries also criticized the exaggerated portrayal of the victims' injuries, the wrong representation of the political hierarchies in the former Soviet Union (cf. Gessen), and the creation of Maria Protsenko, a fictional Belarussian scientist who never existed (cf. Hale).

purpose of energy production for less than fifty years; the Obninsk nuclear power plant was the first of its kind, opened in 1954 in the former Soviet Union.[17] This was soon followed by commercially oriented power plants in the United States, England, and other parts of the world. In addition to the relative newness of this form of energy production, the fact that nuclear perils are often invisible contributed to the public's general illiteracy on the topic; nuclear fission is a process that takes place within the walls of large reactors that cannot be entered by human personnel, and the rays emitted are invisible. We as humans cannot see, smell, or touch the radioactive substances. This dilemma of invisibility is also pronounced in the German reactions that followed the disaster in Chernobyl. Among the immediate literary responses, Gudrun Pausewang's *Die Wolke* (*Fall-Out*) and Christa Wolf's *Störfall: Nachrichten eines Tages* (*Accident: A Day's News*), stand out. Both works were published only one year after the nuclear disaster at the Ukrainian power plant. The two narratives describe the difficulties of perceiving the nuclear danger, especially for laypeople who lack an advanced scientific background. Not only are the radioactive substances invisible, but so are the general risks that accompany nuclear energy; that is, until an accident uncovers them. If we cannot see the danger with our own eyes, how can we know that the peril even exists, or see how it causes harm? How do these narratives offer realistic depictions of a threat they cannot visually describe?

During a scheduled safety test on April 26, 1986, reactor four of the nuclear power plant Chernobyl failed, causing a steam explosion and a fire within the walls of the facility. In the course of events, radioactive fumes from the fire were released into the atmosphere and were carried by the wind into all parts of Europe.[18] The radioactivity was first discovered by chance two days after the actual accident, in the Swedish nuclear power plant Forsmark, around 85 miles north of Stockholm. After confirming the radioactive substances were not escaping from their own systems,

[17] See Schmid, 17-66, for a historical overview of the beginnings of nuclear power in the former Soviet Union. See Augustine for a similar history of nuclear power in West and East Germany.
[18] See Plokhy for more a detailed account of the events in Chernobyl.

the employees began to analyze the nuclear particles. They learned that the radioactive particles collected from grass in the immediate vicinity were specific to power plants from the Soviet Union. This discovery forced an official statement from officials in which they informed foreign governments, prior to their own population, about the accident in Chernobyl. The released information about the disaster triggered widespread media coverage in Germany, Europe, and other parts of the world.

The disaster in Chernobyl significantly intensified the anti-nuclear sentiments shared by the German public. While the Federal Republic of Germany, or West Germany, seemed more aware than other countries of the potential risks of nuclear power, due to an anti-nuclear movement established during the 1970s,[19] the catastrophe in Chernobyl further impacted people's negative opinion on nuclear energy in both German states. The media referred to these public sentiments after the nuclear disaster in Chernobyl, and later in Fukushima, as *German Atom Angst*, a fear of the nuclear threat that in this form is unique from that experienced in other countries and cultures.[20] Although there has never been a major nuclear accident on (West and East) German territory, the German population seemed more sensitive to the potential dangers and risks of nuclear energy than, for instance, their European neighbors. After Chernobyl, the responses in the then divided German states differed significantly and were influenced by their political systems: in West Germany, the public responded with concerns for their safety and health, while the East German population questioned the information they received about the nuclear incident and felt generally misinformed and uneducated by their socialist government. In an article remembering the twentieth anniversary of Chernobyl, journalist Kateri Jochum summarizes the media coverage in

[19] See Tompkins, especially chapter 1, 2 and 3.
[20] The French journalist Céline Calla compares in an article published in the German magazine *Der Spiegel* the German reactions after the nuclear accident in Fukushima in 2011 to the responses in France. Looking back at the disaster in Chernobyl and the catastrophe in Fukushima twenty-five year later, Calla states that the responses in the two neighboring states could not have been more different. She characterizes the German responses as "exaggerated" and "panic-fueled."

both countries: "While the media in the West was quick to depict the 'worst case scenario,' the media in East Germany downplayed the 'incident'" (Jochum). These different responses influenced the perception of the nuclear threat among the German population in both states, too. When weather patterns changed several days after the nuclear disaster, radioactive rain was first measured in Bavaria. Consequentially, the media began warning the population about possible risks of radioactive contamination by, for example, consuming mushrooms from the local forests or drinking fresh milk and eating dairy products. Residents were also urged to stay indoors. In East Germany, the socialist government and their officials continued to downplay the nuclear danger and insisted that "[…] East Germany was not affected by contamination […]" (Jochum). Due to their limited access to information, the East German population, particularly those without access to West German media outlets, remained largely uninformed about the possible risks from the migrating nuclear substances (cf. Jochum).

The official reactions of the West and East German governments in response to Chernobyl led to an overall feeling of distrust and suspicion among the people in both states, particularly due to the inconsistent courses of action in response to the nuclear threat. Prior to the catastrophe, the majority among both German societies appeared unaware of the actual risks of nuclear power (cf. Brede 234-235). After Chernobyl, however, the threat had become a reality. In West Germany, sociologist Karola Brede explains, that "[…] authorities turned to the scientific approach to anxiety control. Attempting to re-establish the former consensus, which included a positive attitude toward large-scale technologies such as nuclear power, they sought to use technical rationality itself to pacify the unsettled public" (239).[21] Despite this seemingly logical response to the nuclear threat, the West German public was not appeased. A survey conducted by Hans Peter Peters et al

[21] While Brede's study analyzes the response to Chernobyl in West-Germany, a similar crisis management was evident in East Germany. Christa Wolf's *Störfall* describes, for example, how the government-controlled radio in East Germany informed the population that the immediate nuclear danger zone was set in a radius of thirty kilometers surrounding the power plant. Outside of this circumference the radioactivity posed no danger. (Wolf 70).

questioned 2,000 West Germans about their feelings towards nuclear energy before and after Chernobyl. The study found that before the nuclear accident, only 15 percent of the West German public approved of an exit from nuclear energy. This number dramatically increased when "[…] 71 % of the interviewees six months after the Chernobyl disaster advocated a more or less rapid discontinuation of nuclear energy in the Federal Republic" (Peters et al 130). These numbers mirror the (West) German disaffirmation of nuclear power after Chernobyl and the overall concerns that could not be alleviated by scientific evidence and rational crisis management.

The unsatisfactory, science-based German responses to Chernobyl led to the publication of literary texts that commented on the nuclear catastrophe at the Ukrainian power plant in different forms and ways. Among the most prominent examples from both German states are Christa Wolf's *Störfall: Nachrichten eines Tages* and Gudrun Pausewang's *Die Wolke*. In their respective works, the two female authors discuss the nuclear threat from the perspective of their female protagonist (*Die Wolke*) and narrator (*Störfall*). Due to their positions in society, their reactions and feelings towards the threat were widely overlooked and ignored. Thus, the literary realm offered these narrative voices a medium to share their feelings towards the radioactive peril as well as its yet unknown consequences. Pausewang describes in her novel a fictional nuclear disaster at a power plant in West Germany, following here the fourteen-year-old Janna-Berta who lives with her family inside the direct danger zone. The text depicts the disaster, the ensuing chaos, and the effects on the disaster's victims, like the protagonist herself. Interestingly, the narrative does not end when the disaster's immediate consequences appear resolved, but instead goes on to depict the catastrophe's lasting aftermath. Wolf's *Störfall* documents the feelings of an anonymous, female first-person narrator over the course of a single day. When news breaks of the nuclear accident, the woman contemplates the potential, immediate danger to herself, while also assessing the risks and advantages inherent to science and technology. Despite their different settings and situations both

texts highlight female voices who, in the wake of the catastrophe in Chernobyl, begin to seriously contemplate the nuclear threat, and experience a growing urge to publicly share these concerns.

In both narratives, the female protagonist and narrator have no access to scientific data and information. As a direct result they learn about the radioactive threat from scientists and those who do have access to, and understanding of, the relevant scientific information and data. This divide between laypeople and scientists, and whether or not they can envision the nuclear danger, impacts the way the peril is communicated. The narrative voices in *Störfall* und *Die Wolke* both comment on the material invisibility of the radioactive substances that possibly pose a threat to their lives but which they cannot see with their own eyes. Thus, they rely on language to describe that which they cannot visually perceive. Chernobyl and the new nuclear treat triggered a semantic shift within the language, creating new meanings to familiar words that appeared to resemble the character of the new peril. For example, the word *Wolke* (cloud) has gained a new layer of meaning within the German language, aiming to describe how humans envision the appearance of the nuclear substance. This form of semantic broadening creates ambiguous words; the *Wolke* ("cloud") no longer describes only a weather phenomenon, but also refers to the accumulation of migrating radioactive substances in the sky.

The broadening of words within the German language resembles the processes in the Anthropocene. The new geological age that humankind initially entered without fully recognizing, is defined by humanity's newly gained dominance over planetary processes that have begun to shape Earthly environments, sometimes even without leaving visible traces. For instance, many still regard the forest as a place of pristine nature when failing to identify human-caused changes such as contamination or degradation via their human senses of smell, touch, or sight. Here, the reliance on science to uncover these anthropogenic alterations impacts the way laypeople refer to and describe these often visibly unchanged environments. Language and the connotation of individual words have begun to absorb the environmental transformation that continues to take place. Instead

of creating new words that could depict the changes, we broaden the meaning of familiar terms, which then receive new connotations. Just as the environments in the Anthropocene largely remain visually unchanged, the words within the language on the surface remain the same, too. Some terms, however, have received an added meaning that is only revealed through the (new) contexts in which they are used. The invisible nuclear threat, just one of numerous unfamiliar phenomena of the Anthropocene, is thus envisioned predominately through the help of language.

Over the course of this chapter, I analyze the broadening of the language after Chernobyl in conjunction with two related issues. First, the femininity of Gudrun Pausewang and Christa Wolf, as well as their narrator and protagonist, influences the ways in which they view the danger. Additionally, their gender handicaps them and limits their opportunities to publicly share their thoughts and concerns about the nuclear threat. They must therefore resort to literary spaces to present their perspectives, which are often not represented in the public discourse mediated by newspapers, magazines, and television programs. Here, both writers have chosen literary genres that stand in direct relation to their experiences as women. In the second part, I analyze through close readings the ways in which the texts directly refer to the material invisibility of the nuclear threat. Understanding the reasons that impede the ability to recognize the danger is beneficial in identifying the changes in the languages that seek to overcome these visual obstacles. The third part then focuses on the semantic broadening of individual words in the German language that has occurred as a direct result of the events in Chernobyl. While language change triggered by social and political circumstances is nothing new,[22] the semantic broadening of individual words is significant due to their direct relation to non-perceptibility of the nuclear danger.

[22] See Keller, 1-56, for a general overview of language change.

(Eco)feminism and Literary Genre in Christa Wolf and Gudrun Pausewang

Many contemporary German nuclear narratives have been written by female authors.[23] In addition to Christa Wolf's *Störfall* and Gudrun Pausewang's *Die Wolke*, writers such as Gabriele Wohmann (*Der Flötenton*, 1987) and Inka Parei (*Die Kältezentrale*, 2011) also deal with the Chernobyl disaster in their literary narratives. Other works that have been published following the more 2011 nuclear catastrophe in Fukushima include Elfriede Jelinek's radio play *Kein Licht* (2012) and Yoko Tawada's short story *The Island of Eternal Light* (2012). According to literary scholar Emily Jones, this multiplicity of female literary accounts about nuclear disasters stands in relation to "women's bodies as a medium of understanding risk, but also as a medium for narrative" (111). Here, Jones adopts an ecofeminist perspective,[24] ascribing women the ability to understand environments and their existing risks better than men due to their gender. This natural ability further benefits women in their roles as storytellers. Additionally, ecofeminist Vandava Shiva notices that the scientific component of these new environmental threats creates an even deeper gender divide, in which science has become a male-dominated sphere that disproportionately excludes women and children (22). This gender divide is also evident in Wolf's and Pausewang's narratives. Their female narrative voices are widely excluded from the public conversations about the nuclear disaster which tend to center on the scientific aspects of the event and neglect the fears and concerns of (female) individuals.

Christa Wolf's *Störfall: Nachrichten eines Tages* can be described as subjective mediations of an anonymous, female first-person narrator, who finds out about a major nuclear accident while her brother is undergoing complicated brain surgery. In her reflections, the narrator connects these two events while still continuing with her daily activities. As she is closely following the news broadcast on the radio, she wonders, for example, if the radioactive substances are capable of

[23] See Gerstenberger for an overview of German narratives dealing with the literary presentations of nuclear disasters.
[24] For an overview of ecofeminism, see, among others, Merchant, part one, and Plumwood, 19-40.

migrating into her home. The information from the media warns the public not to eat certain foods, while at the same time reassuring listeners that there are no immediate safety concerns for the population. Due to this contradiction, the narrator questions the given information and begins her own search for traces of possible radioactive contamination. While on her quest, she takes her bike into the nearby forest and examines the trees for hints of nuclear exposure. She also calls family members, like her daughter, who lives in East Berlin, to discuss the probable, but invisible, threat. Due to the timely juxtaposition between the nuclear accident and her brother's brain surgery, the narrator's reflections turn to the boon and bane of science and technology. Though she denounces the never-ending search for new technologies due to its production of unforeseeable risks, she is nevertheless dependent on technology in her own life. In particular, her brother's medical treatment and his complicated surgery would not have been possible without scientific and technological advancement.

Christa Wolf's *Störfall* has often been analyzed as an autobiographical narrative due to apparent parallels between its nameless, female first-person narrator and the author herself. The work opens with a disclaimer stating that "keine der Figuren dieses Textes ist mit einer lebenden Person identitisch. Sie sind alle von mir erfunden" (None of the characters in this book is identical with a living person. They have all been invented by me). Despite this disclaimer the similarities between Wolf and her narrator are striking. For instance, both live in a rural setting and work in a writing profession. Additionally, Wolf's own brother had to undergo surgery for a brain tumor around the same time as the nuclear catastrophe in Chernobyl, as she described in a personal letter to a friend.[25] Unlike other autobiographical narratives, the plot of *Störfall* surrounds itself in

[25] In this letter, written in December 1986, Wolf announces the publication of her new book project and points to the similarities to her own life. "Dieses Jahr gab es Tschernobyl. Ich war zu der Zeit allein in unserem neuen mecklenburgischen Bauernhaus, am gleichen Tag, als die ersten Nachrichten eintrafen, musste sich mein Bruder einer Gehirnoperation unterziehen. Ich habe diesen Tag beschrieben, Du wirst es wahrscheinlich im April lesen können, der Text heißt *Störfall*" (Constabile-Heming 90, This year Chernobyl happened. At the time, I was alone in our new farmhouse in Mecklenburg; on the same day as the first news

significant vagueness; the text, for example, omits any specific references to time, a concrete geographical location, or the name of the nuclear power plant in which the fatal catastrophe has occurred. It would appear as if Wolf wrapped her concerns over nuclear power and its risks into a self-declared fictional narrative, though this classification contradicts with her prominent status as a writer inside and outside of East Germany. Unlike other well-known authors Christa Wolf did not leave the GDR and openly shared her critical views on a number of sociopolitical topics such as the restricted freedom of speech and feminist issues, particularly during the late 1970s and 1980s. It would therefore not be in keeping with Wolf's character to conceal her personal unease over nuclear power, and science and technology in general, in a fictionalized text;[26] *Störfall* needs to be analyzed for more than its parallels between its author and female first-person narrator.

The occurrence of the nuclear disaster, fictional or not, functions as the starting point for the narrative. The news of the catastrophe initiates the narrator's reflections on the event and the depiction of her personal encounters over the time span of a day. Her contemplations do not follow a clear structure and are often fragmentary, as her thoughts appear to move aimlessly from one idea to another. This narrative style matches the definition of the stream of consciousness technique, which first appeared in modernist novels at the end of the nineteenth century, and most prominently in James Joyce's *Ulysses*. This special form of writing seeks to mirror the modes of thought in the subconscious human mind, where individual encounters and experiences spontaneously prompt inner reflections and contemplations (cf. Fernihough 65-68). Often, stream of consciousness writing has been gendered as a feminine mode of writing (cf. Fernihough 78). Anne Fernihough explains that it was the historical conditions that fueled the emergence of the stream of consciousness novel:

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reports came in, my brother had to undergo a brain operation. I described this day. You will probably be able to read it in April).

[26] Claudia Gronemann defines an autofictional texts as a narrative which "[…] purports to be both fictional and autobiographical, and thus represents a paradox in the traditional understanding of the genre" (241).

> In the late nineteenth and early twentieth centuries, when stream-of-consciousness writing and philosophy were emerging, the physical and cultural textures of life were changing at a bewildering rate, through major advances in technology, for example, and the rapid growth of suburbia. Increasing mechanization, organization and centralization at every level of society were contributing to a paranoid sense on the part of some intellectuals that private space was being surrendered to the public space of the masses. Stream-of-consciousness writing was just one facet of the complex cultural response to this sense of invasion and contamination […]. (73)

In the wake of the nuclear disaster and amidst widespread radioactive contamination, Wolf's *Störfall* documents the complex and intricate thoughts of the nameless first-person narrator. The unprecedented nature of the technological catastrophe precludes any comparisons to previous historical incidents. Moreover, the invisibility of the radioactive threat marks the most extreme difference to earlier catastrophes whose occurrences could be experienced through the human senses. This invisible disaster transpires in non-spectacular form and requires new modes of narration that differ from the literary presentation of disasters predating the age of the Anthropocene.

Christa Wolf's *Störfall* can be characterized as a hybrid narrative that combines the features of several traditional literary genres, most notably the elements of stream of consciousness and autofictional narratives. The perspective of the female first-person narrator is shaped by Wolf's own experiences and concerns in the wake of Chernobyl. The general female perspective depicted in *Störfall* though is representative of a larger group within East German society who were widely excluded from a public discourse that was dominated by the voices of (male) politicians and scientists. The experiences and encounters described by the female first-person narrator focus on the domain of the everyday; the narrative describes not only the nuclear disaster as reported throughout the day, but also how she listens to the news on the radio or talks to her neighbors and her daughter about her day. In the evening, for instance, the narrator calls her daughter in East Berlin to warn her about the possible nuclear contamination of certain food items, which she learned about from the media. Her daughter already knows about these health advisories but says

that she went to the playground with her children the day before. In indirect speech, the narrator reports:

> Im Sandkasten ist sie allerdings gestern Nachmittag mit ihnen [den Kindern] gewesen, danach habe sie sie leider gebadet. Ja, hätte ich das denn nicht gehört? Duschen solle man die Kinder, nachdem sie draußen gewesen seien. Das Bad weiche die Haut auf, öffne die Poren und schwemme die Radioaktivität erst recht in den Körper. Übertrieben? Wenn man das nur wüßte. (Wolf 21)

(She had in fact been in the sandbox with them yesterday afternoon and had, unfortunately, given them a bath afterwards. What hadn't I heard? One was supposed to let the children take a shower after they had been outside. Bathing relaxed the skin, opening the pores and washing the radioactivity all the more into the body. Exaggerated? If only one knew.)[27]

In their conversation, the female narrator and her daughter discuss the uncertainty they experience due to the inconsistency of the information presented by the media. They are not sure what and whom to believe, or even if it was still safe to engage in their everyday activities, such as taking the children to the playground and giving them a bath afterwards. The 24-hour news cycle and the frequently changing health advisories continue, unrelated to the uncertainty the women experience; the media reports of supposed facts update quickly and constantly over the course of the day. Due to the incomparable nature of the nuclear disaster, there are no official established protocols on how to protect the population from the radioactive contamination. The novelty of the situation increases the uncertainty and mistrust in the given information, and prompts questions and concerns that are not addressed in the public sphere.

In the wake of the nuclear disaster, Christa Wolf's *Störfall* focuses on the impact of the catastrophic event and not on the incident itself. The descriptions of ordinary daily activities that have become potentially dangerous are representative of what Loreto Vilar calls Wolf's "Poetik des Alltags" (200, Poetry of everyday life).[28] The narrative's emphasis on the everyday, as opposed to

[27] This and all following translations of Wolf's text are included from the text's English translation by Heike Schwarzbauer.

[28] Loreto Vilar's term "Poetik des Alltags" is intricately connected to Wolf's own view of writing. In an interview she describes, "dieses normale, alltägliche Leben strukturiert offenbar mein Leben und mein Schreiben" (200, This normal, everyday life structures apparently my life and my writing).

the spectacular, mirrors the female experience in the aftermath of the catastrophe. Here, it appears as if mothers faced a particular dilemma: the need to sort through the often contradictory information in order to protect not only themselves but their children, too. Different from other perils, the invisibility of the nuclear substances prevents them from perceiving the nuclear danger with their own eyes. Thus, their dependance on the information released by the media is even greater for mothers than for other social groups. Wolf's narrator describes, "so setzen sich die Mütter vors Radio und bemühen sich, die neuen Wörter zu lernen. Becquerel. […]. Halbwertszeit lernen die Mütter heute. Jod 131. Caesium" (Wolf 31, So the mothers sit down by the radio and attempt to learn the new words. Bequerel. […] Half-life is what the mothers learn today. Iodine 131. Cesium). The dominance of science in the public discourse of the nuclear disaster creates the need for laypeople, such as the female narrator or her daughter, to acquire new knowledge in order to understand the invisible threat. Without scientific expertise, the terms sound foreign and incomprehensible and add yet another layer of invisibility to the already imperceptible radioactive peril.

The criticism of science in Christa Wolf's *Störfall* reaches beyond the language used to represent the nuclear disaster, and has been evident in the author's previous works. For her, the scientific community and its discourse represented a patriarchal hegemony in which women's opinions were largely excluded. Her short story *Selbstversuch* (*Self-experiment*), published originally in 1972, describes an experiment in which a female researcher becomes her own test subject when she scientifically transforms into a man. After thirty days, she aborts the experiment, stating that she realized she cannot continue her male existence due to her former experiences as a woman. She particularly bemoans a gender difference in language and communication, as well as her overall perception of things, and decides to return to her female identity. Later, in 1982, during the Frankfurter Poetikvorlesung (Frankfurt poetical lectures), Wolf lectured on her most recent writing project *Kassandra* (*Cassandra)*. The narrative, which renders the events of the Trojan War

from the perspective of Kassandra, the daughter of the King of Troy, further underlines Wolf's feminist agenda and her motivation as a women writer. She explains during the lecture series that she seeks to create a "weibliche Ästhetik" (146, female aesthetic) that explores the relations between "Herrschenden und Beherrschten" (146, rulers and ruled people).

Christa Wolf's intention in depicting existing gender hierarchies in her literary works is evident in *Störfall*, too. In this work, the scientists and politicians represent the male ruling group who through their actions determine the fate of large segments of society, including the text's female first-person narrator. In the evening, the female narrator describes how she turns on the television and watches a talk show in which the nuclear disaster is discussed once again. The invited guests are exclusively male, and the nameless woman notices their different appearances. She describes,

> Herren haben sie vor die Kamera gesetzt, die allein durch ihre gut geschnittenen grauen Anzüge, durch die dazu passenden Krawatten, den dazu passenden Haarschnitt, ihre besonnene Wortwahl und ihr ganzes amtlich beglaubigtes Dasitzen eine beruhigende Wirkung ausgestrahlt haben – ganz im Gegensatz zu den paar jüngeren, bärtigen Pulloverträgern […] und ich habe an die Leute im Lande denken müssen, an die arbeitsamen, stillen Leute in den beiden Ländern, die ihre Blicke abends auf den Bildschirm vereinen, und mir ist klar geworden: Auf die im Pullover werden sie weniger hören als auf die in den Maßanzügen mit ihren maßvollen Meinungen und ihrem maßvollen Verhalten […]. (100)

(They put some gentlemen in front of the cameras who, solely on account of their nicely tailored gray or bluish-gray suits, the matching ties, the matching haircuts, their prudent choice of word and the whole official capacity of their posture, radiated a soothing effect – quite in contrast to the handful of young, bearded sweater-clad individuals […] and I had to think of the people of the country, the silent, hardworking people of both countries whose gazes unite in the evening on the TV screen, and I realized: They will take those in sweaters less seriously than those in their suits made to measure, with their measured opinions, and their measured conduct […].)

In the absence of any female guests, the narrator identifies a supposed hierarchy amongst the men invited to the talk show. She believes the television audience will deem the ones wearing a suit and tie to be more credible than the men wearing sweaters. Thus, their trustworthiness is often not linked to their statements or their underlying expertise about nuclear power but based on their outer appearance. The female narrator is herself not influenced by the different clothing choices

and instead listens attentively as the guests discuss the indispensable advantages of nuclear energy despite the most recent catastrophe. In their televised conversation the guests however do admit they had known about the possible risks of this new technology; this apparent admission of guilt surprises the female narrator when she states: "Ich habe es ja gewußt, dass sie es wissen. Nur, dass sie es auch aussprechen würden, und sei es dieses eine Mal – das hätte ich nicht erwartet" (Wolf 102, I knew very well that they knew it. Only, I had not expected that they would also say it – be it only this one time). Due to her general distrust in science and technology the woman was well aware that scientists and politicians knew the risks that accompanied their innovation. For them, the obvious advantages outweigh the invisible risks that surface only when these modern processes fail. And even when they do fail, threats such as radioactivity remain widely invisible due to chemical and material composition.

The female narrator shows her indictment of the male decision-makers in the way she addresses them. By referring to the group collectively as "sie" (they), she indicates they are different from herself, and large segments of society, when they create and release modern scientific and technological innovations regardless of their underlying flaws and risks. The continuous introduction of new technologies in the Anthropocene means to live with the possible, but often hidden, negative consequences. The general public, including the female narrator, has often no choice to reject these new inventions. This shared feeling of helplessness in the face of these modern-day perils unifies this group and creates a "wir" (we). The female narrator uses the inclusive, plural pronoun throughout her narrative to refer to her belonging to a wider group within human society. She ponders, for example, why people have remained acquiescent towards the introduction of newer, riskier technologies. She states, "nicht zuviel – zuwenig haben wir gesagt, und das Wenige zu zaghaft und zu spät. Und warum? Aus banalen Gründen. Aus Unsicherheit. Aus Angst. Aus Mangel an Hoffnung" (Wolf 62, We have not said too much – rather, too little – and that little bit too timidly and too late. For banal reasons. Because of insecurity. Because of fear. Because

of lack of hope). When she speculates on the possible reasons for humanity's silent consent and inaction, the use of "wir" (we) indicates that she herself is part of this group and thus equally responsible for not protesting these risk prone innovations.[29] The use of "we" might even appeal to the reading audience if they face similar situations of exclusion from decision-making processes, or share the narrator's concerns for the risks of modern technologies. While the most recent nuclear disaster and its consequences are irreversible, future disasters could be prevented if general society can overcome their silent complicity by questioning and speaking up against the hegemony of science and technology.

The depiction of the nuclear catastrophe in Gudrun Pausewang's *Die Wolke* differs significantly in form and style from the presentation of the disaster in Wolf's literary work. *Die Wolke* describes the nuclear accident at the West German power plant Grafenrheinfeld. While the nuclear accident is mere fiction, the narrative directly refers to the prior events in Chernobyl. The narrative centers around the fourteen-year-old protagonist Janna-Berta who lives with her parents and her three siblings in Schlitz, less than eighty miles distance from the reactors of the nuclear power plant. While Janna-Berta's parents and younger sister are away, a nuclear accident occurs that results in a state of emergency in the surrounding areas. As their neighbors are fleeing, Janna-Berta and her younger brother Uli decide to take their bikes and run away from the approaching nuclear substances. In the ongoing chaos and tumult Uli is killed in a car accident. From then on, Janna-Berta is on her own, escaping from the contaminated area while in a state of trauma and shock. Several days after the disaster, the teenage girl finds herself in an improvised hospital together with other children and teenagers who are being treated for probable exposure to the radioactive substances. While in the hospital she learns that her parents and her youngest sister were also killed in the aftermath of the catastrophe. After being released, Janna-Berta first moves to Hamburg to live with her aunt Helga. But their relationship proves to be complicated, as they barely

[29] See Rey, 373-74, for a detailed analysis of the use of personal pronouns and their effects in Wolf's narrative.

know each other and Helga, like the majority of the German public in the unaffected areas, wants to move on and forget about the catastrophe in Grafenrheinfeld. In the end, Janna-Berta is allowed to return home, where she buries the remains of her brother and then begins to share her story of survival with her grandparents, who have yet to learn about the fate of the rest of their family.

The depiction of the nuclear catastrophe is a recurring theme in Gudrun Pausewang's literary works. Her 1983 novel *Die letzten Kinder von Schewenborn* (*The Last Children of Schevenborn)*, describes the detonation of an atomic bomb in West Germany. Both literary texts, *Die Wolke* and *Die Kinder von Schewenborn,* can be classified as young adult novels, as they describe the nuclear disaster through the lenses of their teenage protagonists while excluding, for example, scientific explanations about nuclear power or the atomic bomb. The narratives instead focus on depictions of the experiences and feelings of their young protagonists. In *Die Wolke* the nuclear accident in Grafenrheinfeld changes the entire life of Janna-Berta. Her parents and two younger siblings are killed as a consequence of the radioactive fallout. The narrative describes how the teenager deals with her grief as well as her disease, which was caused by the released nuclear substances in the environment. Her physical and emotional struggles stand in contrast to the general reactions of the West German public, who wish to forget about the disaster and desire a return to normalcy. In this moment, Janna-Berta recognizes the significance of her own story, which she shares with others whenever possible. In her opinion, a return to normalcy would equal the eradication of the disaster from people's minds, allowing for the uncontested continued use of nuclear power as a form of energy production. The focus on Janna-Berta's experience delivers insights into another social group previously overlooked and excluded from public discourse on nuclear power: teenagers, and here in particular the view of a female young adult, whose life is affected by the disaster just as the lives of adults have been.

Gudrun Pausewang, a teacher by training, began writing about social and political issues during the 1970s. Her first literary works were written for adults but starting in the early 1980s she

began writing books for children and young adults, which helped her gain prominence among a wider public. Pausewang's conscious decision to write about serious topics for a younger reading audience was influenced by her own sentiments during World War II and the Holocaust. In an interview with the German magazine *Stern,* the author admitted she had been part of the Hitler Youth and believed in the Nazi regime until the end of the war (cf. Ramm). Drawing from her own experiences and reworking of the past, Pausewang realized that every human individual shares a political responsibility regardless of their age. In the wake of the nuclear disaster in Chernobyl she began working on *Die Wolke,* intending to raise awareness among her young readers of their own accountability. She states, "ich habe *Die Wolke* geschrieben, damit die Leser aufgerüttelt werden und denken, 'Wir wollen mithelfen, dass das, was hier passiert, nie wirklich passiert.' Denn passieren könnte es – genauso, wie die Katastrophen von Tschernobyl und Fukushima passiert sind" (Ramm, I have written *Die Wolke* to rouse the readers, so that they begin thinking, 'We want to help that what happened here will really never happen again.' Because it could happen again – the same way that it happened in Chernobyl and Fukushima). Thus, Pausewang's determination to inspire teenagers and young adults to think critically about the events happening around them initially drew her into the genre of children's and young adult literature.

Pausewang's intention to shape the views of her young reading audience is mirrored in Janna-Berta's transformation in the literary narrative. Prior to the nuclear accident, the teenage protagonist felt indifferent about the nuclear power plant that operated so close to her home. But once the catastrophe takes place, her entire life changes. The personal losses she experiences in the aftermath of the disaster alter her view of nuclear power and spark a growing interest in political and social issues. While the deaths of Janna-Berta's parents and siblings cannot be undone, her advocacy for political change, and an exit from nuclear power, could save many future lives. The representation of the personal transformation of the text's young female protagonist resembles the plot trajectory in the traditional *Bildungsroman* that emerged in Germany at the end of the

eighteenth-century. The classical *Bildungsroman* describes the acculturation, or coming-of-age, of a literary character. This moral growth is fueled by outer influences such as the general environment, or the individual's personal experiences over time.[30] The most prominent examples of this literary genre, Johann Wolfgang von Goethe's *Wilhelm Meister* or Gottfried Keller's *Der Grüne Heinrich*, describe the acculturation of a male protagonist. These early model narratives initially restricted the genre's definition with regards to the gender of the literary character. Beginning in the 1980s, however, literary scholars such as Jeannine Blackwell argued for an expansion of the genre to include literary depictions of the transformation of a female protagonist. In her revised definition of the female *Bildungsroman* Blackwell describes the genre as following:

> I use the term *Bildungsroman* with respect to heroines to denote a sympathetic third person narration of the growth of one central female character from youth to the fruition of her talents, through which her internal development expresses itself outward and is in turn reshaped by the environment she affects. The narration exposes the dialectic relationship between learning and events, and the dialectic relationship between events and the development of self. (14-15)

Pausewang's *Die Wolke* fits the updated criteria of the *Bildungsroman* as it describes Janna-Berta's transformation from a quiet teenager to an outspoken young woman and survivor of the nuclear disaster in Grafenrheinfeld, who seeks to inform her peers about the underlying risks of nuclear power. Her efforts to educate others about the radioactive threat exceed the textual sphere, and allows readers to view Janna-Berta's moral growth as a paradigm for their own lives.

The growing public apathy in the aftermath of the nuclear accident portrayed in *Die Wolke* reveals a generational conflict, too. While Janna-Berta deals with her hardship and her visible role as victim in an open and transparent manner, her aunt Helga seeks to quickly return to their normal lives, sending Janna-Berta back to school as soon as possible. The narrative describes Helga as incapable of dealing with the consequences of the nuclear disaster. Instead of talking about what has happened, she seeks to cover it up and even to lie; in her letters to Janna-Berta's grandparents,

[30] See Selbmann, especially 7-33, for a more detailed definition of the literary genre and a description of its historical development in German literature.

who were away on vacation when the disaster happened, she reports that the rest of her family is fine and is being treated in a special clinic for radiation disease, where patients are not allowed to get in touch with other people. When Janna-Berta asks about her motivation to lie, Helga responds, "aber ich tue das nur zu ihrem Besten" (Pausewang 137, But I only do it for their own good).[31] Slowly, Janna-Berta comes to understand that older generations have learned to conceal the catastrophe and underlying trauma instead of talking about it. Her aunt's lies remind Janna-Berta of her grandmother's behavior and her silence about World War II and the Holocaust, which she describes as "zugeknöpft" (Pausewang 139, reticent). The literal translation of the German term, "buttoned up," mirrors the intended act of concealing and covering up the unwanted truth. Just as her grandmother's generation stopped talking about World War II, Janna-Berta fears that many, including her own family, will also stop talking about what happened in Grafenrheinfeld, despite personal misfortunes caused by the nuclear disaster. The narrative ends with Janna-Berta's reunion with her grandparents, whose indifferent and nonchalant behavior astonishes the teenager, while at the same time fuels her motivation to tell her personal story and to inform the people around her about the events in Grafenrheinfeld.[32] Different from other traditional German narratives classified as *Bildungsroman,* Janna-Berta's maturation is not triggered by adapting to society's norms and values but commences as an act of defiance to the public indifference towards the nuclear catastrophe.

In the narrative's concluding scene, which depicts the conversation between Janna-Berta and her grandparents, their peculiar views on nuclear power and its risks become evident. In the wake of the accident in Grafenrheinfeld, the grandfather notes a hysteria that appeared exaggerated

[31] This and all following translations of Pausewang's text are included from the text's English translation by Patricia Crampton. In some instances, I comment on the discrepancies between the translation and the literal meaning of the words used in the German original.

[32] For example, Janna-Berta's grandparents complain that they had to wait several months for their return to their house in Germany, worried that plunderers and thieves would have gotten access to their property during that time (cf. Pausewang 220).

and overhasty to him (cf. Pausewang 221). He questions, for instance, the reported death toll when asking his wife: "Hast du sie [die Toten] gesehen?" (Pausewang 222, Did you see them [the dead bodies]?). The apparent remoteness of the power plant where the accident happened, and the material invisibility of the nuclear threat, demand the remediation of the event and its consequences. Janna-Berta's grandfather and his mistrust of the media strengthen doubts about the severity of the threat as well as the credibility and objectivity of the information released by the media. Here, he calls the narrative in the media a „Großkatastrophenmärchen" (Pausewang 223, grand disaster fairy tales), reiterating his opinion that the press misrepresents facts, and possibly even shares untruthful news. His views resemble today's idea of *fake news* and people's fear of biased media coverage that is controlled by specific political or economic interest groups. At the end of her grandfather's monologue, Janna-Berta regains her voice, pulls down her hat, and begins to tell the story of what happened to her and her family. While the narrative ends without depicting the reaction of the grandparents, her story contradicts their earlier claims, in which they suggested the disaster was misrepresented and exaggerated, especially by the media. In this moment, the abstractness of the numbers and facts reported by the press become personal and relatable in conjunction with Janna-Berta's individual story. Her narrative might have the power to alter people's views towards the seriousness of the nuclear threat and overcome its visual obstacles. Thus, her own personal experiences and her underlying growth can inspire the learning of others.

The views of the female narrative voices, and their narratives' respective forms in Gudrun Pausewang's *Die Wolke* and Christa Wolf's *Störfall,* differ significantly from public discourses that followed the nuclear disaster in Chernobyl. Instead of turning to science and their assumed knowledge of the radioactive threat, these texts turn to narrative human figures who are largely unfamiliar with the unprecedented danger. Their backgrounds mirror the experiences of the majority of society, those with limited understanding of the seriousness of the nuclear hazard; they describe how they envision the peril itself, but also its yet unknown consequences for people, non-

human beings, and the environment. They are not concerned with the cause of the core meltdown, or if the numeric value of the radioactivity released in the process is dangerous, but rather if it is safe to go outside with their children. The material invisibility of the radioactive substance and the general obscurity of science become the major obstacles in their quest for information. Thus, their narratives are personal texts in which they ponder the uncertainty and begin to search for what is unseen.

The Quest for the Nuclear Danger

Literary scholar Gabriele Dürbeck classifies many contemporary texts about environmental catastrophes like Chernobyl quite generally as "literary disaster discourses." According to her, these narratives "[…] are characterized by a fundamental tension between the ethical and aesthetical aspects of the destruction" (Dürbeck 2012, 1). In the context of the nuclear catastrophe, the aesthetical components become particularly interesting, because the radioactive threat and its immediate consequences remain widely imperceptible to the human senses. How do these narratives describe the invisible nuclear disaster that their protagonists and narrators cannot see? In Wolf's *Störfall* and Pausewang's *Die Wolke* the narrator and Janna-Berta go on quests to search for the traces of the radioactive hazard, though their searches are ultimately unsuccessful. Consequentially, both texts and their female narrative voices explicitly comment on the fact that they cannot see the dangerous substances nor the full magnitude of this modern-day catastrophe and its consequences.

In both narratives, the nuclear danger presumably *invades* the home environments of Janna-Berta and Wolf's nameless, female narrator. Though neither was involved in the creation of the threat, they are nevertheless exposed to the nuclear peril. They have become part of what sociologist Ulrich Beck called *risk society.* In his homonymous book, published in 1986, the same

year as the disaster in Chernobyl,[33] Beck claims a significant historical shift has taken place in modern Western human societies. Their yearning for technological and scientific innovations has created, in addition to the apparent benefits and advantages, risks and dangers, too. Here, Beck explains,

> The risks and hazards of today thus differ in an essential way from superficially similar ones in the Middle Ages through the global nature of the threat and through their modern causes. They are risks of modernization. They are a wholesale product of industrialization, and are systematically intensified as it becomes global. (21)

According to Beck, these modern risks and perils are the price humans have to pay for their growing and never-ending demand for technological and scientific progress. The fact that humankind's technological progress often comes with undesired disadvantages is nothing new. During the Industrial Revolution, for example, new forms of manufacturing processes generated harmful substances, such as smoke, whose release into the environment immediately impacted the air quality and which were perceptible to the human senses. In modern risk societies, though, new developments often do not create such direct, visible effects. Instead, uncalculated and sometimes even unknown byproducts can emerge over time from these technological innovations. For instance, the use of nuclear power creates radioactive waste that accumulates and poses problems such as radioactive contamination of the surrounding environments.[34] In his work, Ulrich Beck comments on the material imperceptibility of these novel risks, too, when explaining that it

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[33] Due to the timely and spatial proximity to the nuclear catastrophe in Chernobyl, Beck did not begin his work with a traditional foreword, but additionally included a section titled "Aus gegebenen Anlaß" [In light of recent events] in the original German version of his book. Therein, Beck explains that he regards the nuclear disaster as an actual, real-world example for his theory, stating, "weit weg im Westen der Sowjetunion passiert ein *Unfall* – nichts Gewolltes, Aggressives, vielmehr ein allerdings vermeidenswertes Ereignis, das in seinem Ausnahmecharakter aber auch normal, mehr noch menschlich ist. Nicht das Versagen bewirkt die Katastrophe, sondern die Systeme, die die Humanität des Irrtums in unbegreifliche Zerstörungskräfte verwandeln" (8, Far away, in the Western territory of the Soviet Union, an accident happened which was neither intended nor aggressive, but after all a avoidable event that in its exceptional character was also normal and human. Not the failure creates the catastrophes, but the [political] systems that transform human failure into unbelievable destructive forces).

[34] For example, see Cram for her research on environmental contamination around the Hanford nuclear facility in Eastern Washington.

generally requires new technological devices or scientific processes to uncover these unwanted dangers (cf. 21).

In the literary narratives after Chernobyl, the human voices directly address the dilemma of not being able to see the nuclear danger. In Pausewang's *Die Wolke* the meltdown in the power plant causes the unobstructed release of radioactive substances into the immediate vicinity. While the police and crisis management squad encourage the population to stay indoors and close their doors and windows, the fear of the nuclear contamination causes many to flee their homes. Without their parents, Janna-Berta and her younger brother Uli have to choose whether to join their neighbors, or whether to hide in the basement as instructed by their mother over the telephone. Ultimately, they decide to escape on their bikes from the presumably moving nuclear substances. Exhausted from their escape, Uli begs for a quick break, but his sister goads him to continue pedaling. Noticeably upset, Uli asks Janna-Berta, "siehst du vielleicht 'ne Wolke?" (Pausewang 45, Can you see a cloud?). Confused by the media's earlier comparison of the nuclear threat to a cloud, Uli wonders what they are running from, as he is unable to see anything that he can identify as a cloud. Janna-Berta has to explain to him, "das Gift ist unsichtbar. […] Also kann man sie [die Wolke] nicht sehen" (Pausewang 45, The fallout is invisible […] so you can't see it anyway). While the term cloud caused confusion for Uli, Janna-Berta switches to another common term to refer to the radioactive threat. The English translator chooses to put a scientific term into Janna-Berta's mouth, but in fact she uses the most common word for "poison." The translation hides the fact that the protagonist is repurposing existing, easily understood words instead of using a technical vocabulary for the novel hazard. This discrepancy between the German original text and its English translation points to cultural distinctness in how the radioactive peril is described via language. This phenomenon is further analyzed in this chapter's third part, which solely focuses on the semantic broadening of language.

After Janna-Berta's exposure to the nuclear substances, the consequences of her contamination remain invisible for some time. In the beginning, Janna-Berta herself feels fine but she begins to witness other patients in the makeshift hospital getting sick. And after some time, Janna-Berta, and other seemingly healthy patients, begin to notice the health effects in themselves. The text describes, "nach Tagen scheinbarer Gesundheit ging es ihnen elender als zuvor. Gequält von hohem Fieber und Durchfall wimmerten sie vor sich hin oder dösten teilnahmslos" (Pausewang 105, After days of apparent good health they were more sick than before. They were tormented with a high temperature and diarrhea, they whimpered to themselves or dozed apathetically). The timely delay between the contamination and the consequences marks another form of invisibility that impedes the general perceptibility of the threat. In the text, Janna-Berta experiences a time of uncertainty during which she waits for the onset of symptoms. Here, the knowledge of her certain exposure and the direct experience of the radiation disease are interrupted. At first, Janna-Berta can only observe the health effects in others, but eventually she falls sick, too. While the teenage girl recovers from the sickness, a visible marker of her exposure to the radioactive substances remains: Janna-Berta has lost all her hair.

Janna-Berta's striking appearance automatically reveals her previous contamination and becomes an obstacle when the teenager moves to Hamburg, a city in Northern Germany not directly affected by the nuclear disaster. The teenager is surprised how "normal" (Pausewang 128) life is outside of the contaminated zone, and she comes to realize that the general public wishes to forget about what happened in Grafenrheinfeld. But Janna-Berta and the other survivors have become visible reminders of the catastrophe and complicate society's desire to move on. Here, Janna-Berta states, "die Leute fangen schon wieder an zu vergessen. […] *Darum* trage ich keine Perücke" (Pausewang 153, People are already beginning to forget. […] That's why I don't wear a wig). While in Hamburg, she becomes aware of her role as a living human symbol of the nuclear disaster; by refusing to cover her bald head with a wig, she consciously decides not to conceal the consequences

of her exposure to the radioactive substances. She believes that if people are allowed to forget what happened, they will also turn a blind eye to the underlying risks of nuclear power and the Grafenrheinfeld catastrophe will be repeated elsewhere.

The depiction of the invisibility of the novel nuclear hazard in Gudrun Pausewang's *Die Wolke* exceeds the material imperceptibility of the chemical substances. While the accident itself is depicted as something that occurred behind the walls of the nuclear power plant, the narrative and its description of the aftermath discloses other covers that impede humanity's perception of the danger. Among the two most striking additional forms of invisibility depicted in the narrative is the temporally delayed appearance of health symptoms after nuclear contamination and society's urge to forget about the disaster. The narrative's focus on the consequences of the event rather than the meltdown itself reveals how the material invisibility of the radioactive substances disperses into other realms and, thus, magnifies the general obscurity and uncertainty of the nuclear threat.

Christa Wolf's *Störfall* describes the nuclear peril differently, as the narrative only covers the time span of a single day when the news of a nuclear accident breaks, leaving open how the extended aftermath will play out. After she hears about the nuclear accident over the radio, the female narrator wonders if the nuclear particles are able to travel as far as her home as she begins to check her immediate environment for possible traces. She says, "ich bin noch ein Stück durch den Wald gegangen und habe nach Anzeichen von Krankheiten an den Bäumen gesucht, aber keine entdecken können" (Wolf 72, I went a little farther through the woods and looked for signs for diseases on the trees, but couldn't find any). In the forest, however, she is unable to identify visible evidence and cannot be certain if the environment has been contaminated.

In relation to the invisibility and the limitations of the human eyes in perceiving the nuclear substances, Wolf's narrator reflects on the significance of what is referred to as the blind spot, an expression used in two different contexts. First, in the field of medicine, the blind spot refers to an obscuration of the visual field. Second, in philosophy it describes a form of uncertainty in how

humans perceive scientific phenomena and processes. Math and statistics professor emeritus William Byers defines the blind spot in his homonymous work as a "[…] name for things that are real but which the mind cannot grasp and thus cannot capture through words, symbols and equations" (1). In a similar vein, the female narrator struggles to understand the given information about the nuclear accident, especially as she is unable to see the traces of radioactive substances. In a phone conversation with her daughter, she directly asks what her daughter considers to be the blind spot. In indirect speech, the narrator repeats her daughter's response, saying, "[…] sie würde von dem Bereich unserer Seele, unserer Wahrnehmung, sprechen, der für uns dunkel bleibe, weil es zu schmerzhaft wäre, ihn anzusehen" (Wolf 93, […] she would talk about that region of our soul, our perception, which remained in the dark because it was too painful for us to face). Her daughter's understanding of the notion exceeds its earlier, rather general definition. She believes the blind spot begins to set in when humans are confronted with particularly painful ("schmerzhaft") incidences. The female narrator is unable to know with certainty if the radioactive substances have already accumulated in her home environment, while she fears, at the same time, that this knowledge would cause her to perceive her surroundings differently. As a result, the narrator and her daughter agree to regard the blind spot as a measure of self-protection, "Selbstschutz" (Wolf 91), as it is hiding selective, negative realizations. Thus, the material invisibility of the radioactive threat contributes to general human denial.

The conversation between the narrator and her adult daughter corresponds to her earlier descriptions in which she reflects on the set-up of the human eye and the biological existence of the blind spot. She ponders,

> Ob es eigentlich naturnotwendig war, ob es keine andere Lösung für die Konstruktion des menschlichen Auges gegeben hätte, als die, es mit einem blinden Fleck auszustatten? Jenem winzigen Punkt der Netzhaut, wo der Sehnerv einmündet, der zum Gehirn führt. Schneller Trost: Unser anderes Auge gleiche diese minimale Lücke in unserer Wahrnehmung aus. Wer aber, oder was, kann uns helfen, jene Wahrnehmungslücke zu schließen, welche wir uns durch unsere spezielle Art und Weise uns in dieser Welt zu behaupten, unvermeidlich selbst anziehen müssen? (Wolf 89)

(Whether it was actually a requirement of nature, whether there was no other solution to the construction of the human eye than to equip it with a blind spot, that tiny point in the retina where it is joined by the optic nerve, leading to the brain. Speedy consolation. Our other eye is said to compensate for this minimal gap in our perception. But who or what can help us fill that gap in our perception which we inevitably inflict upon ourselves through our special way of holding our own in this world?)

Here, the narrator points to the relationship between failing to perceive certain circumstances with the eyes and the brain's tendency to ignore certain issues for reasons of self-protection. In regard to the latter, Wolf's narrator explains that humans have been trained to use the blind spot's self-defense mechanism. They have to put on ("anziehen") the protective lenses of the blind spot in order to cope with the dangers around them. In her understanding, the blind spot functions as a cover that conceals the negative issues that have surfaced. Wolf's narrative seeks to unravel this form of psychological invisibility that derives from the visual imperceptibility of the nuclear substances. When humans cannot see the radioactive threat with their own eyes, it is easier to ignore the peril. And if this general ignorance towards modern, man-made hazards continues, the nuclear threat is only one of many other perils that pose a threat to humankind, and the environment.

Like Pausewang's text, Wolf's narrative does not depict the nuclear disaster itself. Instead, the event is the starting point for the female narrator's stream-of-consciousness narrative, which depicts the significance of the nuclear catastrophe for her own life. But while she fails to perceive the threat due to its material invisibility, she acknowledges that this feature makes it easier to ignore the threat and return to the earlier status quo. The material invisibility fuels the ability to ignore the threat when it moves into the social sphere, where society aims to deny the hazard's continued existence. Pointing to people's failure to acknowledge the danger prompts the reader to reflect on the ways in which they ignore modern-day risks and dangers. Thus, these narratives offer a different perspective than that of the media, which only reports the event itself, but fails to comment on the social implications of the nuclear disaster.

Referring to the Nuclear Threat: the Emergence of an Ambivalent Language

The material invisibility and the scientific complexity of the nuclear danger creates a reference and representation problem, as people struggle to envision – but also to linguistically express – the radioactive peril.[35] In the German language and culture, the term of the cloud, *Wolke*, has become an established expression to refer to the moving nuclear substances in the environment. After the catastrophe in Chernobyl, the term was repeatedly used in the media to monitor the movement of the nuclear substances as they traveled thousands of kilometers and crossed over national and geographical borders. Since then, the term has become a fixed expression: Gudrun Pausewang even adopts the word for the title of her work.[36] In the wake of the nuclear disaster, the familiar term has been repurposed because it provides a way for laypeople and non-scientists to envision the appearance of the invisible radioactive substances. Additionally, the idea of the cloud implies that the threat is not moving towards humans at the height of their eyesight but that it remains in the sky from where it descends via wind and rain and slowly contaminates the environment. Its general characteristics distinguish the nuclear threat from earlier environmental perils that are usually within reach and live side by side with human and non-human beings.

The specific example of the *Wolke* underlines that new or unusual events have an impact on human languages. The novelty of the Anthropocene and the emergence of unprecedented events leads to a reference dilemma: how do we name phenomena that we cannot visually perceive, and which bear little or no resemblance to perils from the past? Here, the idea of nuclear contamination shares parallels to the spread of communal diseases such as the plague from the Middle Ages to the

[35] The events that have led to the creation of the actual nuclear danger are often foreign and unknown, too, and often individual incidences blend into a single term. In Germany, Chernobyl (or in the German spelling, Tschernobyl) was named the word of the year by the Gesellschaft für deutsche Sprache (Association for the German Language), followed by the terms "Havarie" ("disaster") and "Super-GAU" ("worst case scenario"). Each of these terms describe the events in Chernobyl as a whole but neglects to refer to the individual incidences that led to the disaster.

[36] While Pausewang's German title was directly translated in the French and Spanish version of her novel, it was replaced with different expressions in other languages such as English (*Fall-Out)*. The name of the Japanese theater adaption, *Mienai Kumo*, can be translated into English as *Invisible Clouds*.

nineteenth century, or most recently the COVID-19 pandemic. In her essay "Illness as a metaphor," Susan Sontag argues that "[…] feelings about evil are projected onto a disease. And the disease (so enriched by meanings) is projected onto the world" (63). According to Sontag, the negative effects of the disease are absorbed in the language that is used to refer to the illness. The plague, for instance, has also become known as the "Black Death" (in German, der schwarze Tod), combining here the metaphorical and literal meaning of the disease's symptoms (blackish, purplish buboes on the human body) and its often lethal outcome (death).

In the aftermath of Chernobyl, the discourse about the nuclear threat reveals a similar language change. The invisibility of the nuclear substances resulted in the semantic broadening of particular words. In addition to their original understanding, certain words, such as *Wolke,* developed a new meaning because the familiar term appeared to best characterize the new peril.[37] In Christa Wolf's *Störfall*, the female narrator reflects on the semantic broadening of the term *Wolke*. In a series of rhetorical questions, she ponders the resemblances between the nuclear cloud and the clouds in the sky. She asks,

> Nach welchen Gesetzen, wie schnell breitet sich Radioaktivität aus, günstigenfalls und ungünstigenfalls? Günstig für wen? Und nützte es denn den unmittelbar am Ort des

[37] Before Chernobyl, the term *Wolke* was also used to refer to the pollution from the chemical industry in the former GDR. Scientist Annette Tuffs, for example, informs in her article entitled "Germany: Black Clouds over Bitterfeld" about the visible contamination of the air in the city of Bitterfeld. There, the dirt in the air was highly visible; cars often had to turn on their lights during the daytime hours due to the constantly dark, and cloudy skies (cf. Tuffs 809). The environmental and health problems in Bitterfeld were well-known among the East German public and were also described in literary texts, among others Monika Maron's *Flugasche*, published in 1981. Maron's protagonist, a female journalist, wants to report about air pollution in East Germany, in a town abbreviated as B. She describes, "die Schornsteine, die wie Kanonenrohre in den Himmel zielen und ihre Dreckladung Tag für Tag und Nacht für Nacht auf die Stadt schießen, nicht mit Gedröhn, nein sachte wie Schnee, der langsam und sanft fällt, der die Regenrinnen verstopft, die Dächer bedeckt, in den der Wind kleine Wellen weht. Im Sommer wirbelt er durch die Luft, trockener, schwarzer Staub, der dir in die Augen fliegt […]. Nur die Fremden bleiben stehen und reiben sich den Ruß aus den Augen. Die Einwohner von B. laufen mit zusammengekniffenen Lidern durch die Stadt […]. (Maron 16, These smokestacks like cannon barrels aimed at the sky shooting their charges of filth at the town day in day out and night after night: not with a roar, no, but quietly like snow that falls slowly and gently, that stops up drainpipes, covers roofs where the wind blows without waves. In summer it swirls through the air, dry back dust that flies into your eyes […]. Only strangers stand still and rub the soot from their eyes. The population of B. walks through the town with squinting eyes […]). Here, the falling ash particles are described as snow that is catapulted into the environment from the smokestacks. While she does not directly refer to a cloud, the substances released from the chimneys are described as "Rauchwolke" (cloud of smoke) in the German edition.

> Ausbruchs Wohnenden wenigstens, wenn sie sich, durch Winde begünstigt, verbreitete? Wenn sie aufstiege in die höheren Schichten der Atmosphäre und sich als unsichtbare Wolke auf die Reise machte? Zu meiner Großmutter Zeiten hat man sich unter dem Wort 'Wolke' nichts anderes vorstellen können als kondensierten Wasserdampf. Weiß, wohlmöglich, ein mehr oder weniger schön geformtes, die Phantasie anregendes Gebilde am Himmel. (Wolf 14)

(According to what laws and how quickly does radioactivity spread, at best and at worst? Best for whom? And would those living in the immediate vicinity of the explosion have a slightly better chance if it were spread by a fair wind? If it were to ascend to a higher strata of the atmosphere and there set off on its journey as an invisible cloud? In my grandmother's day the word 'cloud' conjured up condensed vapor, nothing more. Probably white and more or less prettily shaped – a picture in the sky to stir the imagination.)

Despite her apparent familiarity with clouds, the narrator is unable to answer the questions she raises, due to the fact that the nuclear cloud differs significantly from the traditional weather phenomena. It is then that she realizes the meaning of the word has profoundly changed. [38] Two generations ago, during the lifetime of her grandmother, a cloud referred only to the weather phenomenon. Hence, the nuclear disaster has changed the human vocabulary; words that have been used for centuries have gained a new layer of meaning for the purpose of describing modern processes, objects, and substances created predominantly by new technologies. The female narrator explains,

> Daß wir es 'Wolke' nennen, ist ja nur ein Zeichen, unseres Unvermögens, mit den Fortschritten der Wissenschaft sprachlich Schritt zu halten. Unser Erkennungsapparat (…) wählt zur Benennung eines neuen Phänomens gewöhnlich diejenige Bezeichnung aus, welche die größte Anzahl an Merkmalsübereinstimmungen mit denjenigen Erscheinungsformen der Materie aufweist, die er seit alters her kennt. (Wolf 32)

(Calling it 'cloud' is merely an indication of our inability to keep pace linguistically with the progress of science. Incessantly gathering information and comparing the new with the previously recorded, our perception apparatus – […] usually selects that name to designate a new phenomenon which shows the highest number of shared characteristics with those materials manifestations which it has shown since the time immemorial.)

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[38] In her analysis of Wolf's *Störfall*, literary scholar Karin Eysel argues that "the narrator has to acquire new vocabulary to describe her new reality. […] For Wolf, language cannot be analyzed apart from the social context; her dynamic conflictual view of language opens a discursive space from which Wolf articulates, contradicts, modifies, and renegotiates existing social structures" (294). Eysel's argument underlines that novel events such as the nuclear disaster trigger the emergence of a new vocabulary. Here, Wolf's narrator often repurposes familiar term to describe the unfamiliar, too.

According to the narrator, humans and their language are incapable of keeping up with the progress, which explains why familiar terms are repurposed to refer to new phenomena. This process of broadening the meaning of existing terms, however, leads to an often simplified comparison between the old and the new. While resemblances and similarities are the foundation of these new word analogies, the focus on the mutual likeness automatically disregards the differences between the novel and the familiar objects. Here, the invisible but yet dangerous aspects are often neglected because they are so difficult to perceive. As a consequence, the process of semantic broadening can trivialize these novelties and further conceal their hazardous potential.

In an attempt to learn more about the radioactivity, the unknown narrator in *Störfall* compares the weather and the nuclear cloud. While she is aware of their underlying differences, the imperceptibility of the radioactive substances impedes her ability to fully distinguish between these two different objects. She describes,

> Ich […] denke an die Wolke, wie sie böser und böser wird, nach einer Wetterlage umherirrt, die es ihr erlaubt, sich abzuregnen. Wie selbst Regionen, die sonst um Regen flehen, ihn jetzt liebend gerne missen wollen. Sollen die anderen ihn abkriegen. Wir halten für den Notfall, Regenschirm, Regenmantel, Gummistiefel bereit. Wir werden, falls es morgen, übermorgen regnen sollte, unsere Kinder nicht in die Schule, nicht bis zur Bushaltestelle gehen lassen. (Wolf 42)

([…] I think of the cloud and how it wanders about more and more threateningly in search of a weather situation which allows it to rain itself out. How even regions which normally beg for rain are now dying to miss out. Let the others get soaked. We have umbrella, raincoat and rubber boots at the ready case of an emergency. Should it rain tomorrow, or the day after, we won't let our children go to school, not even as far as the bus stop.)

In her comparison the female narrator prescribes agency to the radioactive cloud when she envisions how it transforms and becomes increasingly dangerous over time. Created by human science, this modern cloud is an anthropomorphic object that cannot be controlled and whose hazardous effects are aggravated by natural processes. For example, incoming rain could transport the radioactivity to the ground and directly into environments that are inhabited by human and non-human beings. Humans are not able to detect this nuclear rain as it seems just like a normal

rain shower, and no measures can offer protection from the precipitation that has absorbed the radioactive rays. Just like many others, the woman struggles to understand the new environments of the Anthropocene, where nothing has visibly changed (yet), but where familiar situations and objects such as a rain shower can present new hazards.

Another example of semantic broadening in the German language is the concept of the so-called radioactive glow. In Wolf's text, the female narrator exclaims, "[d]er strahlende Himmel" (Wolf 26, the radiant sky). Here, the word "strahlend" (radiant, or glowing) has taken on a new meaning as a consequence of the nuclear disaster.[39] In the time before the Anthropocene, the phrase could have functioned as a weather description within the narrative, such as beams of sunshine; since there is no reference to sunshine prior to this quote, it is more likely that it is used to describe the contaminated environment. The idea of radioactive radiance has also been used by the German anti-nuclear energy movement, which first gained prominence in the 1960s and 1970s. Their logo incorporates the double meaning of the word "radiance" ("Strahlung"). Its prominent symbol (Fig. 1) combines the image of a smiling, red sun with the slogan "Atomkraft? Nein, danke," making clear that there is only one acceptable form of rays.

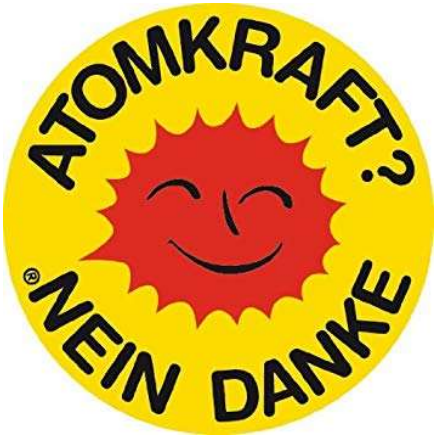

Figure 1: Provenience of the logo of the German anti-nuclear energy movement (Atomkraft? Nein danke. – Nuclear energy? No, thanks.)

[39] According to the dictionary of the Brothers Grimm, the verb "strahlen" was originally used to describe the glow of lightning during a thunderstorm. The word's origin emphasizes that the term was initially used to describe a visible perceptible phenomenon.

In conjunction with the cultural knowledge, it becomes obvious that with her depiction of the sky the narrator alludes to the nuclear contamination of the environment. In a later passage, the narrator again states, "wie herrlich leuchtet die Natur" (Wolf 40, Marvelous nature shining on me). The sentence, written in Italics, was included from the opening verses of Johann Wolfgang von Goethe's poem "Mailied." The poem, published in 1771, is often regarded as Goethe's first nature poem celebrating the sublime beauty of the natural world.[40] In *Störfall*, this intertextual reference is included after the narrator finds a four-leaf clover, a genetic modification of a regular clover that only appears in rare instances and is viewed as a symbol of luck in many Western cultures. Despite her rare find, the woman cannot appreciate her discovery. Her knowledge of the nuclear accident has changed her perception of the environment, and she suspects that the radioactive substances have begun to settle in the trees and in the grass. In his analysis of *Störfall*, Loreto Vilar identifies multiple poetic intertexts in Wolf's narrative (cf. 205-06), arguing that the female narrator emphasizes the before and after of the nuclear accident. The included nature poems are literary ruins from the time before the Anthropocene. With the invisible changes of this new geological era, these literary artefacts need to be re-examined.[41] In the wake of the nuclear disaster, the meaning of the line from Goethe's "Mailied" has drastically changed with the new understanding of the word "leuchten."

In Pausewang's *Die Wolke* the descriptions also allude to the radioactive contamination of the environment. After the news breaks of a nuclear accident, Janna-Berta catches a ride home with one of her older classmates. While the teenager is watching the natural scenery pass by out the car window, the narrator describes,

> Etwas Ungeheuerliches schien geschehen zu sein. Und doch sah alles so friedlich aus wie immer: ein ganz gewöhnlicher, warmer, windiger Frühlingstag. Die Kirschbäume waren

[40] In her analysis of the poem, Hölscher-Lohmeyer notices that the depictions of nature follow the later realist tradition while referring to animals and plants in a descriptive and systematic manner (12-13).
[41] See here Goodbody (1984), especially the introduction, for an overview of German nature poetry and its significance for contemporary literary studies.

> schon fast verblüht. Nun standen rings um die Dörfer die Apfelbäume in der Blüte. Die Rapsfelder leuchteten gelb. (Pausewang 25)

(Something terrible seemed to have happened, and yet everything looked as peaceful as ever: a perfectly ordinary, warm, windy, spring day. The cherry tree blossoms had almost faded and all around the village apple trees were in flower. The rape fields gleamed bright yellow.)

Despite the reports that something terrible has happened, the environment appears unchanged. The text uses the verb "scheinen," which carries an ambivalent meaning in this passage. At first glance, the narrator informs that something horrible "appeared" (scheinen) to have happened, but the consequences of the catastrophe are (not yet) visible in the seemingly unaltered environment. Additionally, the word refers to the idea that the surroundings are contaminated, and the nuclear substances are shining imperceptibly for the human eyes. The allusion becomes more evident a few sentences later, when the radiation is emphasized yet again. Janna-Berta notices the glowing yellow rape fields, which hint at the envisioned glow of the radioactive substances. Without the knowledge of the nuclear accident, the descriptions of the environment would carry only their literal meaning when depicting the environment in an apparent realistic manner. However, the radioactive fallout released in the disaster has begun to travel beyond the walls of the power plant. While the radioactivity is invisible, it is the language here that carries the detectable traces of the contamination. These changes within the language are subtle and can often only be understood within the context of the Anthropocene and its drastically altered planetary reality.

Conclusion

The discovery of nuclear fission heralded the nuclear age, recently identified by the Anthropocene Working Group as the beginning of the new geological era (cf. Zalasiewicz et al 10). While the nuclear bomb over Hiroshima in 1945 graphically demonstrated the destructive power of radioactive elements, widespread belief in the advantages of nuclear power, especially for energy production, continued to exist until the disaster in Chernobyl. The catastrophe turned the risks,

which accompany many modern technologies and scientific innovations, into a threat. The hazard, however, remained entirely invisible and resulted in a significant shift in how humans confront dangers. The disaster revealed a novel reliance on science to inform about the danger and its possible harmful effects. Consequentially, public discourse following the disaster was dominated by science jargon and numeric values, which aimed to depict the impact of the peril. For non-scientists these facts remained abstract and did not help in their understanding of the imperceptible threat.

This dilemma inspired the German literary responses analyzed in this chapter. Christa Wolf's *Störfall* and Gudrun Pausewang's *Die Wolke* depict the nuclear danger in conjunction with the experiences of their female literary characters, a group within society whose views and concerns on environmental issues are often overlooked. Due to a lack of familiarity with nuclear science, the teenage protagonist in Pausewang's text, and the female narrator in Wolf's work, struggle to recognize the modern peril despite their general belief in the hazardous nature of radioactivity. Thus, their literary texts seek to emphasize their struggle with the peril's material invisibility, but also with the general uncertainty exposed in the aftermath of the catastrophe. Their narratives do not inform or educate about the modern radioactive threat but are instead personal contemplations about the challenges posed by the radioactive danger. In their endeavor to acknowledge and depict the hazard, they become reliant on language. Here, the envisioned similarities between the nuclear threat and familiar ideas and concepts trigger a language change that results in the semantic broadening of common words that seek to capture the essence of the modern peril.

In their retelling of the disaster, the HBO miniseries *Chernobyl* depicts the evacuation of the affected populace from areas immediately surrounding the compromised nuclear power plant. In Episode 3, "Open Wide, O Earth," the series shows the complications involved in the removal of residents from their homes in the contaminated zone. In one striking scene, the soldiers who are responsible for the evacuation of the affected population encounter an elderly farmer who has not

yet left her home. One soldier arrives while the woman is milking her cow and demands she stop what she is doing, pack her bags, and follow him to the site where the evacuees are being housed. But the woman does not think about stopping her activity. When the soldier explains that she is in direct danger, the woman exclaims "I can't see the danger," and continues with her chore. This scene emphasizes how the invisibility of the nuclear danger impedes the ability to acknowledge the peril's existence. It is here where the narratives of Wolf and Pausewang have the power to sensitize their readers to the seriousness of the hazard. Their communication of the hazard differs in that they acknowledge the challenges of seeing and recognizing the threat, while still believing in its existence. Their focus on the realm of the everyday – and here especially in their role as women – breaks down the vagueness of the danger and presents its relevance in our daily lives.

Even today Wolf and Pausewang's texts are prominent examples of the general anti-nuclear sentiments in Germany. *Die Wolke*, for example, is included as part of the sixth-grade curriculum in many German federal states, and has gained new significance following the nuclear catastrophe in Fukushima, which occurred exactly 25 years after the disaster in Chernobyl. The recurrence of another nuclear disaster, even if once again outside of German territory, caused existing concerns over nuclear power to resurface throughout German society. The public's apprehension fueled the drive for political change. On June 30, 2011, the German Bundestag, with a vast majority, signed a law that regulated the country's exit from nuclear power. By the end of 2022 at the latest, all of Germany's nuclear power plants will cease operation. While the "Atomausstieg" (nuclear phase out) will prevent a future nuclear disaster like Chernobyl or Fukushima in Germany, the threat will continue to exist as other countries resume the use of nuclear power, thus keeping the invisible global peril alive.

Chapter Two

Climate Change and the Emergence of Anthropocene Chronicles: Depicting the Environmental Threat via Individual Human Experiences

In December 2008, the German Federal Government released its "German Strategy for Adaptation to Climate Change" ("Deutsche AnpassungsStrategie an den Klimawandel", short "DAS"), which outlines political plans for how to adapt to the consequences of climate change in Germany. The 73-page-long report is the first of its kind as the German government officially confirms the existence of anthropogenic climate change and its probable future effects. The ratification is supported by scientific graphs that illustrate the continuous incline of median annual temperatures around the globe and in Germany (cf. 9-13). Despite this visual scientific proof of decades of climate change, the report also identifies "Unsicherheitsfaktoren" (13, uncertainty factors) that obstruct scientists from being able to formulate distinct predictions on the consequences of climate change. These uncertainties go along with the invisibility problem that surrounds climate change. Unlike the nuclear disaster in Chernobyl, climate change is a subtle, slow-moving, and often dislocated process. Industrialized countries, including Germany, produce a large proportion of the total annual global greenhouse gases,[42] chemical substances that have been identified as the principal contributing factors of climate change. But often, the direct effects of the altered climate, such as the rising temperatures that have led to the melting of Earth's glaciers, are not visible in the places where climate changing substances are created.

The long-term action plan in Germany demonstrates the general impulse to predict the future consequences of climate change on both local and planetary scales. How will the rising average temperatures change the climate in Germany? And which effects will these climatic

[42] The data provided by the World Resources Institute, a global research non-profit organization, ranks countries by their amount of greenhouse gas emissions. The data from 2016 identifies China as the leading producer of greenhouse gases, followed by the United States, India, Russia, Japan, Brazil, and Germany, as the first European country.

changes have on other areas, such as the economy, and the habitats of human and non-human species? While it is impossible to answer these and other questions with certainty, the unpredictability of the future of climate change points to the process' complicated relationship with time and space. The severity of the currently perceptible consequences of climate change varies across the planet and even across continents. In 2019, for example, Iceland held a funeral for the first glacier that the country lost as a result of climate change (cf. Doyle). In the future Germany is also predicted to lose low-lying islands on the coast of the North Sea to rising sea levels and extreme weather events such as heavy storms (cf. Mohaupt). Being unable to experience or see how the changing climate alters Earth's environment has contributed to doubt and denial over the very existence of the threat.

Several factors contribute to the sense of skepticism over climate change, including the difficult distinction between weather and climate. The occurrences of severe weather events such as hurricanes, floods, or record temperatures are often regarded as individual incidences rather than as related patterns pointing to irreversible changes in the climate. Here, it is the concept of time that separates weather and climate. "The difference between weather and climate is a measure of time. Weather is what conditions of the atmosphere are over a short period of time, and climate is how the atmosphere 'behaves' over relatively long periods of time" (NASA). Individuals might begin to notice differences in the weather over the course of their lifetime; for example, summers in Germany and other Central and Western European countries have become warmer and drier in recent years, indicating a climatic pattern rather than unrelated incidences.[43] Despite meteorological records and science's ability to visualize the rising temperatures via graphs like the so-called *Hockey Stick*[44] many uncertainties remain with regards to climate change and its actual

[43] The German Meteorological Service (Deutscher Wetterdienst) describes that over the course of the past twenty-five years, the summer temperatures have continuously risen, increasing the overall average temperature during the summer months compared to the recordings of the years prior to 1990.
[44] One of the most famous scientific graphs on climate change is the so-called *Hockey Stick*. Named after its shape, the diagram displays the relative mean temperatures on Earth from 1000 AD to the year 2000. While

existence. This ambiguity is reflected in the language where the terms "climate change" ("Klimawandel") and "global warming" ("Erderwärmung") are often used synonymously to describe the same phenomenon despite the difference in their implied semantic meanings. *The Climate Reality Project* explains that the term climate change refers to the "long term changes in the Earth's climate," such as increasing median temperatures, rising sea levels, or variations in the amount of snow and ice (The Climate Reality Project). In contrast, the term global warming only describes the "increase in the Earth's average surface temperature from human-made greenhouse gas emissions" (The Climate Reality Project).[45] In this regard, the use of "global warming" over "climate change" neglects shifts in the climate that are not related to temperature. Hence, in this chapter, I am exclusively using the term climate change due to the stated concerns about the term global warming. Nevertheless, both expressions come with flaws that fuel uncertainty and skepticism of the topic.

Within German culture there is little doubt as to the existence of climate change. In his thorough depiction of "*Klimaskepsis* in Germany," Axel Goodbody states that the majority of the German population acknowledges the reality of this environmental threat; views on this topic are not an indicator of political beliefs or the denial of scientific facts, as is the case in the US American cultural context. Instead, German climate change critics disapprove of the environmental politics that aim to control the progression of the process. Goodbody writes, "most common is the argument that the urgency of Klimaschutz (climate protection) […] has been exaggerated and attempts to do so are either doomed to failure, or disproportionately costly" (Goodbody 2019, 108). This critique of an exaggerating threat and its future consequences has been evident from the

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the conditions are fairly constant until 1850, the graph then records a rapid and drastic change of the climate in the second half of the nineteenth century according to paleoclimate reconstructions (Mann et al.). Despite its clear visible display, the publication of the graph has caused controversy among the scientific community up until today, criticizing particular the conclusion that human actions such as the growing industrialization have impacted the increase of global temperatures.

[45] See, Heise, 205-207, for a thorough discussion of both terms.

beginning of the climate change discourse in Germany. One of the first national media reports on the issue hit the front page of the well-respected weekly magazine *Der Spiegel* in 1986. Here, the alarming headline "Das Klima gerät aus den Fugen "(The Climate Is Coming Apart at the Seams) was accompanied by a computer-generated image of the flooded cathedral in Cologne.

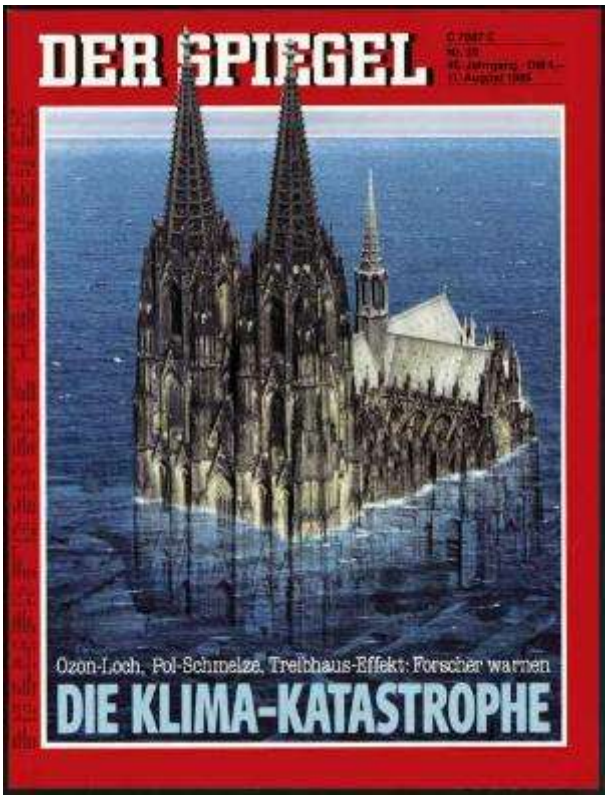

Figure 2: Cover of *Der Spiegel*, weekly edition 33/1986.

The two cathedral towers protrude from the water and appear to be the only visible markers remaining of the former city. The *Spiegel* cover story paved the way for what Goodbody called "the grand narrative of doom" (Goodbody 2019, 109), which has since dominated the general public discourse of climate change in Germany.

The appearance of German literature on the topic of climate change can thus be seen as a reaction to a public discourse dominated by gloom and doom. In contrast to other discourses, Clark

argues that literature has the ability to make climate change "interesting" when it presents the issue in the framework of a story that awakens the readers' curiosity (cf. 177-195). Moreover, in these climate fiction narratives the uncertainty factors continuously addressed in scientific discussions of the issue (such as in the German climate change action plan) have disappeared due to the advantages of fictional storytelling. Literature about anthropogenic climate change has the ability to travel in time and space, confronting the reading audience with story worlds in which the changing climate and its effects are a reality rather than a probability. The volume of published climate change literature has grown continuously since the 1970s in the United States;[46] compared to this total, the number of German narratives that deal with the topic is significantly lower and, at this point, according to Goodbody, only consists of around thirty texts (Goodbody 2017, 300).[47] Due to this fairly small number, a German term does not yet exist to describe the literary genre and its characteristics in the same vein as climate fiction (for short, cli-fi) in the Anglophone context.[48] Climate fiction emerged from the tradition of science fiction literature and thus often incorporates the findings of climate science, following here the demand of writer and critic Robert MacFarlane. He calls on writers of climate change fiction to "[…] find ways of imagining [climate change and its future consequences] which remained honest to the scientific evidence" ("A burning question").[49]

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[46] See Trexler and Johns-Putra for an overview of American works of climate fiction. See Di Paolo for an overview of climate fictions that exceeds literary works and also incorporate other media such as film and video games.

[47] In addition to fictional climate change literature, there exists a larger number of non-fictional works that inform about the problems of a changing climate. Among the most recent examples, published only in 2018, are Claus-Peter Hutter's *Die Erde rechnet ab: Wie der Klimawandel unser tägliches Leben verändert – und was wir noch tun können*, *Die Menschheit schafft sich ab: die Erde im Griff des Anthropozäns* written by Harald Lesch und Klaus Kamphausen, or Stephan Rahmstorf's und Hans Joachim Schellnhuber's work *Der Klimawandel: Diagnose, Prognose, Therapie.*

[48] Stephanie LeMenager points to the difficulties of defining the literary genre in a general sense. Instead, she recognizes that "fictions that have been called cli-fi are remarkable diverse, from psychological realism to science fiction to newer genres attempting to stand apart from cli-fi, such as solar punk. Cli-fi ranges across media, including digital, television, film, short fiction, the novel, and memoir "(22). Hence, the term climate fiction rather functions as a thematic than a generic category, incorporating texts (in a wider sense) that deal with climate change.

[49] Here, D'Avanzo, for example, argues that climate fiction should always be educational, containing scientific research that is then conveyed through the individual literary characters (cf. 2).

Actual climate science, however, is mostly absent in German climate change narratives like Ilija Trojanow's *EisTau* (*Lamentations of Zeno*) or Liane Dirks' *Falsche Himmel* (*False Skies*). Instead, these texts focus on the experiences and emotions of their first-person narrators, who turn to writing to reflect on the environmental changes impacting their lives.

The stark differences between German fictional climate change narratives and their Anglophone counterparts illustrate the need for a term that can properly identify these texts and their unique structure and form. Here, I propose the term Anthropocene chronicles (Aufzeichnungen aus dem Anthropozän) to describe the German literary phenomenon. While climate change is not the only aspect of the Anthropocene, it is a defining condition of critical significance that will continue to alter living conditions on Earth, for humans and non-humans alike. Humankind's dominance in this new geological age, and their role in the creation of climate change, raises uncomfortable questions with regards to their responsibility. This marks the starting point for reflections in the Anthropocene chronicles. In Trojanow's *EisTau,* the narrator and former glaciologist Zeno, who now works as a scientific lecturer on a cruise ship to Antarctica, laments humankind's indifference towards climate change. Even the tourists who embarked on the cruise to the polar region remain unmoved despite the opportunity to see the damage caused by climate change. In Dirks' *Falsche Himmel,* an anonymous human female first-person narrator reports on her life in a future with climate change. While the environment becomes increasingly uninhabitable, she holds out on the eighteenth floor of an abandoned high rise office building. But as people continue to leave the city due to its high ozone levels and increased temperatures, the female narrator reflects on how she has adapted to the new living conditions and how these conditions will affect her future life, if she survives.

German Anthropocene chronicles, like *EisTau* and *Falsche Himmel*, share three distinctive features which are essential for the representation of climate change in these narratives. First, Anthropocene chronicles focus on the experiences of their human narrators, offering

predominately first-person depictions of situations and encounters as well as subjective views and perspectives on climate change and its consequences. The narrators are individuals with no scientific expertise; or, as in Zeno's case, they consciously omit knowledge about climate change that exceeds the personal realm. The focus on individual perspectives in stories of the Anthropocene allows for the telling of unique, personalized experiences despite humankind's presumed unified dominance. Second, Anthropocene chronicles use a form similar to that of traditional diaries, with the narratives comprised of individual entries. These entries often deal with discrete episodes and encounters with no direct relation to each other. Thus, the texts appear fragmentary and selective. For instance, it remains unclear how much time has passed between individual textual accounts, or how encounters not depicted in the actual narrative have shaped the perspectives of the narrators. The structure emphasizes it is the narrator's choice as to what will be included in their personal Anthropocene chronicles. The third and last defining feature is their personal language. Due to the singularity of their individual human experiences, the narrators must convey their perspectives through language. Here, they frequently turn to metaphors to compare their experiences and perceptions to familiar general ideas and objects. In both texts, for example, the narrators describe climate change as a disease caused by human behavior. Their language differs greatly from how we normally speak about climate change and other environmental perils within the public discourse, or in the context of the natural sciences. Thus, it has the power to grab the readers' attention and examine the topic in uncommon, and surprising ways.

In the course of this chapter, I look more closely at these three distinctive features. At first, I analyze the function of the human first-person narrators and their individual strategies for describing climate change. What are their motivations for documenting their experiences of the Anthropocene, and with climate change in particular? Are they turning to a possible audience, or are their narratives purely self-reflections not intended to be read by other humans? Afterwards, I turn to the structure of these Anthropocene chronicles. The texts' composition of individual entries

creates breaks in the overall narrative. The narrators decide which experiences they regard as important and noteworthy, while omitting encounters deemed as insignificant. What is the effect of this selectivity? Can these narratives be read as a whole, or do they instead consist of individual episodes? In the last part, I analyze the language, and here especially the metaphors used to refer to climate change. What is the strength of describing commonly discussed issues in different ways? The interplay of these three distinctive features creates counter narratives to how climate change is generally discussed and portrayed in public discourse. These new methods have the power to grab the attention of their audience in unconventional ways that can then strengthen engagement with the topic outside of the literary realm.

Experiencing Climate Change on a Personal Level: the Significance of Human First-Person Narrators in Anthropocene Chronicles

The concept of the Anthropocene, with its implication that humankind and their activities have become the dominant influence on Earth's planetary processes, assumes that humans have become a unified power, though the way humans across the planet experience environmental changes caused by their actions is often quite varied. When it comes to climate change, for example, visible consequences of an altered climate have begun to surface in places such as the Maldives, where rising sea levels threaten to flood the island state's territory.[50] Literature and literary voices can help to represent these diverse realities in Anthropocene chronicles, which are a distinctive subgenre of German environmental literature.

Ilija Trojanow's novel *EisTau* is written primarily from the perspective of its first-person narrator, the scientific lecturer Zeno Hintermeier. Through analepses in his text, Zeno reveals he worked as a glaciologist in his former life but left his job when a glacier in the Alps he had studied throughout his entire career melted. After the loss of *his* glacier, Zeno learns of an opportunity to

[50] See Pal and Ghoshal for a current overview of the consequences of climate change in the Maldives.

work as a scientific lecturer on an Antarctic cruise ship. After some initial doubts, Zeno takes the job on board the MS *Hansen* believing that he can educate the tourists with his expertise. While he becomes acquainted with the other scientific guides and even begins a romantic relationship with a bartender from the Philippines, Zeno remains a lone wolf who keeps his thoughts and opinions hidden. Zeno as a literary figure and narrator follows the stereotype of the so-called 'mad scientist.'[51] His passion for his scientific work, and his love for glaciers, exceeds the ordinary; over the course of his career Zeno has developed a strong emotional attachment to the icy mountains that are at risk for disappearing as climate change progresses. In his written account, for instance, Zeno compares his bond with the glacier he researched to the bond forged between an old loving couple: "Wir waren wie ein altes Liebespaar […]" (Trojanow 51, We were like an elderly couple […]).[52]

During the most recent cruise to Antarctica, during the course of which Zeno writes his narrative, the well-known performance artist Dan Quentin joins their journey. For his newest project, Quentin wants to take an aerial shot of Antarctica while the cruise ship's passengers form the SOS symbol. While Quentin intends to draw greater public attention to the endangerment of the glaciers and the overall existence of climate change, he also seeks to sell his photograph for profit. During the actual art performance, Zeno hijacks the emptied cruise ship, leaving all but one passenger and the remaining crew behind. His hijacking of the MS *Hansen* grabs the attention of the media and triggers a large-scale rescue mission. Zeno's escape ends with his suicide when he jumps into the Arctic Sea, bemoaning his human existence (cf. Trojanow 164). During these final pages of his report, presumably composed in the last hours of his life, Zeno transforms from the mad

[51] See Haynes for an overview of the portrayal of scientists figures in Western literature. The 'mad scientist', or alchemist, is here one of six recurring stereotypes that are used to characterize the scientist figure in Western literature from the Middle Ages onwards (3-4). The most prominent 'mad scientist' figures can be found in German and English literature in the eighteenth and nineteenth century; examples are here Goethe's Faust, or Mary Shelley's Frankenstein who have influenced the literary trope ever since.
[52] This and all following translations of Trojanow's novel are included from the text's English translation by Philip Boehm.

scientist to a climate extremist. When his concerns for the environment, and the glaciers in particular, are not shared by the tourists or his fellow crew members, Zeno turns to drastic action to emphasize his black despair for the fate of the planet.

The publication of Trojanow's *EisTau* in 2011 was widely anticipated, since Trojanow, at this point already a bestselling author, was the first prominent German writer to deal with the topic of climate change. Trojanow conceived of the idea to write a novel about climate change after a dream he had, or what he himself calls a nightmare. He describes seeing, "[…]ein Mann liegt auf einer Geröllhalde, umgeben von einem Gletscher, der nicht mehr existiert. Der Mann ist Glaziologe, er hat das Objekt seiner wissenschaftlichen Leidenschaft für immer verloren. Er ist unendlich traurig und ratlos" (Requiem auf die Zukunft, A man lies on a scree, surrounded by a glacier that does not exist anymore. The man is a glaciologist; he has lost the object of his scientific passion for forever. He is incredibly sad and helpless). Following the dream, Trojanow, who also included this particular scene in his text, began to draft the general elements of his plot (set the novel in Antarctica, make the glaciologist the narrator, and include a cruise ship) and personally embarked on a cruise to Antarctica. Early reviews of the novel criticized this apparent proximity between Trojanow and Zeno, regarding the narrator as Trojanow's literary mouthpiece.[53] Despite their shared pessimism for the future of the environment, their apparent similarities are a commercial pose aimed to spark interest in the work rather than an indicator of an auto-fictional narrative. [54]

[53] See, for example, Bartels. He claims "[s]o spricht Zeno, Trojanows Glaziologe und Ich-Erzähler – und klingt dabei oft wie Trojanow, der Zeitungskommentar." (In this context, Zeno, Trojanow's glaciologist and first-person narrator – and sounds often like Trojanow, the newspaper commentator).

[54] Before *EisTau*'s publication, the Austrian newspaper *Der Standard* published Trojanow's article "Requiem auf die Zukunft" in which he explained in detail the writing and research process for his narrative. Especially Trojanow's conversations with an actual glaciologist have influenced his own gloomy view of the future. This pessimism becomes further evident in the article's title. When he ends his article with the rhetorical question, "Kann die Literatur mehr tun, als einen Einzelnen zu beschreiben, der sich wehrt" (Can literature do more than to describe an individual who resists?), Trojanow also reveals a glint of hope. His position as a writer allows him to tell stories of human individuals who disagree with the state of the world. These literary counter perspectives can then function as stories of resistance and initiate a change.

Due to Trojanow's prominence as a writer he does not need to speak through his literature figures, as he is given ample opportunity to state his opinions on political and social topics.[55]

Within the public reception of Trojanow's work Zeno's role as literary figure and narrator has faced repeated criticism.[56] In the style of the work's English title, Zeno *laments* the current environmental destruction caused by human actions and the indifference of his peers towards the anthropogenic changes they have created. Despite his scientific background as a former glaciologist, he does not educate or inform about the devastation of the Antarctic glaciers. He does not offer any possible solutions on how to stop the worsening of the conditions. Instead, the pages of his notebook, in which he pens his report, are filled with bleak episodes from his past and pessimistic prognoses of the present and the future environments. The narrative offers no human perspectives other than Zeno's; every incident is depicted through his subjective lens, making him not only the text's narrator but also its sole focalizer. The term focalization was first coined by the literary theorist Gérard Genette, who described it as "[…] a restriction of field – actually, that is a selection of narrative information with respect to what was traditionally called omniscience" (74). Zeno's narrative is influenced by his subjective and personal views and only contains the information he is willing to reveal, hence his descriptions can be specifically characterized on the basis of Genette's term as internal, intradiegetic focalization. This means that Zeno is part of the story world he is describing, since he observes and/or interacts in all the encounters he includes in his narrative. His report offers a restrictive perspective of the events and experiences he chooses to record. Zeno's

[55] After the National Security Agency (NSA) obtained secret information and data from foreign governments such as Germany, Trojanow publicly criticized this practice and was denied entry into the United States. In later interviews Trojanow renewed his criticism against the United States for violating privacy rights as well as against Germany for its failure to act after the US infringement (cf. Kuzmany). Trojanow continues also to openly state his concerns for the growing inequality among human societies due to the impact of global capitalism (cf. Welzer and Unfried)

[56] Hamdorf calls Zeno a "Übermenschen" (Über-human) who walks on a fine line between engagement and delusion for his glaciers (cf. Hamdorf). In his review for *Der Tagesspiegel*, Bartels describes Zeno as a "soulless" ("Lebendig wird dieser Zeno dennoch nicht […].") figure who does not trigger any empathy within the reader, when he concludes, "das Schicksal von Zeno aber […], das alles lässt einen merkwürdig kalt" (Zeno's fate though […] leaves the reader cold).

omnipresence creates a form of unreliable narration through the use of opinionated descriptions about climate change and the slow degradation of the glaciers in Antarctica. Thus, the depictions of the environmental threat are – unlike in science writing – subjective, emotional, and biased.

Throughout the entire text Zeno emphasizes that he is different from his human peers. This becomes particularly evident by repeated condemnation of the actions of those around him; Zeno, for example, harshly criticizes the behavior of the cruise ship passengers and regards them as significant contributors of climate change.[57] In the beginning of his work as a guide, Zeno had been optimistic that he could encourage the tourists' concern for the environment, saying "[…] Eis zu erklären, das war es, was mich von Anfang an für diese Aufgabe eingenommen hat […]" (Trojanow 30, […] it was the chance to talk about ice that inclined me to take the assignment […]). Moreover, he had even believed his scientific expertise could shape the passengers' view of the ice, stating "[d]ie Passagiere fühlen sich verpflichtet die Antarktis zu erwissen […], das kommt mir gelegen, erlaubt es mir doch ihrer Sicht auf das Unbekannte meinen Stempel aufzudrücken" (Trojanow 32, These passengers feel an obligation to ground themselves, to learn what they can about the Antarctic; […] that suits me just fine, by all means permit me to influence your vision of the unknown). As human activities had begun to leave marks in the environment, Zeno initially believed his lectures had the power to leave his mark ("Stempel") on the tourists and inspire permanent changes in their actions. In his initial optimism Zeno had assumed he could erase, or at least soften, the anthropogenic marks in the environment with his own imprints, which sought to

[57] During his report, Zeno criticizes harshly capitalist promise to have a product and gadget for nearly any human desire. He condemns this urge of possessing and purchasing items, declaring "[…] dieser Tage bewohnt jeder hierzulande sein eigenes Museum. Manch einen Gegenstand hatte ich vergessen: das elektrische Tranchiermesser, die Brotschneidemaschine, den Joghurtmaker, ausreichend Schuhwichse für eine glänzend polierte Ewigkeit, ungezählte Sonnenbrillen, Gürtel, Taschen, […]" (Trojanow 72, […] people here all seem to inhabit their own museums nowadays. Some of the objects I had forgotten: the electric carving knife, the bread slicer, the yoghurt maker, enough shoe polish for a very shiny eternity, countless sunglasses, belts, purses.)

renew humankind's appreciation of the environment and which would hopefully lead to an overall change in their lifestyles.

Zeno's optimism quickly begins to fade though, when he realizes his insights on glaciers can neither change the tourists' perspectives nor alter their habits in any lasting way. He recognizes, "[…] ich weiß aus Erfahrung, sie werden durch die Einblicke der nächsten Tage andächtiger gestimmt werden, aber soll ich deswegen ignorien, dass sie auch nach der Heimkehr auf ihre zerstörerische Bequemlichkeit nicht verzichten werden?" (Trojanow 38, […] I know from experience that the insights they will gain during the next few days will put them in a more reverent mood but does that mean I should ignore the fact that this reverence will dissipate as soon as they're back home, that they aren't about to renounce their comfortable lifestyle, despite all the harm it causes?). As in his job as a glaciologist, in which he witnessed the decline of the object of his research, his job as a scientific lecturer appears increasingly meaningless to Zeno. Despite the information he is able to share with the tourists, and their unique opportunity to see first-hand the decline of the glaciers in Antarctica, their new insights will add to their existing knowledge of climate change but will ultimately not alter the behaviors that contribute to the progression of the environmental threat. In his harsh judgment of the tourists, and of humankind in general, Zeno does not make a distinction between individuals but instead regards them as a collective group; to him, they are all equally responsible for the creation of climate change and the destruction of his beloved glaciers. This juxtaposition between Zeno, who presents himself as a climate extremist, and the tourists he presents as climate culprits, humankind is divided into two camps who could not be more different from each other. Being confronted with these two extreme groups, readers are challenged to reflect on their own role in the creation of climate change and other environmental dangers. Here, Goodbody argues that "the book eventually seeks to challenge readers to find a third way between the tourists' indifference to climate change and Zeno's misanthropy, despair, and eventual suicide […]" (Goodbody 2013, 97). When neither Zeno nor the passengers of the MS

Hansen respond to the challenges of climate change in a constructive manner, the narrative indirectly encourages readers to contemplate their responsibility in the creation of the environmental threat. Would they be willing to change their actions if they could see what the tourists saw?

Reader response theory aims to analyze the role of the reading audience and studies their reactions to works of literature. Here, environmental literature and its direct connection to real-world ecological threats is analyzed as to how it addresses the readership and potentially influences readers' perspectives and actions. Wolfgang Iser's concept of the *implied reader* investigates the different ways in which narratives can include the reader in their respective plots. Situated in the field of Anglophone literary studies, Iser exemplifies in his homonymous book how the literary genre of the novel has sought since the beginning of the eighteenth century "[…] to involve the reader in the world of the novel and to help him understand it – and ultimately his own world more clearly" (xi).[58] Ultimately, neither of the Anthropocene chronicles, *Falsche Himmel* or *EisTau,* seek to entertain their readers with a story about climate change; rather, they encourage their readers to contemplate the issue in the context of their own lives while also reflecting on their own responsibility. Here, the reader goes on a journey of discovery with the help of the literary narratives. Iser explains,

> The reader discovers the meaning of a text by taking negotiations as his starting point; he discovers a new reality through fiction which, at least in part, is different from the world he himself is used to, and he discovers the deficiencies inherent in prevalent norms and his own restricted behavior. (xiii)

Iser describes that through discovery[59] readers first learn to understand the world of the fictional plot, and then, despite its differences to their own reality, draw parallels to their own lives. Here, it

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[58] Among the works Iser examines in his work are Bunyan's *The Pilgrim's Progress* (1678), Fielding's *Joseph Andrew* (1742) and *Tom Jones* (1749), Smollett's *The Expedition of Humphry Clinker* (1771), Scott's *Waverley* (1814), Thackeray's *Vanity Fair* (1847), Joyce's *Ulysses* (1914), and Beckett's *Malloy* (1951) and *Malone Dies* (1956).

[59] Iser later describes discovery as "[…] a form of esthetic pleasure, for it offers the reader two distinct possibilities: first, to free himself; […] and second, actively to exercise his faculties – generally the emotional and the cognitive." (xiii)

is likely that negative aspects in the fictional plots, such as flaws and shortcomings, attract reader interest in the same way positive examples do. In Trojanow's *EisTau* the reader is not only confronted with the threat of climate change, but also with Zeno's ongoing criticism of human behavior and blame for the altering of climatic conditions, which he assigns to humanity at large. His pessimistic tone offers no actual solutions to combat or stop climate change. Thus, it is up to readers stimulated by the narrative to reflect on ways of fighting climate change as they implement changes in their own lifestyles.

Liane Dirks' *Falsche Himmel* is set in a future world with a drastically altered climate described here by an anonymous female first-person narrator. Her narrative could be regarded as a diary, with most entries preceded by the notion of the date and the day of the week, the exact time, the ozone level, and the condition of the sky. Despite the documentation of these specific numbers, the exact year is missing. The absence of this particular detail appears odd but frees the narrative from any liability for predicting the planetary future. The female first-person narrator also never reveals her exact geographical location and only makes references to her former life, which seems similar to the present living conditions in Western Europe. Her narrative is written in the last physical notebook she could find among the deserted desks and file drawers of a former office on the eighteenth floor of a tower building. There, she lives with her daughter and several others, though the majority of the city's population has begun to move out of the city and into pre-industrial communities in an effort to escape the hazardous climate and the difficult living conditions. The once comfortable city has no access to clean water and utilities have been almost entirely cut off. The female narrator and her daughter are aware that their time in the city is finite; if they want to survive, they will need to follow the others out of the city.

Despite the diary-like structure, the narrator's report focuses not on the present, but on the past. The new reality of climate change, with its many perceptible consequences, and the drive of her fellow humans to move on and adapt to the changed living conditions, threatens to erase the

past.[60] While material remnants such as buildings might be destroyed as a result of the new environmental conditions, in the far more distant future there may be no traces left by which to inform future others about the history of humankind and the details of their eventual demise. These circumstances trigger her chronicle, which she regards as a finite reflection of the past; she writes of a time when people knew about the potential threat of climate change, but nevertheless continued living as they always had, ignoring the fatal consequences of their behavior. In the present day, as climatic conditions grow more hazardous, society still shows little desire to learn from the mistakes of the past. They instead continue to readjust their lives, while the female narrator is torn between moving on and looking back. The few passages that describe the narrator's new life in a world impacted by climate change are fragmentary and appear foreign to today's reader. In her review of Dirks' text, Ebeling criticizes this selectivity in describing the future: "Die Erzählerin bewegt sich zwischen Innenschau, Beschreibung der Verhältnisse und philosophischen Betrachtungen. […] – nichts wird auserzählt und die Kunst der Auslassung will der Autorin hier nicht gelingen" (Ebeling, The narrator moves from personal reflections, descriptions of the conditions to philosophical renderings. […] nothing is fully narrated, and the author is not successful with her take on the art of omission.). The fragmentary and selective character of the personal narrative that is criticized by Ebeling shares similarities with Zeno's text; the anonymous female narrator only reveals information she deems important while consciously holding back other fact. Thus, her text mirrors her entirely subjective experience as a human individual.

The most obvious difference between these two Anthropocene chronicles is their subjective depictions of the visible consequences of climate change. Though Zeno notices the decline of the

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[60] Watching her fellow humans cope with the realities of the altered world, the narrator, for instance, states: "Sie machen nämlich schon weiter […]. Immer machen sie weiter, die Überlebensspezies Mensch, die Anpasser-Erfindung des Holozäns. Bloß nicht innehalten, nur keine Pause!" (Dirks 110, They that is to say are already moving on. They are always moving on, the human survival species, the Holocene's invention of adaptation. Never pause, never rest.)

glaciers in Antarctica, to the tourists and readers alike these changes remain undetectable due to a lack of familiarity with the polar region. In contrast, the narrative world in *Falsche Himmel* bears more similarities to environments familiar to the readers, despite its futuristic setting. Moreover, the female narrator focuses on aspects of her life that have significantly changed as the effects of climate change became increasingly perceptible. She wonders, for instance: "Seit wann gibt es das Telefon nicht mehr? Auch so etwas. Wieso habe ich mir das nicht gemerkt oder es zumindest aufgeschrieben? Das ist doch ein Einschnitt, und ich notiere es nicht. Telefon, Handy, Internet, die ganze Technik" (Dirks 102, "When did landlines disappear? Another one of these examples. Why did I not remember the time or at least wrote it down? That is a critical moment, and I don't list it. Telephones, cell phones, the internet, the whole technology).[61] When listing examples of technical devices that have vanished, the female narrator omits the reasons and/ or particular circumstances that led to their disappearance. Here, the narrator consciously creates what Wolfgang Iser in his works on reader response theory has called *Leerstellen* (gaps). He explains: "Thus whenever the flow is interrupted and we are led off in unexpected directions, the opportunity is given to us to bring into play our own faculty for establishing connections—for filling in the gaps left by the text itself" (282). According to Iser, omitted pieces of information within literary narratives require reader participation. By leaving out the exact reasons for the altered living condition, the narrator in *Falsche Himmel* turns indirectly to her readership. She wants them to begin questioning what has provoked the loss of everyday devices such as cellphones, and how their own lives would be altered without these gadgets. Due to the lack of information included in the narrative, these questions and their respective answers are open to interpretation. Each reader could envision a different scenario and thus establish their own subjective connection between the narrative world and their realities.

The gaps within contemporary German Anthropocene chronicles also mirror the general uncertainty and invisibility that surrounds the topic of climate change. As scientists acknowledge

[61] This and all subsequent translations of Dirks' *Falsche Himmel* are my own.

the factor of uncertainty in their predictions on climate change the narratives echo this uncertainty in the exclusion of selective details. In literature though, this uncertainty can be used as a strategy to engage the reader. Instead of creating detailed fictional narratives of climate change, these German narratives describe glimpses of the new realities brought about by climate change and encourage their readers to contemplate their personal responsibility for its creation (*EisTau*), or its future consequences (*Falsche Himmel*). The first-person perspectives of the human narrators that are characteristic of these Anthropocene chronicles are not a weakness but a strength, providing new angles on the issue that are absent from media coverage or scientific discourse. Here, climate change as a global threat has moved into the personal sphere and the narratives portray what Stephanie LeMenager calls the "everyday Anthropocene" (223). She defines, "[b]y everyday Anthropocene I imply the present tense, lived time of the Anthropocene, and I recommend paying attention to what it means to live, day by day, through climate shift and the economic and sociological injuries that underwrite it" (225). While both narrators reflect on their personal pasts via analepses, they are writing their reports in the narrative present. Thus, even their depictions of the past are tinted by their experiences in the here and now. Unlike Hollywood blockbuster movies about climate catastrophes such as Roland Emmerich's *The Day After Tomorrow* (2001), their narratives do not focus on the spectacular and extraordinary aspects of climate change but rather depict the new normal, or what is yet to come.

Both Zeno and the female narrator turn to writing to document their personal perspectives, inspired by a similar sense of disillusionment and frustration with their human peers. In their mode of narration, they resort to one of the most exclusive forms of human communication. While writing can be a reclusive practice, both narrators leave a physical marker of their existence that contains their thoughts and feelings. Zeno's report for instance, written in his leather-bound notebook, appears to have been found on the cruise ship after his suicide (cf. Preece 114). In a similar fashion, the report of the female narrator in *Falsche Himmel* could have been discovered by humans who

came after her. Neither of the writers, however, directly reveal if their texts are intended for a possible audience; rather, they explain the significance of writing for themselves. In *Falsche Himmel* the female narrator seeks to gain a form of closure. By finishing her report, she exclaims: "Ich werde Ordnung hinterlassen. Ein weibliches Relikt" (Dirks 8, I want to establish order. A female relict.). The activity of cleaning up and organizing comprises part of her daily routine. She describes going through files and folders to organize the objects left behind in the office building, setting aside the important items for whoever will come after her. As the narrator herself admits, she is taking care of things often regarded as women's tasks. But the documentation of her experiences and feelings also brings a form of closure that helps her find her voice and accept the new reality of the Anthropocene with climate change.

Despite the female voices in the previous chapter on nuclear disaster narratives, writing about the environment has historically been a male practice (cf. Windfuhr 435-37). But the new reality of the Anthropocene and the demolition of established societal structures allows the female narrator in *Falsche Himmel* to express her personal perspective. In her former life, she, just like the female narrator in Wolf's *Störfall* or Janna-Bertha in *Die Wolke*, was widely excluded from the public discourse on climate change. In her contemplation of the past, she admits, "viel zu spät habe ich erkannt, was ich hätte sagen müssen. Es hätte nichts genutzt. Insofern ist es egal, wann man etwas macht" (Dirks 22, I have recognized too late, what I should have said. It would have not made a difference. Therefore, it does not matter, when one is doing something.). Written in the subjunctive form, she reflects on missed opportunities to speak up about climate change. In the past, her search for the right words had caused her to miss opportunities to speak up about climate change, which has since transformed from a risk to an active peril. Now that its consequences have become irreversible and words and actions have failed, the female narrator is still penning down the thoughts she wished she had shared earlier, whether or not her text will ever be found and/or read by another human being. Her missed opportunity to speak about her concerns of climate change

has proven to her the importance of using our human voice instead of remaining a quiet witness. Her statement could be understood as an indirect plea to a possible reading audience, to encourage them to articulate their experiences and emotions in any possible form.

The narrator's new gained confidence in expressing her view is related to her move to the urban tower building. The high rise building offers an elevated perspective of her surroundings and an overview of what is going on in the city, which strongly differs from her previous life in a townhouse in the suburbs.[62] She was aware of the earlier scientific warnings about climate change during her old life, when she'd read about it in newspapers and magazines, but at the time she hadn't felt competent to speak up about her concerns, choosing instead to listen to those deemed trustworthy to talk on the issue.[63] While she paid attention to the forecasts of scientific experts, the looming climate catastrophe was also frequently remediated in media and film for the purpose of entertainment rather than education.[64] But now, the reality has turned into one of these disaster films, when the female narrator states,

> Das habe ich lange nicht mehr gedacht, dass ich mir vorkomme wie im Film. Aber mir fällt gerade auf, dass ich das eigentlich noch nie gedacht habe. Das haben immer andere getan.[…] Ich glaube jetzt, es war eine richtige Ära, man lebte nur vermeintlich. Man war gar nicht richtig da. Wer nicht da war, hatte keine Verantwortung. Wer keine Verantwortung hatte, konnte aalglatt eintauchen, in das, was dann kam: diese hirnlose, taumelnde Oberflächlichekit und das sich Festkrallen am schwindenden Bestand. Diese engstirnige Blödigkeit, mit der man von der Zukunft wegsah. (Dirks 137)

(It's been a while that I felt I was part of a movie. However, I am just remembering that I have never thought that before. It was the others who did that. […] I believe it was an actual era, one only pretended to live in. One wasn't even actually there. Who wasn't there, did not have to take on any responsibility. And who didn't have responsibility, could directly dive into what followed: this

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[62] She states, "früher hatte ich aber auch nicht soviel Überblick, ich lebte in einem Reihenhäuschen in der Vorstadt" (Dirks 25, In the past I had less of an overview; I lived in a small-town house in the suburbs.).
[63] The female narrator says, "Die Metereologen sagten, sie hätten es eigentlich schon immer gewusst, das Wetter entwickle sich chaotisch. Es gäbe Sprünge in der Evolution. Und tatsächlich hatten sie es ja schon immer gewusst, einige von ihnen hatten es sogar gesagt. Ich habe ihre Artikel ja ausgeschnitten, ich habe das Zeug ja eine Zeit lang gesammelt" (Dirks 24-25, The meteorologists said that they had always known that weather develops amorphic. There had been leaps in its evolution. And in fact, they had always known, some of them had even said it. I have cut out their articles; I have collected the stuff for a long time.")
[64] One of the first and most popular movies about climate change was Roland Emmerich's *The Day after Tomorrow,* released in 2004. Since then, there have been made numerous other movies whose plots evolve around a climate collapse. See Svoboda, 43-64, for an overview of these movies and an analysis of their representational strategies.

brainless, drunken superficiality, clinging to the disappearing existence. This narrow-minded stupidity with whom one looked away from the future.)

For the first time ever, the narrator believes that she is part of a movie. Moreover, she distances herself from her fellow humans who would not acknowledge climate change as an imminent threat and therefore neglected their responsibility to alter their behavior. Moreover, because they believed climate change only existed in the movies, and would never affect their own lives, they continued with their indifferent actions.

Zeno shares sentiments similar to those of the nameless female narrator, though his harsh criticism of humankind's destructive behavior turns into action; Zeno's suicide marks his final escape from his human identity. His humanness is what he shares with those who are complicit in the creation of climate change. Before he decides to jump from the MS *Hansen*, he states,

> Der einzelne Mensch ist ein Rätsel, einige Milliarden Menschen, organisiert in einem parasitären System, sind eine Katastrophe. Ich bin es leid, unter diesen Umständen Mensch zu sein. […] Früher glaubte ich, ich müsste mich wehren gegen die schleichende Misanthropie, heute ist mir klar, dass wir den Menschen von seinem Sockel stoßen müssen, um uns zu retten. (Trojanow 167)

(One human being is an enigma, a few billion human beings organized in a parasitic system are a catastrophe. Under these circumstances I'm just tired of being human. […] I used to believe I had to fight my insidious misanthropy, today I realize that we have to topple humans off their pedestal in order to save them.)

In his fatigue with being human, Zeno's metaphorical pleas for ending anthropocentrism and humankind's planetary dominance are turned into action when he commits suicide by jumping from the MS *Hansen*. His suicide represents his disbelief that humankind can change. The use of the personal pronouns "we" and "us" causes confusion in this passage. While the pronouns of the first-person plural are often used in environmental literature to create a sense of a mutual engagement of readers, authors, and narrators in environmental issues, it remains unclear whom Zeno addresses with these words, especially as he has decided to distance himself from the majority of

human society. This moment of confusion, once again, functions as a gap that allows for Trojanow's reader to begin personal contemplations.

I read these last moments, Zeno's finals thoughts, as a direct plea to his possible readers. While his suicide proves that he himself has lost any hope that humankind will change and stop their destructive actions, he nevertheless encourages his fellow human beings to question their own superiority if they want a chance for survival. Losing their planetary dominance would come with constraints that would likely affect their comfortable modern-day lifestyles. But according to Zeno, these sacrifices are their only chance. In this last paragraph of his text, Zeno ends his harsh criticism and instead offers a possible solution to the future climate threat. Reading this last paragraph as Zeno's appeal to his readers correlates with his overall intention for writing the narrative, which he reveals at the beginning of his personal chronicle. With his writing, Zeno intends "[…] aufzuzeichnen, was geschehen ist und was geschehen wird. Ich werde zum Worthalter des eigenen Gewissens. Etwas muss geschehen. Es ist höchste Zeit" (Trojanow 18, […] hence my decision to describe what has happened, what will happen. I shall be the word-keeper of my own conscience. Something has to happen. There's no time to waste.). His moral duty and his deep concern for the environment have motivated him in his work as a glaciologist and later as a scientific lecturer. But once his attempts failed to positively impact the perspectives and actions of other humans, he, like the female narrator in Dirks' *Falsche Himmel,* turns to writing by hand to put his thoughts and experiences down on paper.

Their narratives, which I call Anthropocene chronicles, contain their individual perspectives and become the physical remnants of their existence in this new geological age. While their concerns went unheard when there was still time to act, their texts function as an outlet for their contemplations. Their roles as seeming outsiders in modern-day western societies draw parallels to well-established literary figures: Zeno, with his pessimism and misanthropy, relates back to the 'mad scientist' figure, whereas the nameless female narrator represents a modern-day Rapunzel as

she observes her environment and her fellow humans from the isolation of her elevated position in the office tower building.[65] Their past experiences and their present encounters in the Anthropocene shape their narratives as their reflections move from the past to the present and back again. The asynchronous and fragmentary character of their texts is further emphasized by their overall structure, which becomes the second defining element of these Anthropocene chronicles.

Writing in Fragments: the Narrative Structure of German Anthropocene Chronicles

In their overall structure German Anthropocene chronicles resemble traditional diaries as their narratives consist of a number of individual entries written at different times and in different places by their first-person narrators. These time and spatial interruptions create a fragmentary character that is visible in the texts' appearance but which also becomes noticeable within their plots. While the resemblance to diaries further emphasizes the personal tone of these literary works, their subjective and selective nature is also noticeable in their disrupted structure; here, the first-person narrators determine which of their encounters are noteworthy and which will remain unbeknownst to their readers.

Ilija Trojanow's *EisTau* is structured into two larger parts: chapters preceded by Arabic numerals and geographical location coordinates,[66] which include Zeno's report, and chapters that

[65] Watching the other people flee the city, the female narrator describes: "Allerdings wimmelt es von Menschen. Es wird immer voller. Es findet eine ungeheure Bewegung statt, an der ich nicht teilnehme, die ich aber sehe. Von oben herab" (Dirks 8, It certainly swarms with humans. It becomes more crowded. There is an enormous movement happening, but I am not participating but which I am watching. From above.). While she is still in the process of recording her final reflections, she becomes a passive witness of how other human around here begin to adapt to the altered living conditions. This movement remind her of the movement of insects due to her visual and elevated perspective.

[66] The use of these geographical coordinates at the beginning of the chapters mimics the practices of how marine traffic is monitored and tracked by ports and other official marine institutions.

begin with Roman numerals and consist of montages from numerous texts, genres, and context.[67] In his analysis of the text Julian Preece explains the meaning of the parts not written by Zeno:

> According to the narrative conceit, Zeno's leather bound notebook […] constitutes to 90 per cent of EisTau's narrative. The rest is mainly made up of interludes of prose collage, snippets of advertising jingles and everyday speech which are intersped with snatches of news reports of the ship's hijacking or conversations between survivors or investigators. These sections present the context in which his action has taken place and demonstrate reactions to it. (114)

Borrowing from the vocabulary of music and drama, Preece refers to these chapters as interludes, a term originally meant to describe shorter pauses and interruptions of a play or a musical piece. According to him, the interludes represent the wider context of Zeno's actions and the world in which he has been living – and criticizing – from the very beginning of his narrative. The collage character of these sections – the seemingly random and confusing arrangement of different voices and sources – once again mirrors the fragmentary and selective character of the narrative as well as the boundlessness of the Anthropocene.[68] Climate change is one of the defining aspects of this new epoch of human dominance, but as it is interconnected to numerous other features it can be communicated and framed from endless angles and perspectives, though none are capable of presenting the Anthropocene or climate change in their entirety. Zeno's narrative poses a counter perspective to these public discourses, as he never claims to describe the issues in their totality, but instead only documents his personal experiences and feelings.

Additionally, the interlude chapters in *EisTau* are representative of the challenges in covering climate change within the media. Here, the delayed consequences of climate change fuel uncertainty about the future and contribute to the difficulties of representation (cf. Painter 8ff). Moreover, its slow and often hidden progression makes climate change a daily aspect of life in the

[67] The text's binary structure is only evident in the German original version of *EisTau*. The English translation by Philip Boehm is only divided into sections preceded by Arabic numbers that contain Zeno's documentations as well as the so-called interlude parts.
[68] In her literary analysis of *EisTau* Gabriele Dürbeck argues that the interlude chapters "[…] employ strategies of fragmented poetry" (Dürbeck 2014, 117). She further explains that this stylistic strategy mirrors the ambivalence and instability of the Anthropocene (cf. Dürbeck 2014, 118-119).

Anthropocene rather than an extraordinary and newsworthy event (cf. LeMenager 121). While weather forecasts and news about extreme weather events such as storms and floods are part of the daily news, their possible connection to climate change is often not emphasized or even clearly noticeable. Thus, the media coverage focuses on the event and does not attempt to inform about the larger context, or what may have caused these extraordinary happenings in the first place. *EisTau*'s interlude chapters mirror the short-lived news cycle, with the overemphasis on attention-grabbing headlines and slogans, and superficial and often times false information. The captivating titles and events of the interlude chapters blend together and do not appear to stand in direct relation to each other. The very first interlude chapter describes,

> Das sind Traummaße, kräht kein Hahn danach, das kannste dir abschminken, greifen Sie zu, solange der Vorrat reicht. Sir, Alarmsignal auf 406 MHz. Fassen Sie sich ein Herz, absolute Traummaße, danach leckt man sich die Lippen, dreizehn Monate Sonne, willkommen im Paradies, und Regen an jedem Tag. Notfunkbake? Ja, Sir. Welches Schiff? (Trojanow 19)

[Measurements to die for check her out I tell you, nobody gives a hoot, you can kiss it goodbye, grab yours now while supplies last. Sir, we're picking up a distress signal on 406 MHz Screw up your courage, measurements to die for, you'll be licking your lips afterwards, thirteen months of sunshine, welcome to paradise, and it rained every single day. Distress beacon? Yes, Sir. Which ship?]

In only this short excerpt, the emergency dispatch of Zeno's hijacking of the MS *Hansen* ("Notfunkbake" – "distress beacon") is reported alongside celebrity gossip ("Traummaße" – "measurements to die for") and ads for unnamed items ("greifen sie zu, solange der Vorrat reicht" – "grab yours now while supplies last"). While the interlude chapters hint at the possible ending of Zeno, the details remain unknown as the sentences about the accident are short and without details. They are, therefore, mostly incomprehensible and contrast with the chapters that contain Zeno's narrative. His text is subjective and selective, but the episodes and encounters he includes in his notebook are portrayed in a detailed manner.

The media's appetite for spectacular events and disasters becomes even more evident at the end of each interlude chapter in *EisTau*. Each of these segments end with the announcement of

some breaking news. In the fourth chapter, for instance, sources confirm the hijacking of the cruise ship, leading to the headline: "BREAKING NEWS MS HANSEN IN DER ANTARKTIS ENTFÜHRT BREAKING NEWS MS HANSEN IN DER ANTARKTIS ENTFÜHRT" (Trojanow 62, BREAKING NEWS MS HANSEN HIJACKED IN THE ANTARCTIC BREAKING NEWS MS HANSEN HIJACKED IN THE ANTARCTIC). Due to its all-caps font, the headline stands out in comparison to the rest of the text in this interlude chapter (as well as at the end of the other interlude segments). This strategy mirrors the ways in which the mainstream media aims to catch people's attention. These breaking news announcements often run across television screens while viewers watch programs entirely unrelated to the headers or the event itself; they manage to capture the viewers' interest for only a short time before their attention returns to their previous activities. The fleeting nature of the news cycle is also noticeable in these segments. Here, a fragmentary sentence follows the headline, which appears to be unrelated to the breaking news. In the fourth chapter, "und das bringt mir den einen" (Trojanow 62, And that brings me one) follows the news of the hijacking of the cruise ship.

Both Anthropocene chronicles also reveal the discrepancy between experiencing the effects of climate change and only seeing the consequences of an altered climate on television screens or in newspapers and magazines. Due to the spatial invisibility of climate change, in which the environmental peril and its immediate consequences are often displaced from their points of origin,[69] the media has functioned as a key source on the issue. In Dirks' *Falsche Himmel* the female narrator describes how she felt seeing the beginning effects of climate change happening in distant places:

> Die Hitze hat bereits vor mehreren Monaten eingesetzt, acht vielleicht oder zehn. Oder noch mehr. Davor gab es Wirbelstürme und in der Folge Überschwemmungen. Die Stürme zogen über den ganzen Kontinent, sie ließen Flüsse übertreten und Deiche brechen, Seen verwandelten sich in ganze Meere. Es war überall das gleiche Bild, ein Bild von Verwüstung

[69] Rob Nixon points to an inequality, describing that the effects of climate change are first perceptible in parts of the world that are not as involved in the creation of the threat itself. Nixon calls this feature of today's environmental perils "displacement in place" (cf. 17-21). Nixon argues that "[p]lace is a temporal attainment that must be constantly renegotiated in the face of changes that arrive from without and within, some benign, others potentially ruinous" (18)

> und Schlamm geeintes Europa. Und dieses Bild unterschied sich von den Aufnahmen, die wir von früher aus dem Rest der Welt kannten, von Thailand, Indonesien, Australien, Japan, Costa Rica, Florida und Bangladesch, höchstens noch durch die Gesichtszüge der Menschen: die Asiaten, z.B. das war immer so weit weg. Außerdem schwammen bei uns mehr Autos herum, bei ihnen sah man eher dünne Kühe. (Dirks 24)

(The heat has begun a few months ago; eight, or perhaps ten. Or even before. Before that, there were storms and subsequently floods. The storms moved over the entire continent, and caused rivers to flood and dams to collapse; lakes transformed into oceans. It was the same image everywhere, an image of Europe unified by destruction and mud. And these images were not much different from the pictures that we have seen before from around the world, from Thailand, Indonesia, Australia, Japan, Costa Rica and Bangladesh, except perhaps from the facial features of the people: Asians, for example, it was always so far away. Furthermore, there were more cars in our region compared to their skinny cows that were floating in the water.)

Despite the ability early on to see images of global weather catastrophes in other parts of the world, the population in Europe did not acknowledge climate change as an imminent threat to themselves. Instead, the narrator explains that the consequences appeared to be too far away. In the end, the people of Europe experienced the same extreme weather events and yet seemed no more prepared and aware of the danger than others had been before them.

The spatial invisibility of climate change and its effects poses an overall challenge for its representation, both in the media and in literature. In *Falsche Himmel* and *EisTau* the narratives are tied to one geographical setting; Zeno's journals document his experiences in Antarctica and the female narrator never mentions her exact location but indicates she has been living somewhere in Western Europe, or even specifically in Germany as she brings up the country's past separation (cf. Dirks 80). The tendency to describe climate change and its consequences only in the context of one geographical location appears restrictive, especially when attempting to acknowledge the threat's global dimension, but it also offers certain advantages. Since the narratives are able to travel to places where climate change and its effects have already surfaced and are visually perceptible, it becomes easier to describe the threat within the narrative. Trojanow's text, for instance, is set predominantly in Antarctica where overall increasing temperatures have altered the glacial environments. *EisTau* and its cruise ship journey to the southernmost regions of the Earth

resembles traditional travel narratives when Zeno describes the glaciers and other parts of the polar region that might be foreign to his readers. The descriptions Zeno penned in his individual entries throughout the journey are interrupted by analepses. These flashbacks have been triggered by present encounters, thus connecting Antarctica and Europe within the narrative level. Here, the sights of the glaciers in Antarctica incite memories from his work as a glaciologist in the Austrian Alps and are thus pointing to the global magnitude of climate change. The connections between these remembered places, often small and local, emphasizes its global scale.

Just like with Zeno's report, the account of the nameless female narrator in *Falsche Himmel* is divided into individual entries preceded by headings that either inform about the date and time, temperature and condition of the sky ("Zustand des Himmels"), or they are preceded by a title that relates to the following thematic focus of her entry. Despite its futuristic setting and the explicit references to date and time, the text omits any reference to the exact year. While the omission of this significant detail could be a conscious choice by the narrator, she explains that she is able to document the date and time with the help of the still-functioning clock in the foyer of the office building in which she resides. She depicts,

> Das Jahr sagt sie [die Uhr] nicht, man könnte vermuten, dass sie gebildet ist. Sie weiß um die Vagheit der Werte. […] Die Menschheit hat es nach tausenden von Jahren geschafft, sich auf eine Uhrzeit zu einigen, die zwar von Ort zu Ort verschieden ist, aber doch eine gemeinsame Basis hat. Keineswegs einigen konnte sie sich auf ein Jahr. Die Herkunft der Zeit bleibt also fragwürdig, ungenau. Wie soll sie denn da ein Bewusstsein haben. Zum Bewusstsein gehört Geschichte. Aber die Zeit lebt einfach nur im Jetzt. (Dirks 25-26)

(It [the clock] does not announces the year, one could assume that it is educated. It knows of the vagueness of the numbers. […] After thousands of years, humanity has managed to agree on a time that differs from place to place, but that has a common foundation. By no means were they able to agree on a year. The origin of the time remains questionable, imprecise. How should it then have a consciousness. History contributes to consciousness. But the time only lives in the now.)

The narrator reflects on the obscure beginnings of human time and its ambivalent character. The clock does not indicate the exact year, which is therefore also left out of the narrative. Moreover, the clock functions for the unnamed woman as a constant reminder of the existence of time. This ultimately initiates her reflections on the roots of time, which, as she explains, tend to vary from

culture to culture. While human societies have agreed on universal units for seconds, minutes, and hours, years remain an arbitrary element of time due to the varied beginnings of marking time across human societies. Owing to this discord, humankind has no shared history and/ or shared consciousness of time. Its rise in significance for humankind was largely enabled by economic practices, beginning with industrialization and the later emergence of global trade, technologization, and globalization. The existence of climate change and the severity of its consequences has put an end to these human practices. In this new post-technological era experienced by the female narrator, time has lost its past importance, and only the present moment – the here and now – is relevant. Thus, she marks many of her individual entries with the date of their composition, implying by doing so that something relevant has happened, which she deems noteworthy enough to record and refer to within her narrative.

This special textual structure emphasizes the fragmentary and selective character of her chronicles. In the beginning, she documents her experiences and emotions in daily entries, sometimes even several times a day. Over the course of the text, the time gaps between the entries becomes longer, though the narrator never reveals the reasons for this. Moreover, the encounters and events that occur in between her individual entries are never mentioned. Her fragmentary chronicle resembles a puzzle in which the narrator provides a frame and a few connecting pieces, creating gaps wherever pieces are missing. Once again, the reader is encouraged to find these missing pieces, or at least contemplate what might have happened in the meantime. Just as these narratives revealed gaps in their content due to the subjective perspective of their human first-person narrators, gaps are also evident in their structure, stimulating the readers' engagement with a text that is also relevant to their own lives due to the reality of the Anthropocene.

This new epoch of human dominance emphasizes the finiteness of time, which is also reflected on by the female narrator. She describes, "es gibt Öffnungszeiten und Schluss, manchmal jedenfalls, nicht immer, nicht ganz genau. Es gibt Ziele, Aufgaben, Wege. Wenn es auch andere sind

als die alten, so sind es doch Wege. Man geht sie" (Dirks 13, There are opening hours and closures, sometimes at least, not always, not always exactly. There are goals, task, and paths. Even though these paths are different from the old ones, there exist paths. And one is going them). The altered living conditions have affected human habits and their overall perception of time. These new ways ("Wege") are the timely moments she finds noteworthy and thus documents in her narrative. This selectivity is intensified by the fact that she only possesses a limited amount of paper on which to pen her narrative. The finiteness of the paper mirrors the finiteness of time and forces the female narrator to document only the experiences and encounters she considers meaningful and best representative of the Anthropocene and its reality of climate change.

Due to its futuristic setting, Dirks' *Falsche Himmel* appears to follow the footsteps of many works of Anglophone climate fiction and could prematurely be regarded as another literary example of this particular genre. The narrative, however, does not contain the genre's typical depiction of human advancement in science and technology.[70] Amitav Ghosh criticizes climate fictions' emphasis on depictions of future climate disaster. He states, "[Anglophone] [c]li-fi is made up mostly of disaster stories set in the future […]. The future is but one aspect of the Anthropocene: this era also includes the recent past, and most significantly the present" (72). By focusing on a future world with climate change, many literary narratives neglect the significance of the present. Due to the time-delayed emergence of climate change's consequences, literary narratives set in the future are able to portray the more drastic and visible consequences of the looming global climate disaster. The portrayals of the catastrophe in these narratives often appear exaggerated and their contribution to the discussion of real-world environmental and social problems is frequently diminished and downplayed (cf. Trexler 11). Despite its future setting, however, Dirks' narrative does not focus on portraying the spectacular. Instead, the female narrator describes selective

[70] See Schulz for an overview of the features of German science fiction literature.

experiences of her daily life that are representative of the new living conditions in a world where the consequences of climate change have fully surfaced.

The spatial and temporal invisibility that surrounds climate change directly impacts the structure of these German Anthropocene chronicles. Scholars such as Gabriele Dürbeck and Adam Trexler have argued that the emergence of this epoch is creating new literary genres reflective of this current geological age. Dürbeck, for example, identifies five specific narrative plots that are characteristic of Anthropocene literature: catastrophe and apocalyptic narratives ("Katastrophen- beziehungsweise Apokalypsennarrative"), justice narratives ("Gerichtsnarrative"), narratives of great transformations ("Narrative der 'Großen Transformation'"), (bio)-technological narratives ("(bio)technologische Narrative"), and interdependence narratives ("Interdependenz-Narrative") (cf. Dürbeck 2018, 13). These five dominant plotlines often cannot be clearly distinguished from each other and thus exist side by side in literature about the Anthropocene. Dürbeck's observation concurs with Adam Trexler's explanations on what he calls Anthropocene fictions.[71] He argues that the idea of the Anthropocene poses

> […] narrative difficulties […] [that] threaten to rupture the defining features of genre: literary novels bleed into science fiction; suspense novels have surprising elements of realism; realist descriptions of everyday life involuntarily become biting satire. For these reasons novels about the Anthropocene cannot be easily placed into discrete generic pigeonholes. (11)

According to Trexler, the emergence of the Anthropocene and its representation in fictional literature has created new hybrid literary genres that employ the features of various long-standing genres in order to show the full dimension of this modern geological epoch. In their explanations both Dürbeck and Trexler fail to comment on the distinctive narrative structure of literature about the Anthropocene and instead focus on defining features within the literary plots that are representative of the ambivalence of this geological age. Part of this ambivalence is the spatial and

[71] Adam Trexler explains that he prefers the Anthropocene Fictions, the title of his homonymous book, over climate change fiction due to its underlying assumption that an altered climate is a defining part of this new era (cf. 10-11).

temporal invisibility that accompanies phenomena such as climate change. Here, it is the narratives' structures that mirror the threat's visual imperceptibility during moments of time and across geographical locations. The interruptions within the text – the breaks between the individual entries – mark the moments of invisibility, too. While the individual chronicle entries in *EisTau* and *Falsche Himmel* document and depict their narrators' noteworthy experiences and encounters, the breaks between these segments signal that for the narrators nothing of importance is happening. These breaks in the narrative structure, similar to the gaps in the plots, allow for reader engagement and can function as starting points for the audience to begin their own contemplation on the events and their relevance for their own lives.

Subjective Language: Depicting Climate Change in a Personal Tone

The third defining features of the Anthropocene chronicles is their personal and often metaphorical language. This feature is also influenced by the genre's other two defining characteristics: the focus of the experiences and emotions of their human first-person narrators, and the fragmented structure of the stories. The fact that language is an essential and significant component in referring to modern-day environmental perils has already been made evident in the first chapter of my project in which I examine how the semantic broadening of familiar words, such as "Wolke," have helped to envision the movement of the invisible nuclear threat. Different from the material invisibility of the radioactive particles, the challenge of visually perceiving climate change lies in its temporal and spatial invisibility. Therefore, it does not come as a surprise when Rob Nixon declares in an interview with the independent online publication *The Climate Change Project*, "[…], yes, language matters" (*The Climate Change Project*). According to him, language has begun to reflect – and will continue to do so – the consequences of climate change. Nixon describes,

> Language bends and buckles under the pressure of the climate collapse. […] We're now witnessing, under the pressure of climate collapse, stirrings in the cemetery of dead metaphors. 'Glacier', 'ice', and 'snow' have become words supercharged with self-consciousness about climate breakdown (The Climate Change Project)

Due to the existence of global climate change, certain words, Nixon explains, have begun to receive new connotations. This is particularly interesting, as words used to describe weather and weather phenomena have a long-standing history in languages across cultures. In the Anthropocene these terms contain new meanings that stand in direct relation to the reality of climate change. The German title of Trojanow's text, *EisTau*, for example, is a compound noun that links the two familiar terms "Eis" (ice) and "Tau" (melting). While the melting of ice is not an uncommon process, especially at the end of winter, the compositing of these two words in the title is striking. Unlike in other compound nouns, here the second noun particle is capitalized, which draws attention to the uncommon synthesis of these two words. Thus, the unusual spelling of the compound noun indicates that the melting of ice is not a natural weather process but an unusual one caused by climate change.

The abstract nature of climate, with its often complicated demarcation from weather, influences the ways in which the threat of climate change is communicated. In Dirks' *Falsche Himmel*, for example, the female narrator documents the temperature at the start of most new entries. While the repeated recordings of outside temperatures resemble scientific and meteorological practices, the female narrator also comments on the meaning of this numeric value. When she notices the temperature display on the façade of another skyscraper through the window of her own dwelling, she states: "Die Welt hat Fieber: 42° C" (Dirks 42, The world has a fever: 42°C.). While the mere numeric value does not indicate any abnormalities, it is the female narrator's comments that point to the temperature anomaly. The narrator makes a diagnosis that the Earth is sick, and, just like humans, suffers from a fever. The disease the planet suffers from, however, cannot be medicated; the symptoms of climate change will linger and eventually will irreversibly alter environmental conditions. This notion of Earth's sickness is reiterated when the female narrator exclaims, "jetzt, […] ist die ganze Welt krank […] (Dirks 101, Now, […] the entire world is sick). The repeated use of disease as a metaphor emphasizes her anthropomorphic views of the

environment. Just like human beings, the planet and its environments suffer from the hazardous climate conditions. In none of her references to the health conditions of the Earth, however, does the narrator point to the cause of the disease. Unlike Zeno who denounces humankind as a parasitic system (cf. Trojanow 167) – an hierarchical order in which a group of organisms feeds on a group of weaker creatures and that can also cause diseases and infections – the female narrator does not hint with her anthropomorphic metaphors to the pathogens of Earth's disease. She also does not offer any explanations on how the Earth can be healed, indicating that the planet is suffering from a terminal disease.

Similar anthropomorphic metaphors and depictions can also be found in Trojanow's *EisTau*. Here, Zeno's anthropomorphic descriptions focus on the glacier he studied in his past profession as a glaciologist. Retrospectively via analepses, he details how he inspected the icy mountain and listened to its sounds. Zeno compares these sounds to a human voice only he is able to understand. He explains, "ein sterbender Gletscher klingt anders als ein gesunder, es rappelt heftig, wenn es entlang der Risse birst, und spitzt man die Ohren, hört man das Schmelzwasser fließen, zu untergründigen Seen, die den faltigen Körper schneller aushöhlen" (Trojanow 51, A dying glacier sounds different than a healthy one, it gives off a powerful rattle when it bursts along a crevasse, and if you listen closely you can hear the melt flowing into the underground lakes speeding the erosion of the wrinkled body). Combining the knowledge of his scientific research with his meticulous observations, Zeno was able to diagnose the glacier's decline based only on the sounds it made. He confidently states that the glacier is not only sick, but actually dying. Zeno also has no remedies that can halt the progression, leaving him merely a witness to its slow but unstoppable decline. Zeno's treatment of the glacier resembles what Jamie Lorimer's calls affective logic. Drawing from his own experience as a natural scientist, Lorimer describes this term as "[…] a particular mode of engaging with, knowing of, and feeling towards wildlife" (39), emphasizing the importance of engaging affectively and personally with objects of scientific research in the age of

the Anthropocene. In Zeno's case, this emotional connection to the glacier, and its ultimate demise, triggers his departure from science. Zeno realizes with the deterioration of the glacier that nature's sublimity has ended abruptly in the Anthropocene. Zeno as a human being, and the glacier as a geological feature, have become equal, mortal beings.

The use of anthropomorphism in environmental literature is a common strategy to trigger empathy and compassion for natural surroundings. While the concept of the Anthropocene in the early 2000s helped invoke the notion that human civilization and the natural environment are connected, the domains of nature and culture often continue to be regarded as two separated spheres.[72] The use of anthropomorphic modes to refer to and describe the natural environment, has a long-standing tradition across all cultures and has been used throughout human history in fable stories and fairy tales.[73] This strategy has gained a new significance in the age of the Anthropocene and in the wake of modern-day environmental threats like climate change. Here, Kim-Pong Tam argues

> By anthropomorphizing, people can experience a feeling of efficacy towards nonhuman entities: They can understand and predict these entities just as they understand and predict other people, and experience control over these entities just as they are capable of influencing other people. (277)

Tam explains that the human desire to comprehend other living beings outside of their own species leads to anthropomorphism. In their understanding of other species and non-human entities, human individual focus on the perceived differences between humankind and the other, such as the inability to communicate in forms and ways comprehensible to humans. Thus, anthropomorphism functions as a human projection for the purpose of expressing the feelings and language of non-human beings in ways understandable to humans. The use of anthropomorphic metaphors and

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[72] See Inglis and Bone, 272-287, for a brief historical overview of the nature/culture divide in European thought.
[73] See Moore, especially 43-98, for an historical account of the tradition of anthropomorphism in Western thought.

descriptions by Zeno and the female narrator signals their awareness of climate change and its serious implications for the future of the planet. Their ability to recognize the existence of the environmental threat despite its visual obstacles distinguishes them from their peers and impacts the ways in which they depict the environment in their Anthropocene chronicles. Moreover, their personification of the Earth and its environment, including its non-human inhabitants, points to their desire to protect and preserve these spaces and organisms in much the same way they would care for their own kind.

The more general human responsibility for the creation of climate change and other anthropogenic alterations to the natural environment is often summarized in the metaphor of the footprint. In scientific discourses on the environment, the term is often expanded to ecological footprint (in German, directly translated as Ökologischer-Fußabdruck) or carbon footprint (Kohlenstoff-Fußabdruck).[74] In an article for the *New York Times*, journalist William Safire traces back the origin of the metaphorical use of the term "footprint"; he explains the term first exceeded its literal meaning in Daniel Defoe's *Robinson Crusoe* (cf. Safire).[75] With the discovery of climate change and other environmental perils caused by human actions, the term gained new significance during the 1990s and early 2000s (cf. Safire) and has since been used to summarize the countless human activities that affect the natural environment. Here, once again, a familiar expression undergoes a semantic broadening while also receiving a metaphorical meaning; the trace of a single human body part is now used to symbolize the sum of all harmful human actions on Earth.

In *EisTau*, Zeno plays with the visual reference of the footprint and the metaphorical meaning of the term. Due to Antarctica's special ecological conditions, the results of human actions

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[74] Wackernagel et al. define the term as scientific accounts that […] compar[e] human demand on the planet's resources with the Earth's supply of biologically productive areas. Maintaining human use of such resources and services within the planet's regeneration capacity (or biocapacity) is necessary, although not sufficient, condition for sustainable human societies and economies" (464).

[75] In Defoe's famous novel the sight of human traces on the beach results in the questions "Where are those footprints headed?" While this question directly refers to the visible footprints in the sand, it also contains a more indirect meaning that points to human presence through visual traces in the environment (cf. Safire).

can be noticed for much longer than in other areas of the planet. Thus, Zeno wonders why humans, unlike animals, are inclined to leave visual traces of their actions. He contemplates, "wieso hinterläßt alles, was wir tun einen Abdruck (es braucht hundert Jahre bis ein Fußabdurck in der Antarktis verschwindet), wieso können wir nicht wie die Vögel in der Luft spurlos durch den Augenblick gleiten?" (Trojanow 76, Why is it that everything we do leaves an imprint (it takes a hundred years for a footprint in the Antarctic to disappear), why can't we simply glide through moments without a trace, like birds through the air?). His rhetorical question reflects on the natural qualities of humankind, and how even seemingly simple activities such as walking in certain places can have destructive consequences. The fact that it is possible for human footprints to be found even in remote places like Antarctica is due to advancements in technology and the human desire to travel, even to such remote places as the South Pole. Thus, in the Anthropocene the human footprint has exceeded its literal meaning; the term and its metaphorical meaning now include human actions that contribute to changes in the environment, such as traveling by airplane, or commuting to work by car. Zeno is aware of this broadened significance of the human footprint when he describes how humans have altered the once untouched regions of Antarctica. While the continent remains Earth's least densely populated landmass, Zeno recites the promise of tourist brochures about the Falkland Islands, which characterize the archipelago as one of the last untouched wonders of nature (cf. Trojanow 50).[76] However, appearances can be deceiving. Land mines from the 1982 Falklands War remain buried across many parts of the islands. These land mines present a direct alteration of the natural environments that can be harmful not only to the natural wildlife but also visiting tourists. But just like with climate change, the explosive danger is not perceptible to the human eye, because they are covered by soil and ice and remain widely invisible.

[76] Zeno reads in the brochure, "die Falklands gehören zu den wenigen unberührten Naturwundern der modernen Welt" (Trojanow 50, The Falklands are one of the few places in the world where nature reigns supreme).

In the wake of the climate collapse in *Falsche Himmel*, the female narrator makes a conscious decision to leave marks, though she wants her marks to differ from the imprints that started the Anthropocene and created environmental threats such as climate change. She explains,"wir sind da gewesen. Uns gab es. Das ist etwas völlig anderes als Bewahrung und Erhalt. Wir sind zu Lebzeiten zum Fossil mutiert. Fossilien hinterlassen Abdrücke, aber keine Erinnerung" (Dirks 117, We have been there. We existed. That is something entirely different than preservation and protection. We have turned into fossils during our own lifetime. Fossils leave marks, but they don't leave a memory). To her, there exists a difference between leaving marks ("Abdrücke") and leaving a memory ("Erinnerung") as a living species. While the ruins of empty buildings and the remnants of abandoned objects can be regarded as traces of the human species, they are unable to tell the story of human existence, especially before and after climate change. She realizes that these footprints, similar to Zeno's perception of anthropogenic changes in the environment, cannot narrate the story of human life on Earth or their ultimate responsibility for the destruction of the planet. Instead, only her words have the power to tell this story. She explains, "ein Abdruck im Kosmos ist mehr als ein Gefühl. Ein Abdruck ist der Beleg für Existenz" (Dirks 117, An imprint in the universe is more than a feeling. An imprint is the evidence of existence). Her individual narrative and its ability to deliver her personal explanation offers an additional layer of meaning to the material imprints that are left behind. In order to make this story accessible to others who might come after her, she is recording her chronicle in handwritten print (in German, "Druck"), on the pages of a notebook. Hence, the written print of her very own existence differs from the general imprints of human civilization.

Conclusion

German climate change literature is defined by what I have identified as Anthropocene chronicles. In the wider realm of environmental literature, these types of narratives mark a subgenre due to their focus on a single human first-person narrator, their diary-like structure, and their personal, non-scientific language. These texts differ significantly from how the topic of climate change is communicated within the public discourse; publications such as the "German Strategy for the Adaptation to Climate Change" rely heavily on scientific research and forecasts, but yet are unable to adequately describe the present reality or a future world transformed by climate change. In these literary narratives the topic is moved into the personal sphere, where human individuals document their experiences with climate change and their emotions towards the issue. Often, these individuals also lived during a time when the issue was less invisible and the threat less urgent. Thus, their texts compare the before and after and describe the progression of climate change in the context of their personal lives.

Despite the absence of any actual climate science, these texts can be regarded as sources of information to inform and educate on the issue. Different from media coverage or scientific reports, these texts do not purport to describe the topic in an objective, balanced way. The subjective nature of their narratives presents individual angles by which to view climate change that engage the readers and inspire contemplations on the personal relevance of climate change in their own lives. Here, the texts reveal *Leerstellen*, or gaps, that interrupt the narratives' plot and structure and function as a starting point for contemplations by the reading audience. Reader engagement with environmental literature has been of recent interest in the field of affect theory, where psychologists and literary scholars study emotional responses to such literature, in particular those regarding climate change.[77] Every reader reacts differently towards the literary story worlds presented, and I argue that the gaps in these Anthropocene chronicles engage them on a cognitive

[77] See Bladow and Ladino, 1-22, for an overview of the theoretical foundation of affective ecocriticism.

level wherein they seek to understand the issue and the relevance of the issue to their own lives. After reading Dirks' *Falsche Himmel*, readers could contemplate if they have ever spoken out on the issue, or whether they kept quiet like the female narrator. Or, would they continue to dwell in environments which will soon become uninhabitable, or would they adapt to the new living conditions and move to places deemed more livable? Zeno's thoughts in *EisTau* could cause readers to reflect on how their own consumer habits directly contribute to the progression of climate change. None of these Anthropocene chronicles promises a solution to climate change. But as its spatial and temporal invisibility (still) impedes their ability to recognize issues in their own lives, these narratives function as starting points from where they can begin to envision climate change in their backyards and neighborhoods.

In the future, these Anthropocene chronicles can function much like personal witness reports often utilized in historical contexts. Many topics, including environmental topics and the Anthropocene, are surrounded by an abstractness and invisibility that complicates their overall presentation. These narratives add the dimensions of human experience and human feeling to the discussion. These texts can function as sources that document the progression of climate change from the beginning stages of the Anthropocene well into the future. While scientific data collected over a period of time can be regarded as evidence of climate change, these narratives translate such numerical values into personal, comprehensible human stories that complement the information and enhance our overall understanding of the issue.

Chapter Three

Envisioning the End of Humankind: Literary Narratives of Isolation and the Human Perception of Time

In May 2019, the United Nation's Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) published its latest report informing that "nature is declining globally at rates unprecedented in human history – and the growth of species extinction is accelerating […]" (United Nations). While the report keeps an optimistic tone about the future of humankind and the planet itself,[78] the idea that the existence of Earth's human and non-human beings is finite is nothing new; many literary narratives, and films, have envisioned the apocalypse and an end to the world as we know it. In contrast to these often spectacular end of the world scenarios, extinction is a fairly invisible and dislocated process. Often, humans do not notice the disappearance of small plant or animal species, such as the recent extinction of the golden frog in Panama as described by American journalist Elizabeth Kolbert in her book *The Sixth Extinction: An Unnatural History* (cf. 4-22). According to Kolbert, the dying out of the golden frog is just one example of the countless animal species that have recently gone extinct, or are at the brink of extinction. Thus, she argues that Earth is in the midst of another mass extinction, the sixth of its kind. Different from previous planetary extinctions though, this sixth extinction is the result of anthropogenic action. In her prologue, Kolbert explains,

> No creature has ever altered life on the planet in this way before, […]. Very, very occasionally in the distant past, the planet has undergone change so wrenching that the diversity of life has plummeted. Five of these ancient events were catastrophic enough that they were put in their own category: the so-called Big Five. In what seems like a fantastic coincidence, but is probably no coincidence at all, the history of these events is recovered just as people come to realize they are causing another one. (Kolbert 2-3)

[78] The official statement of the IPBES declares that despite the imminent decline of the ecosystem and its diversity, "[…] we still have the means to ensure a sustainable future for people and the planet" (United Nations).

Human actions contribute to the loss of the planet's biodiversity, which consequentially alters the overall planetary conditions, and which could even threaten their own survival. But what does a world without human inhabitants look like?[79] Is the environment transforming back into a pre-technological state, where plants reclaim their existence among abandoned remnants of human civilization? Or is Earth destined to become a lifeless, barren desert?

Within the Western literary tradition, many texts have explored the idea of a sole human survivor, perhaps most famously Daniel Defoe in his *Robinson Crusoe* (1719). His work paved the way for a new literary genre, the so called *Robinsonade*.[80] Following the general plot of Defoe's eponymous work, scholar Janet Bertsch defines the genre as "[…] a story or episode of a story where an individual or a group of individuals with limited resources try to survive on a desert island" (79). Bertsch's well-known definition restricts the narrative's geographical setting, though she admits "there are valid arguments in favor of including a wide variety of survival texts in the genre," (79) indicating that the opening of the genre to a greater number of texts is possible. The premise of the *Robinsonade* and its narrative focus on the survival of a sole human individual are more relevant than ever in the age of the Anthropocene. While the survivors in traditional *Robinsonades* often faced isolation and struggled to live following a shipwreck, modern human survivors fight for their survival due to environmental conditions that have been altered by their own actions.

Modern *Robinsonades*, though often not yet classified as such, explore the connection of human viability in the environments of the Anthropocene. Many contemporary works of literary fiction have depicted these modern-day survival plots in futuristic and highly technological

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[79] In *The World Without Us,* American writer Alan Weisman aims to imagine how the Earth will change when the human population has disappeared. In his work, he, for example, explains how some of our everyday objects would become fossils, or how evidence of human infrastructure would just crumble and disappear.
[80] The German writer Johann Gottfried Schnabel first coined the term in the preface of his novel *Die Insel Felsenburg* (1731) and initiated a growth of literary texts with similar plot elements than Defoe's original work in eighteenth-century Germany (cf. Hürlimann 389).

settings,[81] contributing to the general notion that environmental literature draws from the genre of science-fiction. The idea of the finiteness of humankind and of Earth is nothing new, however, and predates the birth of the Anthropocene. Even literary narratives written prior to this new geological age contain textual residues that deal with the belief that human life on Earth is limited. Literary scholar Serenella Iovina argues that "[…] a narrative does not only have a 'retrospective gaze', but rather a prospective, ethically preventative and orientative look" (41). Literary critics need to (re)discover the environmental meaning in fictional narratives written pre-Anthropocene, as these earlier texts also, often indirectly, comment on initial traces of anthropogenic changes in the environment and contribute to current discussions in ecocriticism, and the Environmental Humanities. The meanings found in these literary works have often been overlooked in literary analyses of Anthropocene literature, solely due to their publication dates. Yet, they can still be regarded as early literary discourses on the Anthropocene that deal with the environmental consequences of human actions and their destructive potential in the present, and the future. Analyzing these works through current modern lens helps to understand the roots of this new age, and at the same time reveals the history of human concern over how their own actions might be impacting both the environment and the planet as a whole.

Two of these literary examples in the German speaking context are Marlen Haushofer's *Die Wand* (*The Wall*), and Max Frisch's *Der Mensch erscheint im Holozän* (*Man in the Holocene*). These two texts share numerous parallels; the most obvious similarity being their narratives setting in the Central European Alps, which functions as the backdrop to their human survival stories.[82] In *Die Wand,* the Austrian Alps become a prison for a nameless female protagonist after an invisible but

[81] Two of the most prominent examples from contemporary German literature are here Dietmar Dath's *Die Abschaffung der Arten* (2008), or Dirk C. Fleck's *Feuer am Fuss* (2015). Among recent Anglophone literary works, two of the most popular texts are Margaret Atwood's Oryx and Crake, or Kim Stanley Robinson's *Mars* trilogy.

[82] See Ireton and Schaumann 1-19, for a chronological overview of the representation of mountains in German literature and film.

indestructible wall mysteriously appears overnight, separating her from the surrounding environment, which includes a smaller village. The woman discovers that life outside of the barrier has ended, as all animate beings stand motionless. The indestructible blockade separates her from the comforts of civilization, and forces her to adjust to a reality in which she has become the last human inhabitant of the forest, where she must farm, hunt, and learn other tasks essential to her survival. In *Der Mensch erscheint im Holozän*, an older male protagonist, Herr Geiser, lives a secluded life in his house, which is located within a mountain village in the Swiss region of Ticino. Following a torrential rainfall, a landslide destroys the only road connecting the mountainous region with the lowlands, effectively cutting off the village from urban areas and all infrastructures. Triggered by the isolation and the continuing rain, Herr Geiser begins to reflect on his general knowledge of the world and the environment. He realizes then how little humans actually know about Earth's history and environmental processes without the help of encyclopedias and reference books.

The impediments that lead to isolation in the two narratives, though seemingly different in character, make both literary works relevant for current discussions about the Anthropocene, despite publication dates in the 1960s (*Die Wand*) and 1970s (*Der Mensch erscheint im Holozän*). In Haushofer's work, the female protagonist never discovers the origin of the mysterious wall that makes her a prisoner of the mountainous environment. Throughout the entire narrative the female narrator only once contemplates the cause of its appearance, when she states, "über die Wand zerbrach ich mir nicht allzu sehr den Kopf. Ich nahm an, sie wäre eine neue Waffe, die geheimzuhalten, einer der Großmächte gelungen war; eine ideale Waffe, sie hinterließ die Erde unversehrt und tötete nur Menschen und Tiere" (Haushofer 41, I didn't give too much thought of the wall. I assumed it was a new weapon that one of the major powers had managed to keep secret;

an ideal weapon, it left the earth untouched and killed only humans and animals).[83] The narrator's reflection, and the work's publication date, allow one to draw a connection to the tensions of the Cold War and the fear over the use of atomic weapons. The wall's transparency resembles the material invisibility of the nuclear substances, such as those released after the accident in Chernobyl. Thus, at first sight, the wall is not visually noticeable. Different from other human-made technologies and weapons, the mysterious obstacle appears less violent than earlier dangers,[84] and its sudden, unexpected appearance fits other threats in the age of the Anthropocene.

In Frisch's text, Herr Geiser's isolation is caused by a torrential rainfall that triggers a landslide, resulting in the severing of the one road connecting the secluded, mountainous village with the valley. While the narrative acknowledges that heavy rain and landslides are not uncommon for the area,[85] many recent analyses of *Der Mensch erscheint im Holozän* have interpreted the supposedly natural occurrence of rain as a sign of anthropogenic alterations.[86] The heavy rain, for instance, could be a possible effect of climate change. This notion is supported by the narrative itself, when the texts also comments on the decline of local glaciers:

> Die Gletscher, die sich einmal bis Mailand erstreckt haben, sind überall im Rückzug; die letzten Lappen von schmutzigen Schattenschnee schmelzen spätestens im Mai. Nur in einer Schlucht, wo die Sonne kaum hinkommt, halten Reste von Lawinen sich länger, auch sie verschwinden. (Frisch 57)

(The glaciers, which once stretched as far as Milan, are now in retreat everywhere; on the shadowed slopes the last rags of grimy snow have melted by May at the latest, even on the high

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[83] This and all following translations of Haushofer's text are included from the text's English translation by Shaun Whiteside.

[84] The narrator explains here: Nach dem friedlichen Aussehen der Opfer zu schließen, hatten sie nicht gelitten; das Ganze schien mir die humanste Teufelei, die je ein Menschenhirn ersonnen hatte" (Haushofer 41, Judging by the peaceful appearance of the victims, they hadn't suffered; it all seemed like the most human piece of devilry ever to have occurred to a human brain).

[85] Here, the narrative states, "schon einmal, 1970, ist unterhalb des Dorfes ein Stück der Straße abgerutscht, am anderen Morgen hing das eiserne Geländer verborgen in die Schlucht hinunter, und einen Sommer lang war der Verkehr durch die Baustelle behindert, jedoch nicht unterbrochen. Rutsche solcher Art hat es in dieser Gegend immer gegeben –" (Frisch 41, Once before, in 1970, a piece of the highway below the village vanished in a landslide; on the following morning the iron railings were hanging twisted over the ravine; all through the summer the traffic was held up by the repair work, but it was not blocked entirely. Landslides like that have always occurred in the district –).

[86] See here Stobbe, 360-370, or Dürbeck 2014, 114-116, for a reading of the text through the lens of recent theories on the Anthropocene.

points. Just one ravine, which the sun hardly ever reaches, retains the remnants of avalanches a little longer; but these vanish, too.)[87]

The decline of polar and alpine glaciers has become one of the most well-known and visible effects of global climate change. The narrative's direct reference, paired with current research on climate change and its public representation, makes it plausible that the rain and its resulting mudslide are more than just a severe weather event.

In both narratives, a human individual faces a long period of isolation due to current changes in environmental conditions. Their seclusion, and here in particular their remoteness from other people, sparks their interest in the available knowledge of the Earth. Herr Geiser in Frisch's *Der Mensch erscheint im Holozän* looks for answers in his *Brockhaus* encyclopedia and other reference books from his library. Over the course of his isolation, he tapes snippets from the books onto his walls, transforming his living room into a collage of Earth's environmental history. Herr Geiser's attempt to reconstruct the evolution of the planet in its entirety remains unsuccessful, as he realizes the information in his library is shaped by human research. Humankind itself, though, represents only a tiny fraction of Earth's history and might one day disappear just like other species before them. Extinction would not only end human existence but would also render obsolete the human concept of time. In Haushofer's *Die Wand*, the collective history of humankind has lost its significance for the nameless female narrator. The mysterious wall has changed her living conditions so significantly that her only focus is survival. Without access to technology and science, she experiences a pre-industrial environment in which her own human individuality and freedom are no longer relevant. Therefore, she turns to writing to document this new world. Her narrative also functions as a testament to her own human identity, which she has not yet lost despite her isolation and remove from other human beings.

[87] This and all following translations of Frisch's text are included from the text's English translation by Geoffrey Skelton.

Due to the absence of other humans, both literary narratives are highly subjective and possess a fragmentary character. In this regard, they resemble the previously discussed Anthropocene chronicles. Here, though, the remoteness of their human protagonists from other humans is not caused by different opinions but is a result of their isolation. In the absence of other humans, both protagonists come to realize that humankind's seeming hegemony is just a fallacy. If humankind is gone, everything that matters to humankind, including their collective memory recorded in books, or their concept of time, will also disappear. This chapter is divided into two larger parts that analyze the portrayal of human history and the notion of time within the two narratives. The altered environmental conditions in both works spark the protagonists' interest in history, causing them to wonder how their present reality differs from earlier time periods, or what might be humankind's role on Earth. Their interest in history underlines the significance of time for humans. Therefore, the second section analyzes how the texts present and reflect on the human concept of time. The concept of time distinguishes humans from other living species and organisms, for whom, it would seem, there is no notion of a past, present, or future. If human life ended, the concept of time would disappear with them. Both literary narratives also illustrate that the end of humankind is only relevant to human beings, while the planet and its natural environment would continue to exist, and would most likely recover from the anthropogenic alterations brought about by human beings.

Human History and Memory in the Age of the Anthropocene

Marlen Haushofer's *Die Wand* is narrated from the perspective of a female survivor who begins her report more than two years after the appearance of a mysterious wall. For her report, she begins to reconstruct her life in isolation with the help of the sparse calendar notes she has taken over time. Her narrative, which she herself classifies as a "report" ("Bericht", Haushofer 7), contains detailed depictions of her daily life, describing, for instance, how she grows vegetables, cooks, or learns to

fish and hunt. The depictions of her new routine are interspersed with reflections on her own transformation, which has been brought about by her new living conditions. She contemplates what it means to be human, and how her human character separates her from animals and the environment. While she presumes she is the last surviving human, she is not entirely alone as she shares her isolation with the dog, Luchs, the nameless cat, and the cow, Bella.[88] The presence of the animals and their dependence on a human caretaker sparks her initial survival instincts. Her report ends abruptly when she runs out of paper.

Die Wand marks Marlen Haushofer's most prominent work, which has experienced a renewed popularity following the release of the 2012 film adaptation by Julian Pölsner.[89] Haushofer herself, who was born in 1920 in Frauenstein, a small town in Upper Austria, grew up in a hunting lodge surrounded by meadows, the mountains, and the forest. Here, she spent the first ten years of her life in an environment similar to that of the nameless female narrator in her literary work. Her autofictional novel, *Himmel, der nirgendwo endet* (*Nowhere Ending Sky*), which was published three years after *Die Wand,* in 1966, depicts the upbringing of the child narrator Meta and contains plot elements that resemble those in *Die Wand.*[90] Both works, for example, revolve around a wall, though in *Himmel, der nirgendwo endet* the wall is not an actual barrier, but a metaphorical reference for the relationship between the child narrator and her mother. Haushofer's literary works are known for their strong emphasis on the experiences of female protagonists and/or narrators and have often been analyzed in the context of gender studies. Her texts have also been compared to other prominent Austrian women writers, such as Ingeborg Bachmann or Elfriede Jelinek.[91] The recent increase of interest in ecocriticism and environmental topics has led to a

[88] Both the cat and the cow bear offspring during her life behind the wall. But sudden deaths and disappearances makes them less significant for the female narrator. Instead, the dog, the cat, and the cow form the protagonist's nuclear community.
[89] See Frost 75-90, for a comparison between the literary text and its film adaptation.
[90] See Brüns, 24-85, for a comparative analysis of Haushofer's *Die Wand* and *Himmel, der nirgendwo endet*.
[91] See, for example, Neuwirth and Sauer, particularly the introduction, on contemporary female Austrian writers.

rediscovery of Haushofer and her works within academia but also among the general public.[92] The renewed interest in *Die Wand* emanates from the general popularity of apocalyptic stories as well as the appeal of a survival narrative with a female point of view in a genre long dominated by male voices.

Max Frisch's *Der Mensch erscheint im Holozän* was originally published in 1979. By that point in time, Frisch was already a prominent Swiss writer and playwright, and his previous works, like *Homo Faber* and *Montauk,* had already reached canonical status. In the context of his extensive literary accomplishments, *Der Mensch erscheint im Holozän* is often viewed in conjunction with his later works, which are similar in their portrayal of the world as a historic and fixed space.[93] Additionally, the text is viewed with regards to its presentation of mental and physical human decline, allowing for a comparison of similarities between the literary narrator and the author.[94] In the past decade, *Der Mensch erscheint im Holozän* experienced a rediscovery similar to that of Haushofer's *Die Wand*. Literary scholar Bernhard Malkmus interprets *Der Mensch erscheint im Holozän* as a text "[…] about the current inhabitants' footprint and a growing unease about its not quite so 'picturesque' manifestations. The story looks at the footprint and its anthropological implications on three levels: loss of biodiversity, invasive species, and climate change" (80). And Gabriele Dürbeck characterizes the text in a similar vein, "[…] as an early articulation of a protodiscourse of the Anthropocene [that] is supported by the geologic perspective that pervades the text" (Dürbeck 2014, 114). In contrast to more recent literary works, like those discussed in the previous two chapters, the presentation of phenomena characteristic of the Anthropocene, or manmade environmental changes in general, are less pronounced in Frisch's work.

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[92] For instance, *Die Wand* just celebrated an unexpected revival in France after a blogger posted about the text on her Instagram page and its view on ecofeminist issues. As a result, the sale numbers of the book began surging unexpectantly, eventually causing an emergency reprint of the text (cf. Hanimann).
[93] See Petersen, 160-186, for a comparative analysis of *Der Mensch erscheint im Holozän*, *Tryptychon*, and *Blaubart*. Petersen argues that these three literary texts, compared to Frisch's previous works, have a shared perspective through which the world is presented as a past, unchangeable, and settled environment (cf. 160).
[94] See, for example, Schwieren 290-305.

Frisch's narrative follows Herr Geiser, a man trapped inside his house in the Swiss Alps due to continuous heavy rainfall. He has lived alone since the death of his wife, having only infrequent contact with other family members, like his daughter or the residents of the nearby mountain village. The narrative begins some days after the heavy rain has set in, when Herr Geiser realizes he is confined to his mountain home. As a result of his isolation, he starts to recall random facts and information about the Earth and its history. But Herr Geiser quickly realizes the knowledge stored in his memory is fragmentary and limited. That is when he begins to consult the books in his home library, looking up such random facts as the definition and description of Earth's history (cf. Frisch 87), how to seek protection from a lightning strike (cf. Frisch 39), and the definition of a human (cf. Frisch 71). He initially takes notes of the information he comes across in his quest for knowledge, but when this method becomes too time-consuming, he begins to cut out the most interesting encyclopedia entries and tapes them to the spare walls of his living room. At one point during his involuntary isolation, Herr Geiser attempts to hike up a mountain pass despite the ongoing rainfall. The climb, which he has done numerous times in the past, marks his attempt to escape from his imprisonment. The attempt ends in failure, though, as Herr Geiser is unable to reach the mountain peak due to the difficult weather conditions and his own physical health. It becomes apparent in this episode that his physical and mental wellbeing are declining as a consequence of his age. After his return to the house, Herr Geiser suffers a stroke that causes paralysis and puts an end to his quest for knowledge. At the end of the text, the weak protagonist is found by his daughter, who is able to reach the secluded home after the rainfall has stopped and the street has been repaired. The narrative closes with a depiction of a peaceful mountainous environment, while the fate of Herr Geiser remains unresolved.

Frisch's narrative, as well as Haushofer's *Die Wand,* focuses on the survival of a single human individual following drastic environmental changes that force them to adjust their lifestyle. The altered circumstances for the protagonists prompt inner contemplations in which they ponder

the consequences for their own lives. The changes described in these two literary works can be read as features of the Anthropocene due to their possible anthropogenic origins. The nameless woman and Herr Geiser experience the potential consequences of humankind's planetary dominance. Moreover, their isolation resembles the end of their own species. In both texts, humans have not yet gone extinct, though the depictions present possible scenarios for the end of the human species.

The Anthropocene, with its interrelated connections between human beings and the environment, challenges the longstanding practice of separating the realm of the natural from that of the cultural. For example, the study of Earth's environmental history, including the evolution of animals and plants, has always belonged to the discipline of the natural sciences, while research into humankind's past has largely been the domain of the humanities. Research into human history has focused on the development of human civilization, including the forming of nations, the growth of human economies, and advancements in science and technology. All of these factors have contributed to humankind's rise as a geological force. At this moment in time, the historian Dipesh Chakrabarty argues that "[…] the distinction between human and natural histories […] has begun to collapse" (Chakrabarty 2009, 207). According to him, the growth of capitalism and the human desire for individual freedom and wealth have played a significant role in the emergence of the Anthropocene (cf. Chakrabarty 2009, 208-210). At first glance this argument is surprising, since these developments have seemingly led to the binary view of nature and culture. Over time, such processes have contributed to the emergence of the Anthropocene, an age in which the human and environmental spheres have converged. In Haushofer's *Die Wand* and Frisch's *Der Mensch erscheint im Holozän,* this renewed connection between humans and the environment leads to catastrophes that separate the literary protagonists from their human peers.

During his involuntary isolation, Herr Geiser in Max Frisch's *Der Mensch erscheint im Holozän* turns to his library to distract himself. His bookshelves are lined with the complete

collection of the *Brockhaus*,[95] the Bible, atlases and maps, and other reference books, such as hiking guides. The variety of books represents the available archive of Western history, as the books contain information and facts about the very processes that led to the emergence of the Anthropocene. But now that Herr Geiser, and humankind as a whole, have entered this new geological era, the books appear outdated and provide no explanation for the current, extreme weather events. Despite the books' inability to explain the most recent changes, this activity transforms from a mere distraction to Herr Geiser's own personal quest for knowledge about the world he inhabits. Some of the information he looks up are facts he once knew but has since forgotten as result of his age-related memory loss, or the general fallibility of human recall. The narrative explains:

> Wie Flut und Ebbe entstehen, wie Vulkane, wie Gebirge usw., hat Herr Geiser einmal gewußt. Wann sind die ersten Säugetiere entstanden? Stattdessen weiß man, wieviel Liter der Heizöltank fasst und wann der erste Post-Bus fährt, sofern die Straße nicht gesperrt ist, und wann der letzte. Wann ist der Mensch entstanden und wieso? Trias, Jura, Kreide usw., kein Ahnung, wie viele Jahrmillionen die Erdzeitalter gedauert haben. (Frisch 27f)

(Geiser knew at one time what caused tides, just as he knew about volcanoes, mountain ranges, etc. But when did the first mammals emerge? Instead of this, one knows how many liters of heating oil the tank contains, the time of the first and last mail bus – that is, when the highway is not blocked. When did man first emerge, and why? Triassic, Jurassic, Cretaceous, etc., but no idea how many millions of years the various eras lasted.)

Human memory and its capacity to store facts and information is depicted here as a loose and selective-subjective process. Herr Geiser is capable of recalling everyday knowledge, such as the size of his oil tank, while being unable to recall the time period in which humans first developed, a fact tied to his own human existence. The choice of examples here indicates that the human memory prioritizes knowledge. Specifically, the human memory is better able to recall information relevant to our current, modern life, than it is able to remember data and events that occurred

[95] The *Brockhaus* is a popular German encyclopedia which was first published in 1796 and has been viewed as a model for modern reference works in other languages and cultures with its short information filled articles. The encyclopedia was intended as a collection of general reference books for laypeople and students. The published *Brockhaus* collection was discontinued after its twenty-first edition in 2005 (cf. Encyclopedia Britannica).

thousands of years ago. Though these previous processes shaped human life and the evolution of the species, they appear to be less relevant to their current existence.

The study of memory in the context of literary scholarship is deeply influenced by the research of Aleida Assmann, who divides the overall broad – and often problematic – term into four wider subcategories: individual, social, political, and collective memory. These discrete areas, though, do not act independently but are instead greatly entwined. Humans connect individual memories of personal and subjective encounters to other types of information not directly experienced but acquired instead through social interactions, or by reading books as Herr Geiser did in Frisch's *Der Mensch erscheint im Holozän*. His quest for knowledge is inspired by random questions for which he lacks answers, but which stand in direct relation to his current isolation and/or his past life. Herr Geiser's condition mirrors Assmann's general explanation of the human memory. She describes that the individual human memory is "fragmented and random […], episodic memories never exist in complete isolation but are connected to a wider network of other memories, and, what is even more important, the memories of others" (Assmann 2006, 211). In his current state of isolation, Frisch's protagonist is unable to directly engage with the memories of other individuals. Instead, this part of his memory, the social memory, is only filled with social encounters from his past. Without direct social human interaction, Herr Geiser turns to his library, which is representative of political and cultural memory. In contrast to individual and social memory, Assmann explains that

> […] political and cultural memory are […] mediated; both are founded on the more durable carriers of external symbols and material representations; they rely not only on libraries, museums, and monuments, but also on various modes of education and repeated occasions for collective participation. (Assmann 2006, 215)

In this regard, the difference between social memory and political and cultural memory is found not only in their forms of acquisition, but also in their longevity. While political and cultural memory

can be passed on due to its physical form, individual and social memory dies with the people with whom it is shared.

In order to learn about the history of the planet, Herr Geiser relies on political and cultural memory, because the existence of the Earth far surpasses his own life span. The narrative describes, for example, that Herr Geiser wants to find out if similar torrential rainfall has previously occurred in the Swiss alpine valley, or if it is an unusual and unprecedented weather phenomenon. He reads in one of his books about similar extreme weather events: a rockslide in the sixteenth century and a fatal landslide in the nineteenth century (cf. Frisch 22). Herr Geiser's interest in history aligns with people's general attraction to the past, which, according to Assmann, has only developed since the period of the Renaissance and is therefore a rather modern phenomenon (cf. Cultural Memory and Western Civilization 4). His wall collage of selective historical facts is reflected in the narrative's structure, which mirrors his montage of text excerpts and underlines both the human fascination with history and the dependence on books for collecting prior knowledge. Some of the notes on Herr Geiser's wall, though, do not require research or fact checking. One of these memos, for example, claims in all capital letters: "DER MENSCH GILT ALS DAS EINZIGE LEBEWESEN MIT EINEM GEWISSEN GESCHICHTSBEWUSSTSEIN" (Frisch 53, HUMAN BEINGS ARE THE ONLY LIVING CREATURES WITH AN AWARENESS OF HISTORY). Assmann's argument is supported by Herr Geiser's statement that history is only relevant for his fellow human beings. His interest in history, however, is predominantly focused on Earth's environmental past, with his selections ranging from details about erosion to the evolution and extinction of dinosaurs. He disregards monumental events in humankind's own history.

Herr Geiser's interest in Earth's environmental history is sparked by his isolation. Without the presence of others, he perceives his world differently and focuses on the environment rather than his human peers. When the rain eventually interrupts his television's satellite connection, he loses his last connection to topics relevant to people. The television is more than a mere source of

information and entertainment, as he states: "[…] trotzdem ist man beruhigter, wenn man weiß, dass die Welt weitergeht" (Frisch 37, […] one feels easier in one's mind when one knows from day to day that life is still going on). Herr Geiser regards the television as a window into a world he cannot directly experience. News about terrorist attacks in other countries, or the resigning of a foreign president (cf. Frisch 37), indicate to him that the world continues to exist. Herr Geiser's isolation allows him to recognize that this is a very human-centered view, and the planet will likely continue, and even prevail, without its human inhabitants.

In his isolation, he desires to understand the history of the place he lives and to learn more about the processes and events happening outside the realm of human interest. During his quest, Herr Geiser realizes he will never be fully capable of understanding the world around him: "der Mensch ist und bleibt ein Laie" (Frisch 80, Man remains an amateur). Despite the plethora of information available in books, Herr Geiser and his fellow humans will never be completely knowledgeable about the Earth and the environment. Instead, their continued ignorance is the result of not only their own disinterest in the world around them, but also the general limitations of human memory, which is incapable of saving and remembering the entirety of information related to the planet.

Herr Geiser's quest for knowledge is an attempt to overcome the weakness of human memory. As he tries to gather the information he needs to better understand the world, the books from his library provide the only means of overcoming his gaps in knowledge. Scholar Aleida Assmann explains that books functions as non-human mediators of cultural memory and that they are one of the few ways to preserve historical facts from the past into the present, and future (Assmann 2011, 14-19). In Frisch's narrative, Herr Geiser, for instance, looks up the definition for "Erdgeschichte" (Earth history), cuts out the encyclopedia entry, and tapes it to the walls of his living room (cf. Frisch 89). This clipping is just one of many that soon plaster over the empty spaces on his walls. Thus, the interior of his living room becomes an outer memory for Herr Geiser, a place

where he collects information about specific events and reconstructs parts of the planet's history in the form of a collage. The montage that develops over the course of his isolation is entirely subjective. While the clippings from the encyclopedias and reference books can be seen as objective, due to their emphasis on scientific facts and numbers, the overall creation is a subjective chronicle owing to the inability of a human to know and retain comprehensive details of planetary development, and as a result of the selective choices made in his curation of the collage. In his search for knowledge, he is predominantly guided by his own curiosity and his extraordinary situation. The lack of contact with other humans brings him closer to the environment he seeks to understand. While the heavy rainfall prevents him from directly experiencing the mountainous area, his books function as alternative sources of learning about the world he inhabits.

In the process of his research into the history of the planet, Herr Geiser begins to make connections and share commentary on the information he looks up. In this context he also coins the book's title when he randomly exclaims, "— der Mensch erscheint im Holozän" (Frisch 103, —man emerged in Holocene). This statement is factually false. While the Holocene – the time period after the last ice age and the era antedating the Anthropocene – saw the evolution of humankind from hunters and gatherers, to farmers, and lastly, to workers and scientists, the human species actually first emerged during the Pleistocene. But it was during the Holocene that humankind transformed into a geological force. Herr Geiser states that the human species "erscheint," best translated as "suddenly appears," altering with their arrival the course of Earth's history. As an example, Herr Geiser mentions in the same paragraph that human beings interpret planetary events based on their outcomes: "— Katastrophen kennt allein der Mensch, sofern er sie überlebt; die Natur kennt keine Katastrophen" (Frisch 103, —only human beings can recognize catastrophes, provided they survive them; Nature recognizes no catastrophes). From a human perspective, Herr Geiser's isolation, the torrential rainfall, and the destruction of the only connecting roadway could easily be described as catastrophes. Outside of the human realm, these incidences do not receive an implied

meaning and are mere events. In the context of history, this form of human interpretation determines which occurrences carry significance and are consequentially remembered and documented in the books of Herr Geiser's library. In this sense, humankind is writing a twofold history of the Earth: the alteration of environmental conditions and the recording of noteworthy events in encyclopedias, history texts, and reference books.

In Marlen Haushofer's *Die Wand,* the isolation endured by the female protagonist is more drastic than Herr Geiser's, as she is imprisoned within the perimeter of the wall for more than two years while the world outside the transparent barrier appears to have ended. This makes her the presumable last human survivor on Earth. Unlike Herr Geiser, she has no access to books to help pass the time. She instead begins to write her own report, penning down her story of survival since the appearance of the wall. As the mysterious wall seems to have ended all other human life, the event has not yet been interpreted, researched, or chronicled in encyclopedias or history books. If her handwritten text were to be found by other humans, the narrative could function as a reference, informing about conditions following the appearance of the wall. Her role as the lone human survivor makes her the only living authority on the topic of humankind. As a consequence, her report represents the collective memory of humankind after the appearance of the wall.

Haushofer's protagonist writes from a retrospective viewpoint, documenting her life more than two years after the appearance of the invisible barrier irrevocably altered her existence. On the first page, she reveals that she never intended to write a report of her new life. Due to the time gap between the actual events and their written documentation, the woman questions her own truthfulness and objectivity: "Ich bin angewiesen auf spärliche Notizen; spärlich, weil ich ja nie damit rechnete, diesen Bericht zu schreiben, und ich fürchte, dass sich in meiner Erinnerung vieles anders ausnimmt, als ich es wirklich erlebte" (Haushofer 7, All I have to rely on is a few meagre jottings, meagre because I never expected to write this report, and I am afraid that much that I remember will be different from my real experiences). The narrator worries that her memory

differs from the human experience. Here, her individual memory, in keeping with Assmann's assertion, might be clouded and/or biased due to the time lapse between the event and her written depiction of the first encounter with the wall. Aleida Assmann explains that individual human memory is strongly influenced by the remediation of their experiences with other people (Assmann 2006, 212). Her isolation, though, makes it impossible for the nameless woman to share her encounters with others. Therefore, her written report is biased, subjective, and in some instances, even fragmentary. These characteristics distinguish her text from traditional reports, which are generally objective narratives that incorporate science-based evidence. Due to the text's personal and fragmentary character, her report can instead be classified as the earlier discussed Anthropocene chronicles.[96]

The female narrator begins her narrative after an encounter with another human survivor. The human, a man, kills her dog and is thereupon killed by the women. This event marks a drastic experience as it could have been her last opportunity to interact with another human being. She depicts her motivation in writing her story as the following:

> Ich schreibe nicht aus Freude am Schreiben; es hat sich eben so für mich ergeben, dass ich schreiben muss, wenn ich nicht den Verstand verlieren will. […] Ich bin ganz allein, und ich muss versuchen, die langen dunklen Wintermonate zu überstehen. Ich rechne nicht damit, dass diese Aufzeichnungen jemals gefunden werden. Im Augenblick weiß ich nicht einmal, ob ich es wünsche. Vielleicht werde ich es wissen, wenn ich den Bericht zu Ende geschrieben habe. (Haushofer 7)

(I'm not writing for the sheer joy of writing; so many things have happened to me that I must write if I am not to lose my reason. […] I'm quite alone, and I must try to survive the long, dark winter months. I don't expect these notebooks will ever be found. At the moment I don't even know whether I hope they will be. Perhaps I will know, once I've finished.)

Writing becomes an essential, yet joyless, activity that helps her retain her sanity. While authors often write for a future audience, the woman does not believe her narrative will ever be found,

[96] Different from the literary works discussed in the previous chapter, her retrospective view makes her narrative even more unreliable than the other texts in which the human writers documented their experience in relative real time.

much less read, and she expresses uncertainty as to whether she even wants her writing to be discovered. Despite her pessimism, it is no coincidence she turns to writing in her isolation. This activity is a mode of communication exclusive to human beings, which distinguishes them from other living species. While the absence of any social interactions makes her feel less human, she decides to engage in an activity unique to humankind. Over the course of writing her story, she begins to hope her text will be discovered and read.[97]

The fear of losing her human identity is a recurring theme in the report of the nameless woman. While she repeatedly compares herself to her animals, particularly to her dog Luchs,[98] she explains that the appearance of the wall and its lasting consequences has sparked her personal transformation. She contemplates,

> Es fällt mir schwer, beim Schreiben mein früheres Ich und mein neues Ich auseinanderzuhalten. Mein neues Ich, von dem ich nicht sicher bin, dass es nicht langsam von einem größeren Wir aufgesogen wird. Aber schon damals bahnte sich die Verwandlung an. Die Alm war schuld daran. Es war fast unmöglich, in der summenden Stille der Wiese unter dem großen Himmel ein einzelnes, abgesondertes Ich zu bleiben, ein kleines, blindes, eigensinniges Leben, das sich nicht einfügen wollte in die große Gemeinschaft. Einmal war es mein ganzer Stolz gewesen, ein solches Leben zu sein, aber auf der Alm schien es mir plötzlich sehr armselig und lächerlich, ein aufgeblasenes Nichts. (Haushofer 185)

(I find it hard to separate my old self from my new self, and I'm not sure that my new self isn't gradually being absorbed into something larger that thinks of itself as 'We'. It was the Alm's fault. It was almost impossible, in the buzzing stillness of the meadow, beneath the big sky to remain a single and separate Self, a little, blind, independent life that didn't want to fit in with a greater Being. Once my major source of pride had been that I was just such a life, but in the Alm it suddenly struck me as pathetic and absurd, an overinflated Nothing.)

Looking over the notes she has taken over the course of her isolation, the woman distinguishes between her old and her new self; her old self was the one who came to the Austrian Alps on a

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[97] The woman writes, "seit einigen Tagen ist mir klargeworden, dass ich immer noch hoffe, ein Mensch werde diesen Bericht lesen. Ich weiß nicht, warum ich es wünsche, es macht doch keinen Unterschied. Aber mein Herz klopft rascher, wenn ich mir vorstelle, dass Menschenaugen auf diesen Zeilen ruhen und Menschenhände die Blätter wenden werden. Viel eher aber werden die Mäuse den Bericht fressen." (Haushofer 84, Over the last few days I have realized that I still hope someone will read this report. I don't know why I wish that, it makes no difference, after all. But my heart beats faster when I imagine human eyes resting on these lines, and human hands turning the pages. But mice will eat the report long before that.)

[98] See Hester, 200-209, for a detailed analysis of the human-animal relation in Haushofer's work.

weekend getaway, while her new self is the one who had to stay and who had to adjust her entire life to the changed living conditions. The major difference between these two identities is their urge for individualism. In her old life, when she lived among other humans, she felt the urge to be different and to distinguish herself from her peers. Now, she denounces this yearning for human individualism. The longer she lives in the mountain pasture without other human beings, the more her desire for human individuality decreases. Since she has been living alone, she has desired a greater connection with the environment, and with other non-human beings. As a consequence, her narrative is also a manifest of her human transformation, documenting how some of her innate human traits have changed since the appearance of the wall and the beginning of her isolation. As she is writing her report from a retrospective view, the constant comparisons between the present and the past have caused her own metamorphosis to become more distinct to her. Composing her story is her own reworking of her past.

Despite her presumably extraordinary role as the last human survivor on Earth, the woman continuously downplays her own significance. The absence of other human beings diminishes her own importance, and she becomes increasingly aware of her flaws. For example, just like Herr Geiser, she recognizes how incomplete her knowledge is of the environment and the Earth in general. She describes,

> Aber ich weiß auch sonst fast nichts, ich kenne nicht einmal die Namen der Blumen auf der Bachwiese. Ich habe sie im Naturgeschichtsunterricht nach Büchern und Zeichnungen gelernt, und ich habe sie vergessen, wie alles, von dem ich mir keine Vorstellung machen konnte. Ich habe jahrelang mit Logarithmen gerechnet und ich habe keine Ahnung, wozu man sie braucht und was sie bedeuten. Es ist mir leichtgefallen, fremde Sprachen zu erlernen, aber aus Mangel an Gelegenheit lernte ich sie nie sprechen, und ihre Rechtschreibung und Grammatik habe ich vergessen. […] Ich werde nie mehr die Möglichkeit haben, diese Mängel auszugleichen, denn selbst wenn es mir gelingen sollte, die vielen Bücher zu finden, die in den toten Häusern aufgestapelt sind, werde ich nicht mehr fähig sein, das Gelesene zu behalten. […] Ich werde sterben, ohne meine Chance genutzt zu haben. Ich war in meinem ersten Leben ein Dilettant, und auch hier im Wald werde ich nie etwas anderes sein. (Haushofer 83f)

(But I know practically nothing else either, I don't even know the names of the flowers in the meadow by the stream. I learned them in science lessons, from books and drawings, and I've

forgotten them again like all the other things I couldn't get into my head. I did sums with logarithms for years, and have no idea what they're for or what they mean. I found it easy to learn foreign languages, but for want of opportunity I never learned to speak them, and I've forgotten their spelling and grammar. […] Never again shall I have the opportunity to make up for these losses, for even if I manage to find the many books stacked up in the lifeless houses, I will never be able to retain what I read. I shall die without having used the chance that I had. In my first life I was a dilettante, and here in the forest, too, I shall never be anything else.)

The female narrator remembers the many things she learned over the course of her life, now mostly forgotten for lack of use. In her new life, however, these skills have become meaningless. Her survival is now contingent upon practical knowledge, such as knowing how to milk cows, hunt and fish, or grow potatoes. While she has been able to acquire some skills that have proved useful in her new life, she will forever remain an amateur. Her statement resembles the proclamation by Herr Geiser, who declared that humans will always remain amateurs. Here, their isolation demonstrates to them that their knowledge of the world around them will always be incomplete, despite their best efforts. The nameless woman realizes, though, that the facts recorded in traditional encyclopedias and reference works, those which Herr Geiser references, would have been largely useless in her new life. In this sense, her narrative can also be classified as a survival manual that describes her adaptation to the new living conditions after the appearance of the wall.

The woman's turn to writing, and her wish to leave a written document, are influenced by her view of books as sources of collective (human) memory. In her earlier life, she heavily relied on books and continues to recollect remnants of information she read at various points in time. The woman explains,

> Namen lebten in meinem Kopf und ich wußte nicht mehr, wann ihre Träger gelebt hatten. Ich hatte immer nur für Prüfungen gelernt, und später hattem mir die Lexika im Rücken ein Gefühl der Sicherheit gegeben. Jetzt, ohne diese Hilfen, herrschte in meinem Gedächtnis ein furchtbares Durcheinander. Manchmal fielen mir Gedichtzeilen ein, und ich wußte nicht, von wem sie stammten, dann packte mich das quälende Verlangen, in die nächste Bibliothek zu gehen und Bücher zu holen. Es tröstete mich ein wenig, dass es die Bücher noch geben musste und ich sie mir eines Tages beschaffen würde. Heute weiß ich, dass es dann zu spät sein wird. Ich könnte selbst in normalen Zeiten nicht lange genug leben, um alle Lücken aufzufüllen. (Haushofer 224f)

(Names lived on in my head, and I no longer knew when the people who had borne them had lived. I had only ever learned for exams, and later the dictionaries behind me had given me a sense of security. Now without these aids, my memory was in a terrible muddle. Sometimes lines from poems occurred to me; I didn't know who had written them, and was seized by an obsessive desire to go to the nearest library and take out some books. It was some comfort to me that the books must still exist, and that I would one day get hold of them. I know today that by then it will be too late. Even in normal times I couldn't live long enough to fill in all the gaps.)

Her isolation has changed her view on the importance of knowledge. While she feels content that reference books continue to exist outside of her reach, the collective memory they contain has become irrelevant to her life. The appearance of the wall has therefore changed what is deemed important and what is not. In the present circumstances, her own story could bear even more significance to possible future readers than the books stored in libraries outside of her reach. While Herr Geiser finds satisfaction in collecting knowledge during his isolation, the nameless woman's more dire situation requires different types of information for her survival. Herr Geiser's confinement appears to him only temporary, as he believes the rain cannot continue forever and people will soon repair the destroyed street and restore the infrastructure. The woman, though, has lost all hope that the wall will vanish in the same mysterious fashion as it appeared. She must therefore adapt her life to the new conditions.

Der Mensch erscheint im Holozän and *Die Wand,* attempt to address the question of what remains relevant if humankind disappears. While both literary works were published well before the concept of the Anthropocene was introduced, Herr Geiser and the nameless woman recognize the dominant influence of the human species on the planet's processes and its environments. Indeed, their isolation is the result of changes to the environment likely caused by human activity. In the absence of others, they begin to realize human significance is fading. Moreover, when compared with the history of the planet, their own existence is fleeting and insignificant when seen in the greater context of the cosmos. Though humankind has existed on Earth for only a short period of time, their fates have become entangled. In Frisch and Haushofer's narratives this

connection becomes visible to the human protagonists at the moment of catastrophe and the beginning of their isolation, highlighting the finite nature of the human species.

Depicting the Catastrophe and (Anthropocentric) Time in Literary Narratives of Isolation

The depiction of the catastrophe in literature has a longstanding tradition. In recent years, and in the age of the Anthropocene, scholars have analyzed depictions of environmental catastrophe in literary narratives. In contrast to earlier disasters in humankind's history, scholar Eva Horn argues the environmental catastrophe is a process rather than an event. Her observation points to the relation between the catastrophe and time; it is in the here and now that anthropogenic changes lead to future environmental disaster (cf. Horn 6). Another distinctive feature of the catastrophe is its subjective character, which aligns with Peter Utz's well-known definition. He describes catastrophes as "[…] ein kulturelles Muster, das die Wahrnehmung, Darstellung und Deutung eines Einbruchs in unsere geschichtliche Erfahrungswelt prägt. Eine 'objektive', von ihren historischen und kulturellen Voraussetzungen gelöste Definition von Katastrophe kann es deshalb kaum geben" (Utz 11, […] a cultural pattern which indicates the perception, presentation, or interpretation of an intrusion into our historically experienced world. It is most unlikely to define catastrophe in an 'objective' way due to its historical and cultural origin). Humans classify catastrophes based on their respective views and values.[99] The subjective element of how events are viewed and interpreted has become more complicated in the Anthropocene. There are some, for example, who do not view anthropogenic changes in the environment as serious or threatening, and instead believe the human species will continue to persevere by adapting to increasingly more dramatic

[99] Herr Geiser shares this view when he describes that the notion of the catastrophe is a human-made idea. He states, "Katastrophen kennt allein der Mensch, sofern er sie überlebt; die Natur kennt keine Katastrophen" (Frisch 103, —only human beings can recognize catastrophes, provided they survive them; Nature recognizes no catastrophes).

environmental alterations in the future. For others, though, these changes are indicative of a larger, looming disaster that could potentially lead to the end of humankind.

At first glance, the sudden appearance of the wall in Haushofer's narrative fits the event-centered view of the catastrophe (cf. Utz 13). Unlike with other events, a considerable mystery surrounds the emergence of the unseen, unknown barrier. The narrator herself remarks,

> Die Wand ist so sehr ein Teil meines Lebens geworden, dass ich oft wochenlang nicht an sie denke. Und selbst wenn ich an sie denke, erscheint sie mir nicht unheimlicher als eine Ziegelwand oder ein Gartenzaun, der mich am Weitergehen hindert. Was ist denn auch so Besonderes an ihr? Ein Gegenstand aus einem Stoff, dessen Zusammensetzung ich nicht kenne. Derartige Gegenstände hat es in meinem Leben immer mehr als genug gegeben. (Haushofer 150)

(The wall has become so much a part of my life that often I don't think about it for weeks. And even if I do think about it, it strikes me as no more strange than a brick wall or a garden fence that stops me from going further. What's so special about it? An object made of material whose composition is unknown to me. There was always more than enough of that kind of thing in my life.)

Throughout her report, the female narrator mentions the wall only a few times. The invisible border has become a part of her life, and while it influences her living conditions, she no longer consciously thinks of it. As a consequence, the catastrophe in *Die Wand* is less event-centered than it initially appears. While its emergence forces the woman to adjust her entire life, the event itself bears less significance over the course of her isolation. In her seclusion she experiences personal catastrophes more dramatic than the emergence of the wall itself. When she loses her dog companion, for instance, she describes this experience as follows: "Er war mein sechster Sinn. Seit er tot ist, fühle ich mich wie ein Amputierter. Etwas fehlt mir und wird mir immer fehlen. […] Das Schlimmste ist, dass ich mich ohne Luchs wirklich alleine fühle" (Haushofer 149, He was my sixth sense. Now that he is dead I feel like an amputee. I miss something and will always miss it. […] The worst thing is that without Lynx I feel truly alone). With the death of her dog she loses a part of herself, and experiences loneliness in a way she never has before, not even in the beginning of her isolation. This event, as well as others, changes how she views her life and what she regards as catastrophic. In addition, the retrospective way of telling her story impacts how she describes past encounters and underlines the direct connection between time and catastrophe.

In Frisch's *Der Mensch erscheint im Holozän,* the torrential rainfall that causes Herr Geiser's isolation can easily be regarded as a "Naturkatastrophe" (natural catastrophe). In the age of the Anthropocene, natural, environmental catastrophes require a clarification of the original, more general term that traditionally regarded nature and culture as two separate domains. Peter Utz explains,

> Der Begriff der 'Katastrophe' markiert die Grenzlinie zwischen der Natur und der Kultur, und er entsteht mit dieser Grenzziehung. Seit die menschliche Kulturarbeit die 'Natur' hinter Zäune und Dämme zurückdrängt, kann diese sie auch überschreiten. Seit der Mensch das Feuer nutzt, kann es auch sein Haus zerstören. (Utz 9)

(The term of the 'catastrophe' marks the boundary between nature and culture, and it derives with this demarcation. Since humans' cultural labor has pushed 'nature' back behind fences and dams, it is able to also cross these borders. Since humans have used fire, it can also destroy their house.)

Utz's explanation incorporates the concept of the Anthropocene, whose emergence has made it impossible to clearly distinguish between natural and cultural phenomena. While rain can be viewed as an aspect of daily weather, the length and intensity of the precipitation described in Frisch's text fuels the assumption that this not an ordinary weather event. Herr Geiser's research into comparable historical events stresses the assumption there is something different with this current weather compared to earlier climatic conditions in the mountain valley. While the rain is the initial reason for Herr Geiser's isolation, he appears to forget about the heavy precipitation over the course of his isolation, and the continuing rainfall becomes a mere backdrop to the narrative. In the end, he does not even notice when the rain finally stops. Here again, the notion of time comes into play. Possibly intensified by his degrading health, Herr Geiser, like the nameless woman in *Die Wand,* forgets about the initial catastrophe that causes his isolation. Attempting to describe the initial catastrophes and their consequences, the texts ultimately abandon their intention to depict the events chronologically. At some point in the narratives, the sequence is disrupted, resulting in the plots' time disorientation.

A literary narrative represents the concept of time on two different levels: first, on a structural level through the sequence(s) of the plot, or what is referred to as *story time,*[100] and, second, on an analytical level through language. Combining these two levels in a text, "time structures the narrated world ('diegesis') and is the effect of verbal evocation which emerges from use of tense, deictic expressions, and literary techniques" (Scheffel et al.). In Frisch's work, the narrative does not follow a traditional plot, but is interrupted by the insertion of the encyclopedia clippings, which are often unrelated to the actual plot. In his analysis of *Der Mensch erscheint im Holozän*, Andrew Liston argues that the structure of the text mirrors "[…] the chaos of the natural world more than a conveniently organized text […] (118f). One element of the disorder of the natural world can be found in its history. Despite humankind's attempt to research the history of the Earth and the environment, some aspects of the environmental past remain a mystery. Humans like Herr Geiser, for example, struggle to understand the magnitude of geological time when their own lives revolve around hours, weeks, months, or years. The evolution of the Earth over billions of years is most incomprehensible, especially to a lay person like Herr Geiser, and particularly when he already has trouble keeping track of the day of the week.

Herr Geiser's very human inability to comprehend time that exceeds his own lifetime is realized via language and the narrative structure in Frisch's *Der Mensch erscheint im Holozän*. The majority of the text – encyclopedia clippings excluded – is written in the present tense. The only exception is the retelling of Herr Geiser's climb to the peak of the Matterhorn when he was younger, as well as shorter anecdotes from his previous life that are depicted in past verb tenses.[101] The

[100] See Genette, 86-112, for a more detailed definition and description of this term.

[101] The narrative depicts, for example, how, for one summer, the woodpeckers began pecking onto Herr Geiser's windows instead of the trees and how he solved the problem. "Einmal im Sommer hatten die Spechte eine Idee: sie pickten nicht mehr auf die Rinde der alten Kastanie, sondern plötzlich an die Fensterscheiben, und es kamen immer mehr, alle wie versessen auf Glas. […] Es wurde eine Plage. Trat man ans Fenster, um sie persönlich zu verscheuchen, so wählten sie flugs ein anderes Fenster, und man konnte nicht überall am Fenster stehen und in die Hände klatschen. Wirksamer war es, wenn Herr Geiser mit einer Latte auf den Granittisch schlug, so daß es knallte wie ein Schuß, dann flohen sie und warteten in den Zweigen ringsum. […] Im Sommer darauf hatten sie es wieder vergessen" (Frisch 66, One summer the woodpeckers got a sudden

depictions of Herr Geiser's quest to reconstruct Earth's history, which he composes in the present tense, are repeatedly interrupted by the original encyclopedia clippings, as well as short, often seemingly unrelated statements by the protagonist himself. Therefore, a sense of chronology is never established. The narrative also contains inconsistent references to time that has passed since the rainfall started and Herr Geiser's involuntary isolation began. The unreliable, omniscient narrator,[102] who observes Herr Geiser and his actions, only sporadically and selectively reveals information about the time, which contributes to an overall confusion about the narrative's timeline. In the beginning, the narrative informs: "Heute ist Dienstag" (Frisch 14, Today is Tuesday). This direct time reference appears to actively create a sequence, and resembles the time stamps found in traditional diaries, or the previously discussed Anthropocene chronicles. But only three pages later, the narrator directly disrupts the attempt to establish a timeline. Here, the text states: "Heute ist Mittwoch. (Oder Donnerstag?)" (Frisch, Today is Wednesday. (Or Thursday?)). While the quote begins with a sequenced reference, the addition of Thursday in parenthesis creates confusion about the veracity of either part. As a consequence, the text never establishes a sense of *story time*, and the reader never learns how long the heavy rainfall continues, or for how long Herr Geiser endures his isolation.

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idea, as it were: they stopped pecking the bark of the old chestnut tree and started on the windowpanes; more and more of them came, all seemingly obsessed by glass. […] It became a real nuisance. If one went to the window to shoo them away, they at once moved to another, and one could not be at every window, clapping one's hands. Geiser found it more effective to strike the granite table with a lath, which made a sound like the crack of a shotgun – then they flew off to wait in the surrounding branches. […] By the following summer they had forgotten all about it.)

[102] The role of the narrator in Frisch's *Der Mensch erscheint im Holozän* has been a point of great interest in academic scholarship. Gabriele Dürbeck argues that "the narrator remains hidden behind the character of Geiser when he depicts the story of an individual who develops a sense of purposelessness in his thinking, his action, and finally his existence" (Dürbeck 2014, 115). Thus, her depiction of the function of the text's narrator aligns with the role of an omniscient narrator. Andrew Liston's interpretation of the storyteller offers a different view. He regards Herr Geiser as the text's "principal focalizer" (116) whose account is supplemented by an extra-diegetic authorial narrator with his "interjections in brackets" (124). Bernard Malkmus characterizes the mode of narration in his analysis as a "limited third-person point of view, traditionally associated with free indirect speech, or 'erlebte Rede'" (73).

Despite the absence of *story time* in the narrative structure, the text itself reflects on the meaning of human time and the discrepancy between perceived human time and the history of the Earth. At one point, Herr Geiser, for example, looks up the geological epochs that structure Earth's history. He begins with the Cambrian age, which started one hundred million years ago (cf. Frisch 28f). In spite of the familiar unit of years, Herr Geiser's mind, and the human mind in general, is incapable of comprehending the actual length of such a time frame.[103] This difficulty in understanding time is further complicated by Herr Geiser's isolation, which makes him even more aware of the passing of time. The narrative depicts,

> Wieder und wieder auf die Armbanduhr zu blicken, um sich zu überzeugen, dass die Zeit vergeht, ist Unsinn. Die Zeit ist noch nie stehengeblieben, bloß weil ein Mensch sich langweilt und am Fenster steht und nicht weiß, was er denkt. Es ist sechs Uhr gewesen, als Herr Geiser zuletzt auf seine Armbanduhr geblickt hat: — genau drei Minuten vor sechs.
>
> Und jetzt?
>
> - eine Minute vor sechs. (Frisch 85)

(To keep on looking at one's wristwatch, just in order to convince oneself that time is passing, is absurd. Time has never yet stood still just because a person is bored and stands at the window, not knowing what he is thinking. The last time Geiser looked at his watch it was six o'clock – or, more exactly, three minutes to six.

And now?

— one minute to six.)

In his seclusion, time has become irrelevant since he is unable to engage in structured activities, or go about his normal, daily routine. At the same time, his isolation makes Herr Geiser more aware of the existence of time. While his wristwatch functions as a constant reminder that time remains, his imprisonment makes him question if time actually passes. If nothing is happening, how can the seconds, minutes, and hours move forward?

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[103] In his analysis, Peter Utz draws a parallel between the text's portrayal of time and space, arguing, "wie aus dem Raum fällt er [Herr Geiser] aus der Zeit, gerade weil sich im Text beides in kosmische Dimensionen ausdehnt" (61, Herr Geiser falls out of time and space, as both expand to cosmic dimensions throughout the narrative).

Herr Geiser's perception of time aligns with Paul Ricoeur's understanding of the term and its dependence on human experience. The French philosopher distinguishes between two forms of time: cosmological time and phenomenological time. Cosmological time is the forward movement of time, as human individuals progress through life, from birth to death (cf. Ricoeur Volume 3 12f). Or, in Herr Geiser's case, when he repeatedly checks his watch and notices the passing of minutes. Phenomenological time is the human experience of time, with an awareness of the past, present, and the future (cf. Ricoeur Volume 3, 15f). Ricoeur argues that cosmological and phenomenological time, despite their seeming disconnect, are actually linked, especially when considering the present. He argues, "for it is indeed the '*now*', the instant, that is the end of the before and the beginning of the after. And it is the interval between the two instants that is measurable and countable" (Volume 3, 19). This interplay between the two types of time is evident in Frisch's *Der Mensch erscheint im Holozän,* where the *now* describes Herr Geiser's quest for knowledge. He actively engages with the past, browsing through his encyclopedia and reference books to understand how the world around him has evolved to the present moment in time. The time of his own human existence, as well as the general period of humankind's existence on Earth, is significantly less than the age of the planet, or that of other living species. Thus, he begins to realize the finiteness of human time, and states "soviel Zeit hat der Mensch nicht" (Frisch 48, —no one has that much time). His isolation offers him a glimpse at how the human species could end, if endangered by increasingly severe natural catastrophes. In Herr Geiser's case, it is not only the severe weather and its consequence that appear hazardous; his advanced age and related health issues make him aware his own end might be near.

Despite the strong focus on Herr Geiser as the narrative's sole human protagonist, the text reveals scant personal information about him or his past. Throughout the entire narrative, his first name is never revealed, creating and enduring mystery. Other facts that remain unmentioned are, for instance, his former profession, or why he moved from Basel to the rather secluded mountain

village. Literary scholar Gabriele Dürbeck reads the narrative's omission of certain information as a reflection of Herr Geiser's mental state and his memory loss (cf. Dürbeck 2014, 115), but it also demonstrates the general insignificance of an isolated human individual and their past. During his reconstruction of the planet's history on his living room walls, he even takes down the oil portrait of his late wife to make room for additional cutouts. The text describes this measure by stating, "es ist aber nicht anders zu machen" (Frisch 53, There is nothing one can do about it). Herr Geiser's urge to understand the history of the Earth takes precedence over his own personal past. Compared to the planetary whole, his existence is insignificant. Yet humankind and their actions have initiated changes on the planet that have the power to annihilate their very existence and alter the living conditions that evolved over the course of an unimaginably long time. The age of the Anthropocene, Herr Geiser's *now*, marks a turning point in which the planet and humankind have become ever more entwined. The future presents the new unknown, as it is impossible to fully predict the effects of this new symbiosis. In Frisch's *Der Mensch erscheint im Holozän,* the impact is not yet visible. While Herr Geiser supposedly dies after he suffers a stroke, the narrative ends with a realist depiction of the mountain valley, which, after the protagonist's death and the end of the torrential rain, continues to exist. This description of the peaceful and tranquil scenery, though, may be just a temporary illusion, as the next environmental catastrophe might just be days, weeks, or months away.

In Haushofer's *Die Wand* the notion of time plays a significant role in the narrative setting. The female narrator does not begin her report immediately after the emergence of the wall, but more than two years after this life-changing event. Similar to Frisch's text, her account makes a reference to time at the beginning of the narrative, when she states, "heute am fünften November, beginne ich mit meinem Bericht. Ich werde alles so genau aufschreiben, wie es mir möglich ist. Aber ich weiß nicht einmal, ob heute wirklich der fünfte November ist" (Haushofer 7, Today, the fifth of November, I shall begin my report. I shall set everything down as precisely as I can. But I don't even

know if today really is the fifth of November). While the documentation of the date is a common strategy in the genre of the report, the narrator herself admits she is unsure about the accuracy of the day and month.[104] Here, her isolation has changed the significance of time. In the beginning of her seclusion, she found it important to keep track of the time, when she describes: "Ich nahm mir auch fest vor, täglich die Uhren aufzuziehen und einen Tag vom Kalendar abzustreichen. Das schien mir damals sehr wichtig, ich klammerte mich geradezu an die spärlichen Reste menschlicher Ordnung, die mir geblieben waren" (Haushofer 43, I also resolutely decided to wind the clocks daily, and cross each day in the diary. At the time it struck me as very important; I was practically clinging to the meagre remnants of human routine left to me). After the appearance of the wall, time marked one of the few remaining aspects of her old life, signaling some form of human order. Her depiction indicates, though, that her mindset has changed, and time is just an ambivalent unit used to structure life in a time when other humans still existed. The omission of the year in her reference to the date also indicates time has become meaningless. While she might have lost track of the exact day, or even month, over the course of her permanent isolation, the nameless woman should be able to list the exact year as a larger time unit. Its omission refers to a timelessness of the catastrophe; man-made disasters, such as the wall and its sudden appearance, are not bound to a specific time period, but can happen at any time during this modern age.

The narrator's retrospective view is an important structural element in the plot of Haushofer's *Die Wand*. The human first-person narrators in the Anthropocene chronicles, discussed in the second chapter, have worked with analepses to describe personal experiences and encounters from their past. In *Die Wand*, the female narrator reflects back on the beginning of her isolation, from her place in the present, where she writes about her experiences. Thus, she intertwines her current mindset with earlier events she deems noteworthy to include in her report.

[104] In her report she describes, for example, how she got extremely sick and slept for days. During this time, she was unable to maintain her sense of time (cf. Haushofer 244-254)

Narratology scholar Gary Fireman describes this technique as the following: "What we are doing is remembering and narrating, which means situating the experiences of the past – rewriting them – in accordance with and in relation to what has happened since, as understood and reunderstood from now, the moment of narration" (123). The woman's description of the beginning of her isolation are tinted with her current knowledge of the situation. Consequently, her perception of these earlier encounters has changed over the course of time, making her reports subjective and selective. David Carr adds, "the narrator […] in virtue of his retrospective view, picks out the most important events, traces the casual and motivational connections among them, and gives us an organized, coherent account" (59). In the beginning, the nameless woman follows a selective, chronological structure in her narration when she describes in detail, and with a time reference, how she arrived at the hunting lodge in the Austrian Alps,[105] or how she encountered the mysterious wall for the first time. She depicts here,

> Verduzt streckte ich die Hand aus und berührte etwas Glattes und Kühles: einen glatten, kühlen Widerstand an einer Stelle, an der doch gar nichts sein konnte als Luft. Zögernd versuchte ich es noch einmal, und wieder ruhte eine Hand wie auf der Scheibe eines Fensters. Dann hörte ich lautes Pochen und sah um mich, ehe ich begriff, dass es mein eigener Herzschlag war, der mir in den Ohren dröhnte. Mein Herz hatte sich schon gefürchtet, ehe ich es wusste. (Haushofer 15)

(Baffled, I stretched out my hand and touched something smooth and cool: a smooth, cool resistance where there could be nothing but air. I tentatively tried again, and once more my hand rested on something like a window-pane. Then I heard a loud knocking sound and glanced around before realizing that it was my own heartbeat thundering in my ears. My heart had been frightened before I knew anything about it.)

The retelling of this life-changing experience is full of detail. The retrospective view appears to allow the nameless woman to remember specific aspects of events and to better analyze her original encounter with the wall. For example, she compares the wall's texture to window glass in

[105] The woman explains, "am dreißigsten April luden mich die Rüttlingers ein mit ihnen zum Jagdhaus zu fahren" (Haushofer 10, On the thirtieth of April, the Rüttlingers invited me to drive with them to the hunting lodge).

her description. This realization might have occurred in retrospect, and not in the original moment. In this sense, her retrospective depictions are enriched.

Another example of this entwinement of past and present is the female narrator's occasional switch of the verb tense. While the retelling of selective encounters from an earlier time in her seclusion is done in simple past, the female narrator sporadically uses the present tense, pointing to a perspective that has changed over time. Describing her own transformation, she writes down:

> Wenn ich jetzt an die Frau denke, die ich einmal war, ehe die Wand in ihr Leben trat, erkenne ich mich nicht in ihr. Aber auch die Frau, die auf dem Kalendar vermerkte am zehnten Mai Inventur, ist mir sehr fremd geworden. Es war ganz vernünftig von ihr, Notizen zu hinterlassen, dass ich sie in der Erinnerung zu neuen Leben erwecken kann. (Haushofer 44)

(If I think now about the woman I once was, before the wall entered my life, I don't recognize myself in her. But even the woman who marked her diary with the word 'Inventory' on the tenth of May has become very strange to me. It was very sensible of her to leave notes behind, so that I can awaken her new life in my memory.)

The switch in the verb tense occurs in the middle of her sentences depicting the change from her previous self to her new identity. She admits in this passage that the process of remembering, and writing down her experiences in retrospect, enables the resurrection of her memories. This entwinement of the past and the present, though, disrupts her sequential and chronological retelling and causes incoherence. This disjointedness of her narration, and its overall subjective character, contradicts her classification of the text as a report ("Bericht"). Instead, her narrative can be defined as a (Anthropocene) chronicle due to these shared features with the new genre of the Anthropocene.

Throughout her narrative, her textual account contains notes that foreshadow events she experienced at a later time in her isolation. For instance, after describing her affection and growing connection to her dog Luchs in the earlier stages of her seclusion, she reveals that the animal will later die. She explains, "es war mir plötzlich ein großer Trost Luchs bei mir zu haben" (Haushofer 18, It was suddenly a great source of comfort to have Lynx with me), and ten pages later, she writes,

"seit Luchs tot ist, trage ich es [das Messer] wieder auf allen Wegen bei mir. Allerdings weiß ich jetzt sehr genau wozu und rede mir nicht mehr ein, daß ich es zum Schneiden von Haselnußzweigen brauche" (Haushofer 28, Since Lynx died, I have carried it [the knife] with me wherever I go. At least I know now precisely why, and no longer convince myself that I need it to cut down hazel-branches). These foreshadowing passages reveal some aspects of future events, but they also create suspense since it is not yet known how Luchs has died. His death might be the reason why the woman has begun to carry a knife with her at all times as some form of a safety precaution. This hint indicates that the dog might have not passed from natural causes. While this narrative strategy can be read as a technique to create coherence, due to the narrator's retrospective view in Haushofer's *Die Wand,* this style constitutes an incoherence. Here, the nameless woman is unable to follow a clear chronology, or recall her experiences and encounters only in a past context. Instead, she intertwines her feelings from the past with those of the present, consequentially disrupting the chronology of her textual account.

The significance of the present, and its general incoherence, is evident in the narrative's ending, too. While the retrospective perspective in literary texts is often used to highlight selective episodes and incidences in order to make sense of a text's ending (cf. Carr 61), the nameless woman's narration abruptly ends when she runs out of paper. Stating the presumable date that marks the end of her written account, she describes,

> Heute am fünfundzwanzigsten Februar beende ich meinen Bericht. Es ist kein Blatt Papier übrig geblieben. Es ist gegen fünf Uhr abends und schon so hell, dass ich ohne Lampe schreiben kann. Die Krähen haben sich erhoben und kreisen schreiend über dem Wald. Wenn sie nicht mehr zu sehen sind, werde ich auf die Lichtung gehen und die weiße Krähe füttern. Sie wartet schon auf mich. (Haushofer 276)

(Today, the twenty-fifth of February, I shall end my report. There isn't a single sheet of paper left. It's now around five o'clock in the evening, and already so light that I can write without the lamp. The crows have risen, and circle screeching over the forest. When they are out of sight I shall go to the clearing and feed the white crow. It will already be waiting for me.)

At the end of her report, the female narrator does not depict a resolution. Instead, it is the lack of paper that forces an end to her report, with her stating the presumable date and time, and her next activity. However, besides this brief mention of her day's plans, [106] the female narrator does not describe how she envisions her future. She focuses on her survival, which is dependent upon the present, and her daily chores.[107] Due to the absence of other human individuals, the woman is solely responsible for her future, which in her isolated circumstances simply means her survival. Survival appears to be the driving force behind her actions, since she could have otherwise ended her own life earlier in her isolation. As the sole human survivor, her present actions determine her future. Her fate is no longer dependent on outside factors, or other humans, and can only be impacted by seemingly natural causes. The Anthropocene will end with her, and the planet and its non-human entities are expected to regain their independence, despite showing the traces of human action for an indefinite time in the future.

Like Herr Geiser in Frisch's *Der Mensch erscheint im Holozän*, not much is known about the female narrator's life before the appearance of the wall. In her seclusion, the past possesses no significance. When she explains why she joined her cousin Luise, and her cousin's husband, on a weekend getaway to their hunting lodge, she gives some details about her living situation. She says, "ich war damals seit zwei Jahren verwitwet, meine beiden Töchter waren fast erwachsen, und ich konnte mir meine Zeit einteilen, wie es mir gefiel" (Haushofer 10, I had been widowed for two years at the time, my two daughters were almost grown up and I could use my time as I saw fit). Later,

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[106] During one of her walks through the forest, she first discovered the white-feathered crow. She compares herself to the animals, because, just like the bird among his conspecifics, she is an outsider in her environment. See Gwin, 165-174, for a more detailed analysis of the allegory between the nameless woman and the crow.

[107] In a previous part of her report, the narrator comments on the difficulty to focus on the present situation. While retelling the events of her first summer on the mountain pasture, she explains, "noch immer hoffte ich damals, man würde mich eines Tages finden, aber soweit es mir möglich war, verdrängte ich alle Gedanken an die Vergangenheit und an die fernere Zukunft und befasste mich nur mit naheliegenden Dingen: der nächsten Apfelernte und den saftigen Almwiesen" (Haushofer 128, Back then I still hoped that somebody would find me one day, but I repressed all thoughts of the past and the distant future as best I could, and only concerned myself with the immediate things: the next potato-harvest and the lush meadows of the Alm).

she also reveals that she is in her forties (cf. Haushofer 82). The sparse details she includes from her life before the wall emphasize that the past is no longer of importance to her. She has come to terms with her fate, and her new life. Over time, this new living situation has sparked a personal transformation. The woman she has become is so significantly different from her former self that she refers to her past self with the third-person personal pronoun. She describes, "wenn ich heute an die Frau denke, die ich einmal war, die Frau mit dem kleinen Doppelkinn, die sich sehr bemühte jünger auszusehen, als sie war, empfinde ich wenig Sympathie für sie" (Haushofer 82, If I think today of the woman I once was, the woman with the little double chin, who tried very hard to look younger than her age, I feel little sympathy for her). The continuous seclusion has estranged the woman from her former identity, and her past in general, leaving her unable to relate to certain earlier habits. Her human transformation has taken place on two different levels. First, she describes a physical transformation and the loss of personal vanity. Second, she notices a psychological transformation as she begins to abandon human habits, she once deemed significant before the appearance of the wall. This dual metamorphosis results in her total alienation from the past, but also from humankind and civilization in general. She explains, for example, that she no longer has a connection to the old magazines and newspapers left behind in the hunting lodge.[108]

While her personal transformation indicates her assimilation to life in the mountains, one relic from her human past remains: time. She cannot overcome her urge to classify her activities in relation to the concept of time. Fittingly, the woman pens her self-declared report with the help of notes she left on a calendar. One such memo she discovers reads: "Die Zeit vergeht so schnell" (Haushofer 236, Time is passing so quickly). While the woman is able to reconstruct past experiences and encounters, this thought appears foreign to her and she has no memory of the

[108] She says, "heute habe ich jede Beziehung zu ihnen (die Zeitungen und Magazine) verloren. Sie langweilen mich. Das Einzige, was mich hier im Wald gelangweilt hat, waren die alten Zeiten" (Haushofer 110, Today I've lost all feeling for them [the newspapers and magazines]. They bore me. The old newspapers were the only thing that has bored me here in the forest).

moment when this thought occurred, or what made her feel this way. In this passage, she interrupts her retelling once again, and further reflects on this statement. She goes on to say:

> Die Zeit schien nur mir schnell zu vergehen. Ich glaube, die Zeit steht ganz still und ich bewege mich in ihr, manchmal langsam und manchmal mit rasender Schnelligkeit. Seit Luchs tot ist, empfinde ich das deutlich. Ich sitze am Tisch, und die Zeit steht still. Ich kann sie nicht sehen, nicht riechen und nicht hören, aber sie umgibt mich von allen Seiten. Ihre Stille und Unbewegtheit ist schrecklich. Ich springe auf, laufe aus dem Haus und versuche ihr zu entrinnen. Ich tue etwas, die Dinge treiben voran, und ich vergesse die Zeit. Und dann ganz plötzlich ist sie wieder um mich. […] Ich werde mich an sie gewöhnen müssen, an ihre Gleichgültigkeit und Allgegenwart. (Haushofer 236f)

(Time only seemed to be passing quickly. I think time stands quite still and I move around in it, sometimes slowly and sometimes at a furious rate. Since Lynx died, I feel that clearly. I sit at the table and time stands still. I can't see it, smell it or hear it, but it surrounds me on all sides. Its silence and motionlessness are terrible. I jump up, run out of the house and try to escape it. I do something, things race ahead, and I forget time. And then, quite suddenly, it surrounds me again. […] I shall have to get used to it, its indifference and omnipresence.)

Just like Herr Geiser, the nameless woman cannot overcome the feeling that time continues to exist and imperceptibly surrounds her at all time during her daily activities. While she sometimes forgets of its existence, during other times the idea of time seems to haunt her, especially following the loss of her animal companion, Luchs. The sense of time marks the last remnant of her former life due to the tendency of humans to often measure and evaluate the pace of life. Without any purpose other than basic survival, and in the absence of other human beings, time becomes a relic of human civilization. However, after the appearance of the wall, the nameless woman remains the only living being supposedly able to perceive time. She describes, "ich musste warten und warten. Hier hat alles sehr viel Zeit, eine Zeit, die nicht von tausend Uhren gehetzt wird. Nichts treibt und drängt, ich bin die einzige Unruhe im Wald und leide immer noch darunter"(Haushofer 155, I had to wait and wait. Everything takes its time here, a time that isn't agitated by a thousand clocks. There's no haste or urgency, I'm the only disturbance in the forest, and I still suffer from that). In contrast to her natural surroundings, the woman's perception of time prompts her to engage in daily chores, or to find activities with which to pass her time. This results in a form of impatience that complicates

assimilation to her new life, and to the environment. Her humanness, and her sense of time, distinguishes her from other living beings and makes her the last disturbance in the mountainous forest. Just as humankind in the Anthropocene has transformed into a geological force, the woman continues to alter the conditions on Earth due to her presence and her human character.

Believing herself to be the last living human individual, though, the woman predicts that the concept of time will die with her. She states, "wenn die Zeit aber nur in meinem Kopf existiert und ich der letzte Mensch bin, wird sie mit meinem Tod enden. Der Gedanke stimmt mich heiter. Ich habe es vielleicht in der Hand, die Zeit zu ermorden" (Haushofer 237, But if time exists only in my head, and I'm the last human being, it will end with my death. The thought cheers me. I may be in the position to murder time). With her death, the concept of time will end, too. There will be no living being remaining for which life is structured by the concept of minutes, hours, or even years. She is content with this thought, as she regards humans and time as a disturbance to the planet and its environment. Without a human presence the Earth will continue to exist, and regain its independence from humankind. She describes,

> Die Nesseln neben dem Stall werden weiterwachsen, auch wenn ich sie hundertmal ausrotte, und sie werden mich überleben. Sie haben soviel mehr Zeit als ich. Einmal werde ich nicht mehr sein, und keiner wird die Wiese mähen, das Unterholz wird in sie einwachsen, und später wird der Wald bis zur Wand vordringen und sich das Land zurückerobern, dass ihm der Mensch geraubt hat. (Haushofer 185)

(The nettles beside byre will go on growing, even if I exterminate them a hundred times, and they will survive me. They have so much more time than I do. One day I shall no longer exist, and no one will cut the meadows, the thicket will encroach upon it and later the forest will push as far as the wall and wine back the land that man has stolen from it.)

The nameless woman envisions the planet's future without her or any other living humans. In her imagination, nature will be untamed, and grow without any barriers or restrictions. Just like Herr Geiser read in his encyclopedia about the history of the Earth prior the evolution of the human species, the female narrator tries to predict what will happen to the mountainous area she has gotten to know during the previous two years in isolation. Her outlook for the future is positive and

optimistic; she realizes that humankind and their altering actions represent only a tiny fraction of the planet's history. Earth in its entirety remains resilient, and will outlive the human species.

In Marlen Haushofer's *Die Wand* und Max Frisch's *Der Mensch erscheint im Holozän,* seemingly catastrophic events cause the isolation of their human protagonists. In their seclusion, and due to the absence of other humans, they reflect on their own species and their significance on Earth. Here, it is the concept of time, and human's interest in history, that distinguishes them from other living beings. Herr Geiser and the nameless woman recognize that these two human traits influenced their lives before the isolation, and continue to play a significant role despite the fact that their seclusion has made time and history insignificant and meaningless. Herr Geiser turns to the books in his library to reconstruct the history of Earth in an attempt to identify similarities between his current situation, in particular the severe weather, and the past. His quest for knowledge causes him to realize the history of the planet is significantly longer than that of humankind, making it impossible to study the planet as meticulously as he wishes to do. The nameless woman documents her life after the appearance of the wall and writes down noteworthy encounters and experiences from the last two years. In her written account she reflects retrospectively about her more recent past, and also explains how time has structured her life behind the wall despite the absence of other humans. The narratives' reflection and reevaluation of time is evident on the texts' structural and discursive levels alike, demonstrating that humankind, with its engrained sense of time and history, is often more concerned with the past, and even the future, than with the present. As a consequence, the isolation and its effects disrupts their lives, and their narratives' portrayal of their seclusion.

Conclusion

The idea of the end of humankind is not entirely new, but the recent challenges and threats of the Anthropocene demonstrate that the continued existence of the human species on Earth is not guaranteed. The question of humankind's survival in the near, or distant, future marks the great unknown, which is comparable to the invisible threats discussed in the previous chapters. How is the future going to look when anthropogenic changes continue to alter the conditions of the planet? What will the effects be on humans and their lifestyles? And how would the last human survivor describe the end of their own species?

Marlen Haushofer's *Die Wand* and Max Frisch's *Der Mensch erscheint im Holozän* are two literary responses that deal with these raised questions through their depictions of the ways in which the last human survivors on Earth spend their lives. In both narratives, it is a catastrophe that causes their isolation and separates them from their human peers. In *Die Wand,* the catastrophe remains a mystery when the sudden appearance of a transparent wall ends human life outside of the boundary's perimeter. Inside, a nameless woman survives and documents her isolation in a personal report through which she gives a detailed description of her life after the appearance of the wall. Similar to the previously discussed ecological perils, the woman believes the wall is a result of human action. Her new life in the mountainous forest of the Austrian Alps brings her closer to nature; it is then that she fully recognizes both the destructive consequences of human behavior on the environment, and the fundamental differences between her and other living habitants of the Earth. Her isolation, for instance, reveals the significance of time in her own life, and for human beings in general. In her report she reflects on issues previously invisible to her, which have only surfaced because of her isolation.

As the woman's hope for an end of her isolation dims over time, she begins to write her personal report. Over the course of her text, she mentions several motivations for writing down her

story: for one, she does not want to lose her mind (cf. Haushofer 7), but she also begins to write in the hope her narrative will find a reader (cf. Haushofer 84f). Her wish implies that she intends to leave a visible, written account that documents her time as the last human survivor on Earth. While her future audience might be unable to read her written words, it is the only known form of communication with which the woman is familiar. Before the appearance of the wall, books were the source of humankind's collective memory, documenting their history and their knowledge. Even in her state of isolation, living in drastically changed conditions, she cannot conceive of a different form of documenting her existence. Her words, written by hand on scrap paper, make her experiences visible and real to herself. Moreover, she can go back and reread her reflections, knowing they have existed, and she has not yet lost her mind.

Herr Geiser's quest for knowledge, described in Max Frisch's *Der Mensch erscheint im Holozän,* portrays humankind's general ignorance of planetary processes and the Earth's past. While he can see, for example, the mountains and the rain from his living room window, he realizes he does not know how the natural environments developed, or if heavy rainfall is common for this geographical area. Here, his ignorance resembles invisibility. During his isolation he attempts to overcome his gaps in knowledge by looking up selective information and facts in the books from his library. Soon, he recognizes that looking up information is not enough, because this strategy only temporarily teaches him facts that he will continue to forget. The narrative explains,

> Es genügt nicht, dass Herr Geiser in diesem oder jenem Buch mit seinem Kugelschreiber anstreicht, was wissenswert ist; schon eine Stunde später erinnert man sich nur noch ungenau, vor allem Namen und Daten prägen sich nicht ein; Herr Geiser muss es eigenhändig auf einen Zettel schreiben, was er nicht vergessen will, und die Zettel an die Wand heften, Reissnägel sind genug im Haus. (Frisch 28)

(It is not enough for Geiser to draw a line with his ballpoint pen against passages in his book or that worth remembering; within an hour his memory of them has become hazy; names and dates in particular refuse to stick; the things he does not wish to forget Geiser must write down in his own hand on pieces of paper, which he must then affix to the wall. There are thumbtacks enough in the house.)

In order to remember the information he looks up, Herr Geiser begins to create a collage of facts and statements on the walls of his living room. Being able to see and review his notes helps him to memorize the information he deems important, which he did not know beforehand, or which he had forgotten over time. Reading and writing become essential skills in his drive to understand the environment. While the rainfall prevents him from engaging directly with the environment, he most likely would not be able to understand the development of the Alps by merely looking at the mountains. Here, his books become his teachers, containing the information that humans have researched and collected over time in written form. Writing, and language in general, have the ability to overcome different forms of visual imperceptibility; in this case, ignorance due to material invisibility.

The benefits of language and writing as a tool to make sense of the world is restricted to humans. After filling up every free space on his living room walls with cut-outs from his books or his handwritten notes, the narrative states: "All die Zettel, ob an der Wand oder auf dem Teppich, können verschwinden. Was heisst Holozän! Die Natur braucht keine Namen. Das weiß Herr Geiser. Die Gesteine brauchen sein Gedächtnis nicht" (Frisch 139, All the papers, whether on the wall or on the carpet, can go. Who cares about the Holocene? Nature needs no names. Geiser knows that. The rocks do not need his memory). Herr Geiser's quest for knowledge mirrors the human urge to research, record, and name everything they encounter, including the planetary environments. This human practice, though, is insignificant for non-human entities and beings such as stones, or even animals like birds, or insects. Most will continue to exist, regardless of names, and without humankind. The human urge to archive the world around them will never be completed, and all their collective knowledge, or collective memory, will become irrelevant once they disappear.

The concept of the Anthropocene and its emergence in the early 2000s has highlighted humankind's dominance over the planet and its processes and environments. Reports of ever-increasing environmental changes, and ecological disasters caused by human actions, emphasize

the geological power the human species has obtained. While their influence on the extinction of animal and plant species, for example, is not directly visible, human beings themselves could be confronted with obstacles of survival in the near, or distant, future. Literary narratives such as Marlen Haushofer's *Die Wand*, or Max Frisch's *Der Mensch erscheint im Holozän,* first identified this problem in German-speaking literary texts, long before the concept of the Anthropocene was established. In their texts, the human protagonists recognize the dominant influence of their own species that lead to their isolation, threatens their survival, and gives them the idea they are the last representatives of their species. Both texts end on a fairly misanthropic note, with each believing the planet will continue to exist without its human dwellers, and will regain its independence and begin to grow and thrive again.

Chapter Four

North American Views of Environmental Threats: Seeing and Science in Barbara Kingsolver's *Flight Behavior* and Margaret Atwood's *Oryx and Crake*

In our modern, globalized world, environmental threats like climate change and pollution can no longer be contained in a single geographical location; instead, they are moving and transforming into dangers with no awareness of national borders or natural boundaries. Despite the global dimension of these environmental perils, the ways in which people from different cultures think about and discuss these perils is distinctly different. In her social study on the public perception of climate change in Norway, the sociologist Kari Marie Norgaard identifies a worldwide inability "[…] to integrate this knowledge [about climate change] into everyday life or to transform it into social action" (11),[109] indicating that our concerns for a changing climate do not automatically translate into changed action. Additionally, Norgaard identifies that "'[c]ognitive traditions', or collective patterns of thinking differ from one 'thought community' to another. How we think is part of culture and marks our perception in community" (6). Members of different cultures, regardless of shared living conditions and realities, think and talk differently about climate change. Norgaard's study ends with a comparison of her findings on the public perception of climate change in Norway and in the United States. While she identifies a "public silence" on climate change in Norway, the strong sense of individualism in the United States, or the so-called 'American Way of Life,' creates different challenges to acknowledge the threat's very existence (192-202).

These different ways of communicating environmental threats are absorbed in literary narratives, too. The previous three chapters looked at the depiction of modern, invisible

[109] In the third chapter Norgaard gives reasons for the dissonance between the knowledge of climate change and human actions. One of the most important factors of climate change denial in humans' everyday lives are financial advantages. "Citizens of wealthy nations who fail to respond to the issue of climate change benefit from their denial in economic terms. They also benefit by avoiding the emotional and psychological entanglements and identity conflicts that may arise from knowing that one is doing 'the wrong thing' […]" (Norgaard 72).

environmental hazards in contemporary German literature, namely, nuclear accidents and contamination, climate change, and extinction. Their collective visual imperceptibility influences their presentation in literary narratives in three distinct forms. First, literary texts have transformed into hybrid narratives in which the boundaries of literary genres have become less stable. These literary texts intertwine the features of numerous prominent generic traditions, such as travel, autobiographical, or disaster writing. The emergence of these hybrid literary texts affects their presentation of place and time within the narratives. Second, the human first-person narrators become the plots' focalizers when they describe the encounters through their personal, highly subjective lens. These human individuals are in most cases ordinary people with no scientific background or deeper understanding of environmental threats. Similar to the texts' readers, they are only witnesses of the change in the environment. Their depictions of the perils are non-scientific attempts to envision and describe happenings that are often imperceptible to their human senses. Third, language is employed to overcome the threat's material invisibility when words are used to describe what cannot be seen. Here, the literary texts use common words to compare the modern environmental dangers to familiar, everyday occurrences by broadening the semantic meaning of individual terms and/or by creating metaphorical analogies.

In the field of German studies, interest in studying depictions of the environment and the age of the Anthropocene in literature emerged fairly recently, especially when compared to Anglophone literary studies. German literary works from the nineteenth century up to the middle of the twentieth century have, until recently, received minimal recognition, and are just now being rediscovered by literary scholars due to their depiction of environmental threats that remain relevant into the present.[110] The enduring prominence of Anglophone environmental literature might be connected to an early interest in ecocriticism among American and British literary

[110] The growing interest in the presentation of the environment in literature has led to a rediscovery of realist writers such as Adalbert Stifter, Theodor Fontane, or Wilhelm Raabe.

scholars in the late 1980s and early 1990s.[111] Cheryl Glotfelty defines the field broadly as "[…] the study of the relationship between literature and the physical environment" (XVIII). Together with Harold Fromm, Glotfelty published the first edited collection about American environmental literature, *The Ecocriticism Reader* (1996), which informed about the historical roots and the wide variety of environmental topics in American literature. The publication of their edited collection, as well as the establishment of the Association for the Study of Literature and the Environment, short ASLE, attempted to formally institutionalize the study of environmental literature across academia and led to a rise in scholarly publications (cf. Dürbeck and Stobbe 10) and a growing general interest in the field. Among German literary scholars, it was Axel Goodbody who first formerly introduced ecocriticism to German Studies with the publication of his *Umwelt-Lesebuch: Green Issues in Contemporary German Writing* in 1997, and, one year later, his edited collection *Literatur und Ökologie.* While Goodbody's scholarship marks the beginning of German ecocriticism, the sheer number of academic publications, as well as its general significance within the field, has not yet reached the discipline's prominence within the Anglophone scholarly sphere.[112]

This chapter offers a comparative analysis of German and Anglophone environmental literature and their depiction of environmental invisible threats. Due to the global dimension of many environmental threats, it would be easy to assume they are viewed similarly across different works. Studies by sociologists, and anthropologists such as Kari Norgaard, have shown that environmental thinking is culture-specific. This is also evident in contemporary environmental literature. Literary critics have acknowledged distinctive differences in the ways cultures have viewed and written about the natural world, especially in centuries past.[113] Therefore, this chapter

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[111] See Dürbeck and Stobbe, 9-15, for a historical overview of the development of ecocriticism in German and Anglophone literary studies.

[112] See Goodbody (2015), 123-135, for a detailed historical overview outlining the development of ecocriticism in German literary studies.

[113] Parham and Westling's edited collection *A Global History of Literature and the Environment* (2017) offers a historical-cultural overview of environmental writing, including literary voices from as early as ancient Mesopotamia and Greece to current environmental perspective from all continents. With their collection they

analyzes two contemporary examples from the Anglophone context and their depiction of modern, invisible environmental threats. I do not seek to assess which modes of presentation are better, or more effective; rather, I point to the distinct differences in communicating current environmental perils in the German and the North American culture. The comparative look at literary examples presents insights into the more general differences in how cultures view, communicate, and depict environmental threats. While these perils have a worldwide relevance, they cannot be generalized or globalized and require culture-specific representation in order to be both understood and effective in conveying their ecological meaning.

This chapter focuses on Margaret Atwood's *Oryx and Crake* (2003) and Barbara Kingsolver's *Flight Behavior* (2012). Both widely popular, bestselling works center around environmental threats that are relevant in the era of the Anthropocene. Atwood's *Oryx and Crake*, the first book of her *MaddAddam* Trilogy, depicts a future, post-apocalyptic world in which humankind has been killed by a sudden pandemic. The only human survivor is the text's narrator and focalizer, Snowman,[114] who describes how the end of the world came to be and what his new reality looks like without other humans. Aside from Snowman, other living beings not killed by the mysterious virus are from genetically engineered hybrid animal species, such as rakunks, wolverogs, pigoons, and the so-called Crakers. While the Crakers resemble humans in appearance, they too have been genetically engineered, and have lost all human traits considered undesirable by their eponymous creator, Crake, such as the desire for status and hierarchy. Kingsolver's *Flight Behavior* is set in

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seek to "[…] offer representative studies that help to show how various historical and geographical perspectives on literature capture the ancient, 'modern', and contemporary environmental experiences that have shaped our present-day ecological awareness" (3-4). Especially, the collection's final part called "The Anthropocene" implies a turn to global environmental literature when acknowledging "[…] variant ways of doing ecocriticism and of registering, narrating, and contesting what, in the entanglements of politics, economics, geological, atmospheric, and environmental change, has been and continues to be a world environmental history as well as a globalised present" (4).

[114] Snowman explains at the very beginning of the narrative that he chose his name after the apocalypse and that it was inspired by the "Abominable Snowman, a being that was believed to be "[…] existing and not existing, flickering at the edges of blizzards, apelike man or manlike ape, stealthy, elusive known only through rumours and through its backward-pointing footprints" (Atwood 2003, 8).

rural Tennessee and follows the main protagonist, Dellarobia Turnbow, a 28-year-old mother and housewife who accidentally finds a colony of endangered monarch butterflies in the valley behind her house. Her discovery, at first regarded as a miracle by the local community, is actually the result of significant and insidious ecological problems. When biologists arrive to study the appearance of the monarchs, Dellarobia learns that the changing climate in their winter habitat in Mexico has led the butterflies to the spot in her backyard. As the colder months are approaching, the butterflies are threatened by the expected harsh temperatures that could bring them one step closer to extinction.

In Atwood's *Oryx and Crake* and Kingsolver's *Flight Behavior,* scientific findings pertaining to environmental threats play a significant role in these narratives. This marks the most striking difference to the German environmental texts described in this research project, in which scientific knowledge is largely absent, or the comprehensibility of scientific information is sharply criticized, as in Christa Wolf's *Störfall – Nachrichten eines Tages*. Actual scientific facts and data are included in these Anglophone literary works, helping the literary characters understand environmental threats that are otherwise imperceptible to them. In *Oryx and Crake,* scientific innovations in bioengineering have drastically altered the human world, especially when compared to the conditions with which Atwood's contemporary readership might be familiar. These extreme changes have apparently happened over the course of only a few decades, as descriptions of the living conditions contain remnants that resemble the present circumstances of the early twenty-first century, which here implies a rather rapid transformation of the environment due to bioscientific innovations. This future *storyworld*[115] offers a look into the possible near future, when the consequences of anthropogenic environmental changes have become visible and threaten the well-being of humankind. The fight for human survival fuels the need for innovations in science and

[115] I am borrowing the term *storyworld* from ecocritic and narratology scholar Erin James who regards this idea as "[…] the world-making power of narrative texts" (x). She explains further that the term implies that the readers are losing themselves within the narrative and begin to envision living in the environment described in the literary text (cf. ix-xiv).

technology that can combat, at least temporarily, the threat of floods, heat waves, and storms. In the world of *Oryx and Crake,* currently known environmental threats are no longer invisible, because new bioengineered solutions have repaired the consequences of these perils. These scientific remedies, whose benefits supposedly overshadow their risks, though threaten to become even worse hazards for humankind.

In Barbara Kingsolver's *Flight Behavior,* the significance of the natural sciences, and here in particular climate science, is presented in a more positive light. The narrative depicts how access to information in entomology and climate science helps Dellaboria understand the environmental changes that were once only partly visible to her. With the help of scientific data, and the guidance of the entomologist Ovid Byron, she begins to recognize the changes in the environment that led to the arrival of the monarch butterflies in her backyard in Tennessee. Enthused by her own enlightenment, she is motivated to share her information with family and neighbors, only to realize that what appears visible and clear to her might not seem the same way to others.

Based on findings from the previous chapters and the significance of literary genre and human first-person narrators, this chapter is divided into two larger parts that analyze the texts' generic compositions, and the role of the human individuals as the stories' focalizers. The first part discusses the complications of regarding environmental literature as global literature due to their focus on environmental threats with worldwide implications. In spite of the difficulties in localizing the geographical origins of modern environmental perils, these hazards are viewed in distinctly different ways, and their depiction in literary narrative cannot be universally understood across all cultures. The inclusion of environmental science in Anglophone environmental literature is the most noticeable feature that distinguishes them from contemporary German works. In Kingsolver and Atwood's texts, the incorporated scientific findings are the result of the authors' extensive research and reflect the actual state of knowledge of their respective topics. In both narratives, the scientific data is entwined with other elements of literary storytelling, which works to create

similarly hybridized literary texts distinct from those in the German context. The second part analyzes the significance of the human protagonists, who function as the texts' focalizers, too. The events of the plot are depicted through their personal perspectives and they interpret and explain the meaning of the scientific information included in the texts. As they increasingly understand the changes in the environment, the human protagonists undergo a personal transformation sparked by their education. In *Flight Behavior*, the female protagonist uses her new access to science to learn about the invisible environmental threats that surround her, and which she previously underestimated or was entirely ignorant of. In *Oryx and Crake*, Snowman, or his previous self, Jimmy, grew up in a highly technological world that brought him comfort and convenience. During his years at a humanities college, he begins to recognize the threat posed by science, and bioengineering in particular. While he is one of the few who notice the possible danger, he is not able to break with the scientific world, and instead begins working for a bioscience corporation that ultimately becomes responsible for the end of humankind.

Environmental Literature, Genre, and the Use of Science

Environmental writing has a longstanding tradition in North American literature; after the colonization of the continent by European settlers, its seemingly vast and unknown geography needed to be explored. Meriwether Lewis and his co-commander, William Clark, are probably the most famous explorers of the North American continent, having prospected the lands West of the Mississippi river in the early nineteenth century. During their journey, they recorded their observations in over thirty notebooks, informing about the geographical and environmental conditions they encountered (cf. Hallock 47). Their notebooks could be regarded as early American

nature writing.[116] The emergence of American Nature Writing as its own independent literary genre is often inextricably linked to the life and works of Henry David Thoreau in the mid-nineteenth century. His *Walden* (1854), named after the homonymous lake near his cabin in Concord, Massachusetts, became the epitome of the genre and has continued to inspire other well-known writers, such as Ralph Waldo Emerson, Edward Abbey, Rachel Carson, Annie Dillard, and Barry Lopez.[117] Their non-fictional accounts describe these authors' personal responses to their encounters with nature, while also incorporating relevant biological and historical facts (cf. Lyon 20-25). More importantly, though, in some cases the influence of these narratives exceeded the literary sphere; Rachel Carson's *Silent Spring* (1962) documented the harmful consequences of the use of chemical pesticides, such as DDT, on the natural environment, which eventually led to a nationwide ban of these chemicals.[118] For more than two centuries, the most popular North American textual accounts of the environment were predominately non-fictional, and it was not until the beginning of the 1970s that works of literary fiction concerned with environmental issues have gained broader prominence. In 2015, Adam Trexler counted more than 150 literary works that he classified as Anthropocene fictions (cf. 7); he included general literary texts that depicted environmental topics related to the emergence of the Anthropocene, such as anthropogenic climate change and pollution.

This long-standing tradition between the natural sciences and nature writing has continued to influence contemporary American environmental literature, both fiction and non-fiction. When

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[116] There exists disagreement whether to regard reports by explorers such as Lewis and Clark as literature. While the well-known *Ecocriticism Reader* edited by Glotfelty and Fromm makes no mention of exploration texts, environmental historian William Cronon argues that literary scholars should consider these written accounts as literature about nature and the environment (cf. 45-51). In his literary analysis of Lewis and Clark's journals Hallock argues for their reconsideration as literature due to their prose style (cf. Hallock 47-56)

[117] See Slovic, 3-20, for a more detailed depiction of the genre.

[118] Numerous scholarly works on Rachel Carson have highlighted her contributions to American conservation efforts, writing, science as well as the feminist movement. See Browne, 196-210, for one of the most recent articles about Carson's legacy.

seeking to define fictional narratives on the environment, numerous terms have been used, among others, and most prominently: eco-fiction,[119] climate fiction,[120] speculative fiction and science-fiction[121], posthuman fiction,[122] and most recently, Anthropocene fiction.[123] Due to the difficulties of demarcating the boundaries of these literary genres, these labels are often used synonymously and/or interchangeably. This is also evident in Kingsolver's *Flight Behavior* and Atwood's *Oryx and Crake*. The latter offers a view of a possible technology-dominated future that has replaced politics and national governments and moved literature and the liberal arts to the very margins. Atwood's *storyworld* is dominated by the advancements of bioengineering and their urge to reconstruct the (natural) world that has been irreversibly destroyed by humankind's actions. Describing her writing process, the author reveals the new technologies depicted in her novel have not been made

[119] See Dwyer, 1-8, for a general definition of ecofiction. He describes that he regards "ecoficition as a composite subgenre made up of many styles, primarily modernism, postmodernism, realism, and magic realism, and can be found in many genres, primarily mainstream, westerns, mystery, romance, and speculative fiction. Speculative fiction includes science-fiction, and fantasy, sometimes mixed with realism, as in the works of Ursula Le Guin" (3).

[120] See Goodbody and Johns-Putra, 1-18, for a detailed overview of climate fiction, or short cli-fi. According to them, there is no valid definition of the genre, but climate fiction should instead be understood as "[…] a distinctive body of cultural work which engages with anthropogenic climate change, exploring the phenomenon not just in terms of setting, but with regard to psychological and social issues, combining fictional plots with meteorological facts, speculation on the future and reflection on the human-nature relationship with an open border to the wider archive of related work on whose models it sometimes draws for the depiction of the climate crisis" (1-2).

[121] The emergence of these two genres is not limited to the increased significance of environmental literature. However, in this context these two labels have been often viewed in conjunction to each other. Pak explains though that the features of these established literary genres enable the creation of imaginative environments of the future where either technological solutions for current environmental threats have been developed, or, more pessimistically, the current threat has turned into an irreversible disaster that destroyed parts of the planet and its species, among others often even the human species itself (cf. 5-12).

[122] As many current environmental dangers threaten the survival of humankind, at least in an unknown future, posthuman narratives depict a world without humans. Höpker describes that these texts "confront the reader with the paradoxical spectacle of an intradiegetic ending which announces the unthinkable, radical finiteness of humanity and yet remains suspended, because the posthuman theme also always proposes a story beyond this end. Instead of establishing closure, these narratives draw a divisive line right across the chronology of their diegetic world which radically puts humanity at disposition" (162).

[123] Among the list of labels offered here, Anthropocene fictions is most recent term to refer to contemporary environmental literature. Coined by Adam Trexler in his homonymous book in 2015, his understanding of Anthropocene fictions is closely connected to climate fiction, or the climate change novel. He explains his preference for Anthropocene fictions over climate fictions, by stating that the term Anthropocene "[…] shifts the focus from individual thoughts, beliefs, and choices to a human process that has occurred across distinct social groups, countries, economies, and generations […]" (4).

up in her own imagination, but rather copied from scientific articles she found in newspapers. She says, "I'd been clipping small items from the back pages of the newspaper for years and noting with alarm that trend derided ten years ago as paranoid fantasies had become possibilities, then actualities" (Atwood 2004, 285). Atwood is following a "quasi-scientific technique" (Kuźnicki 78) when she remediates the scientific findings she discovers and interweaves these actual facts into her narrative, often unbeknownst to her readers.

The opening of Margaret Atwood's *Oryx and Crake* portrays a world where technology has been displaced, just like humankind before it. Snowman, supposedly the last human survivor on Earth, explains that he dwells in a tree on a beach by the ocean, clothed only in a simple bed sheet, a baseball hat, and a pair of sunglasses with only one shade left. His elevated living quarter offers him protection from scavenging nocturnal creatures, and shades him against the high intensity rays of the sun and the heat. Despite the absence of other humans, he is not entirely alone. Snowman reveals he shares the beach with a group of human-like beings introduced as the "children" (Atwood 2003, 6). These beings later also called the "Crakers," are the results of genetic and bioengineering and only resemble human beings in their visible appearance. Because of their scientific origin, the Crakers possess character traits and bodily functions adopted from a variety of familiar living beings. For instance, they are ruminants and strictly vegetarian (cf. Atwood 2003, 156-158). In a series of analepses, Snowman reveals he once went by the name of Jimmy and lived a seemingly normal life. Jimmy grew up in the compound[124] of the HelthWyzer corporation, where his parents worked as scientists; they assisted in the development of the so-called pigoons, a pig-like animal engineered to grow human organs for patients in need of organ donations. During his high

[124] The compound can be described as a community that is built around a scientific corporation such as HelthWyzer and which houses all of their employees. While the corporations protect the compounds' inhabitants from outer influences such as pollution or severe weather disasters and offer education in their own schools and universities as well as entertainment in form of movie theatres, gyms or entire shopping malls, they also employ a strict surveillance machinery that monitors the actions of their residents. In certain regards, the compounds resemble autonomous countries.

school years, Jimmy meets and befriends a new student, Glenn. They play video games in their spare time or browse the Internet for news of the world outside their compound. After high school, their paths go separate ways when Glenn, now going by the name of Crake, pursues a bioengineering degree at the renowned Watson-Crick Institute, and Jimmy studies the humanities at the Martha Graham academy, a degenerated liberal arts college.

On the train to the Martha Graham academy, Jimmy, for the first time in his life, gets a glimpse of life outside of the compounds. From the window of the bullet train, he sees the pleeblands,[125] the outside world not yet controlled by the scientific corporations. During his time at Martha Graham, Jimmy works in the library and discovers a passion for old books, ranging from dictionaries to literature by seemingly forgotten authors, such as William Shakespeare. During their years apart, Jimmy and Crake remain loosely in contact, and Jimmy visits his friend once at Watson Crick, where he noticed how different Crake's college experience is from his own. After their graduation, it is Crake who helps Jimmy find a job as an ad writer at the same RejoovenEssence compound where he himself has begun working as a bioengineer. Here, Crake has also started his top-secret project developing bio-engineered human-like creatures, later named after himself. In addition to his work on the Crakers, he is also involved in the development of a new drug, BlyssPluss, which promises its consumers health and happiness. One day Crake introduces Jimmy to Oryx, a mysterious woman he has hired as a teacher for the Crakers, who also becomes Crake's official girlfriend. After a while, Jimmy begins an affair with Oryx despite her relationship with

[125] The narrative describes Jimmy's first look, as follows: "Jimmy spent a lot of the three-hour trip looking out the window at the pleeblands they were passing through. Rows of dingy houses, apartment buildings with tiny balconies, laundry strung of the railings; factories with smoke coming out of the chimneys; gravel pits. A huge pike of garbage, next to what he supposed was a high-heat incinerator. A shopping mall like the ones at HelthWyzer, only there were cars in the parking lots instead of electric golf carts. A neon strip, with bars and girlie joints and what looked like an archaeological-grade movie theatre. He glimpsed a couple of trailer parks, and wondered what it was like to live in one of them: just thinking about it made him slightly dizzy, as he imagined a desert might, or the sea. Everything in the pleeblands seemed so boundless, so porous, so penetrable, so wide-open. So subject to chance. (Atwood 2003, 196)"

Crake. Although Jimmy increasingly worries that his friend has found out about his betrayal, Crake's normal behavior seems to indicate their secret remains intact.

After the release of the BlyssPluss pill, the break-out of a global pandemic throws many parts of the world into chaos, and quickly kills all human beings. Jimmy recognizes the connection between his friend's invention and the mysterious lethal disease and discovers it was Crake's plan all along to end humankind because of the disappointments he experienced throughout his life. In their last personal encounter, Crake kills Oryx in front of Jimmy's eyes, but not before telling Jimmy that he is the only human being immune to the disease, as Crake has been secretly inoculating him with a vaccine. Jimmy then shoots Crake. After finding out the artificially created virus cannot harm him, Jimmy waits for the end of humankind from his apartment in the compound, as he follows the news and watches his fellow humans disappear one after another. After he deems it safe to leave the compound without encountering any other living humans, he frees the Crakers and starts his new life by the beach, feeding off provisions he finds on regular scavenger hunts through the crumbling nearby compounds.

Due to Margaret Atwood's wide popularity, *Oryx and Crake* has received widespread attention from reviewers in the mainstream media and scholarly community alike. The novel was not Atwood's first literary venture into the realm of environmental science fiction; *The Handmaid's Tale* was published over thirty years ago and describes the totalitarian and conservative state of Gilead that is facing, among other problems, a high infertility rate caused by environmental pollution and radiation. In both works, the existent environmental threats of a changing climate (*Oryx and Crake*) and pollution (*The Handmaid's Tale*) have led to a societal transformation and thus draw comparisons among reviewers over their use of literary science fiction to imagine human lives in the near and distant future.[126] In a special issue of PMLA entitled "Science Fiction and

[126] In her review for *The Guardian*, Natasha Walter states, "But *Oryx and Crake* lacks some of the subtler imaginative power of Atwood's previous novel set in a dystopian future, *The Handmaid's Tale*, which was full

Literary Studies: the next Millennium," Atwood herself discusses the difficulties of assigning the label of a single literary genre to a narrative, and how she does not regard herself a genuine science-fiction writer. She states, "[…] I like to make a distinction between science fiction proper – for me, this label denotes books with things in them we can't yet do or begin to do, talking beings we can never meet and places we can't go […]" (Atwood 2004, 513). As she drew her inspiration for *Oryx and Crake* from newspaper articles, her text envisions how these developments could alter the environment in the near and distant future. While the narrative's futuristic setting is a distinct feature of science fiction, the incorporation of actual scientific facts is rather typical of scientific, and non-fiction writing. Thus, Oryx and Crake can be classified as a hybrid text. Additionally, Atwood identifies shortcomings that surround literary works of science fiction and the expectations that accompany the label. She states, "literature is an uttering, or an outering, of the human imagination. […] Understanding the imagination is no longer a pastime or even a duty, but a necessity, because increasingly, if we can imagine something, we'll be able to do it" (Atwood 2004, 517). Atwood's comment proves the struggle to define literary texts reaches further. The supposed genre is more than just a label in the bookstore; it also determines what stories might be possible in the near and far future, and which remain purely imaginative. Atwood contests the notion of the imaginative as ideas that remain purely fictional. Instead, with ever growing technological research, anything deemed imaginative can become a realistic, future possibility.

Atwood's view of the flaws of literary science fiction have caused her to advocate for labeling her own work as speculative fiction. She explains that her narratives of the future, like *Oryx and Crake*

> […] invent nothing we haven't already invented or started to invent. […] Writers write about what worries them, and the world of *Oryx and Crake* is what worries me now. It's not a

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of convincing detail and had an individual heroine. *Oryx and Crake* is, by comparison, a more derivative vision. Here too Atwood is putting across a relevant and intelligent political message, which can easily be summed up: don't trust the scientists and the big corporations to run the world."

> question of our inventions – all human inventions are merely tools – but of what might be done with them; […]. (Atwood 2005, 285).

Unlike science fiction, the label speculative fiction implies to Atwood an envisioning of *storyworlds* that revolve around scientific knowledge and technological inventions already known in the present. In *Oryx and Crake,* Atwood intertwines elements from the present and the future, allowing her readers to identify objects familiar to their present lives while learning about scientific and technological innovations that will become part of the future everyday life. While Jimmy himself grew up in this technological and science-driven world, it is his mother among others, who, in his earliest memories, felt nostalgic and mourned the good old days. Living in the post-apocalyptic world, Snowman looks back, repeating what he once heard: "[…] Everyone's parents moaned on about stuff like that. *Remember when you could drive anywhere?* […] *Remember when you could fly anywhere in the world, without fear? Remember hamburger chains, always real beef, remember hot dog stands? Remember before New York was New York? Remember when voting mattered*?" (Atwood 2003, 63). Printed in italics to differentiate from Jimmy's own views, these rhetorical questions represent the nostalgic sentiments evident even among the population in the compounds who have benefitted from the establishment of the technocratic societies. While Jimmy and younger generations have not experienced a different life, it is his parent's generation who grew up in societies similar to that of Atwood's readers. Throughout the lifetimes of Jimmy's parents, possibly not more than forty or fifty years ago, the influence of technology and science increased drastically, impacting even the social and political sphere. Pointing to the rather quick transformation of the world, the narrative, despite its speculative and fictional character, is alerting readers that they could be confronted with a similar situation in their lifetime, too.

Jimmy, who only knows life in a technocratic society, is exposed to a taste of this old world during his college years at the Martha Graham Academy. The arts and humanities college, "[…] set up by a cult of now dead rich liberal bleeding hearts from Old New York […] in the last half of the twentieth century […]" (Atwood 2003, 186), remains a place where remnants from the old world

have survived. Jimmy explains, "so a lot of what went on at Martha Graham was like studying Latin, or book-binding: pleasant to contemplate in its way, but no longer central to anything […]" (Atwood 2003, 186). As his comparisons show, his interest in literature, and humanitarian ideas in general, no longer have value in the hyper-technological world. The lost appreciation for the humanities as a discipline is also nothing new for Atwood's readers. The trend of devaluing the liberal arts has already begun in the world of Atwood's readership, and the portrayal of their near-death in the world of *Oryx and Crake* illustrates the full progression of this development.[127] Here, Atwood imagines the progression of things she already witnesses, often less visible in the margins of public life, and speculates how these current developments will evolve in the future, which she then describes in her literary *storyworld*. Literature's ability to envision the unknown future with the help of human characters and their stories is its biggest asset in raising awareness for modern environmental threats and their coming implications. Different from environmental reports in the media, or scientific research that predict the future consequences of ecological changes, literary narratives are more coherent as they contextualize the hazards in time, space, and by way of the literary plot. In *Oryx and Crake,* the altered climatic conditions function as the starting point from which to explain the extraordinary rise of the natural sciences and technology through provided solutions that allow humans to adapt to the new environmental circumstances. By following the human character, Jimmy, and his counterpart, Crake, from childhood into adult, professional careers in the compounds, the narrative provides a detailed depiction of a possible future reality.

. Different from other futuristic narratives, Atwood's *Oryx and Crake* does not revolve around the environmental collapse. The altered environment is instead a mere backdrop to the plot. For this reason, Atwood's text has not often been classified as environmental literature, or climate

[127] The losing significance of the humanities in higher education is a continuous trend since the recession in 2008, five years after the publication of *Oryx and Crake*. See Stover for an overview of the decline of the humanities in the past decade and an outline of possible shortcomings of the discipline.

fiction. Descriptions of the changing and altered climate, as well as depictions of the changed environments, are moved to the plot's periphery and superficially function as information about the text's setting and scenery. In the opening pages, the narrative paints a visual and audible scene of the environment surrounding Snowman's dwelling at the beach. "The shrieks of the birds that nest out there and the distant ocean grinding against the ersatz reefs of rusted car parts and jumbled bricks and assorted trouble sounds almost like holiday traffic" (Atwood 2003, 3). While the sentence seemingly describes the natural, non-human environment, its second part reveals that human debris has replaced such natural organisms as oceanic reefs. The loss of non-human entities not only changed the appearance of the environment but has even affected its sounds. The breaking of the waves has lost its original melody, and instead sounds more like other human-made noises, such as busy holiday traffic. Jimmy, or Snowman, though, might not even be familiar with the authentic sound of breaking waves due to his sheltered upbringing in the compounds. Thus, this description can only be fully understood by readers who are familiar with the two examples in this analogy. In the present, the sound of waves is often described as calming and relaxing, which is the opposite of noise caused by holiday traffic. The use of antonyms in this analogy emphasizes the drastic changes in the future world, and points to humankind's responsibility for these changes. Due to their actions, not only have the visual appearances of the environment changed, but so have their sounds.

Despite the absence of other humans, genetically modified beings have survived the pandemic and continue to inhabit the environments and influence their conditions. Unlike Haushofer's *Die Wand*, here the environment cannot recover, because humankind's scientific innovations have survived their creators. Snowman describes how the genetically engineered creatures have escaped from the compounds and have begun to mingle with the natural beings outside its walls. He comes across a rabbit, for example, that has completely changed from the animal species that inhabited the planet for millennia. Snowman describes:

> Across the clearing to the south comes a rabbit, hopping, listening, pausing to nibble at the grass with its gigantic teeth. It glows in the dusk, a greenish glow filched from the iridocytes of a deep-sea jellyfish in some long ago experiment. In the half-light the rabbit looks soft and almost translucent, like a piece of Turkish delight […]. Even in Snowman's boyhood there were luminous green rabbits, though they weren't this big and they hadn't yet slipped their cages and bred with the wild population, and become a nuisance. (Atwood 2003, 95-96)

The extinction of humankind has led to a breakdown of the walls between the inside (the compounds) and the outside (pleeblands, and other spaces beyond), which has enabled the creation of hybrid living beings, such as these foreign creatures. They are entirely different from the rabbits with which Atwood's readership might be familiar, and stand out because of their size, their teeth, and their conspicuous green glow. The latter in particular, already evident in Jimmy's childhood, stems from human interest in genetic engineering and the crossbreeding of different animal species. The narrative explicitly describes how human science has altered the seemingly natural environments in a distinctly visible way by creating new, artificially shaped creatures that have little in common with their evolutionary ancestors. The hybridity of the future world is evident in the text's generic label, too. In order to describe the drastic environmental changes caused by human actions, the narrative employs the strategies of different literary traditions to present the complexities of the future.

Another feature of the future environmental conditions is the progression of anthropogenic climate change that is depicted as part of the narrative *storyworld*. After leaving the abandoned compounds and moving into his provisional dwelling by the beach, Snowman explains the destructive forces of the weather that control his daily schedule and his routine. The narrative describes, "at about eleven o'clock Snowman retreats back into the forest, out of sight of the sea altogether, because the evil rays bounce off the water and get at him even if he is protected from the sky, and he reddens and blisters" (Atwood 2003, 37). Without sun block to protect him from the intensified UV rays, Snowman's skin is unable to withstand the sunshine, causing him to retreat back into the protection of the shade from the remaining trees. Later in the day, Snowman must seek shelter yet again, this time from the dangerous precipitation of the daily afternoon storms,

which also brings cooling air and relief from the heat. “Sometimes there are hailstones as big as golf balls, but the forest canopy slows their fall. […] Today it is only rain, the usual deluge, so heavy the impact turns the air to mist. Water sluices down onto him as the lightning sizzles. Branches thrash around overhead, rivulets amble along the ground” (Atwood 2003, 45). During the daily storm, it is again the trees that offer Snowman protection from the gushing rain, and the regularly occurring hail showers. Here, the forested environment offers the only shelter Snowman can find. After the storm passes, Snowman can return to his dwelling at the beach and commence with his evening activities before sleep. In this world, without the presence of other humans and societal obligations, the weather has replaced the significance of time and now determines Snowman’s daily schedule.

The retrospect into Snowman’s former life illustrates how the changes in the weather began well before the pandemic that erased human life on the planet. During Jimmy’s childhood, “[…] the coastal aquifers turned salty and the northern permafrost melted, and the vast tundra bubbled with methane and the drought in the midcontinental plains region went on and on, and the Asian steppes turned to sand dunes […]” (Atwood 2003, 24). In this passage, the list of the consequences of global climate change is not the focus of the narrative, but rather the backdrop that fueled and justified the technology advancements in the compounds of the bio-corporations, such as the OrganInc Compound where Jimmy grew up. Traditional agriculture and cattle breeding have become impossible due to alterations in the climate, causing global food shortages that threaten human survival. While the pigoons developed by OrganInc were primarily designed to grown human donor organs, the meat of the pig-like creature also presented a solution for the then ongoing food crisis. While climate change and its consequences are not centered in the narrative, the text reveals the interconnectivity and the interlacement of human, non-human, and scientific entities in the Anthropocene. Climate change is here just one of the features of this new geological age that determines the course of humankind’s future. While many works of climate fiction and environmental literature focus on climatic alterations in order to raise awareness and educate

about this environmental threat, Atwood's *Oryx and Crake* does not question the peril's existence and assumes the hazard will be overshadowed by new, more threatening future hazards.

Barbara Kingsolver's *Flight Behavior* is another example of contemporary North American environmental literature that shows the complexity of modern life and the countless connections between the human, non-human, and technological-scientific sphere. Like Margaret Atwood, Barbara Kingsolver is a popular and well-known writer, engaging in both fictional and non-fictional literary work. While her texts often deal with socio-political themes, at first glance *Flight Behavior* appears to deviate from Kingsolver's other works. Set in the fictional community of Feathertown, Tennessee, the narrative centers around the twenty-eight-year-old mother, Dellarobia Turnbow, who struggles with her role as a wife in a family of sheep farmers. While she originally dreamt of going to college, leaving her small hometown after high school, her unplanned pregnancy and marriage to her high school boyfriend kept her in Feathertown. Her unhappiness in her marriage drives her to flirt with other men. One day, while on her way to a date with one of her secret lovers, she accidentally sights a colony of thousands and thousands of monarch butterflies on the hilly trail behind her house. Not knowing what she just discovered, Dellarobia interprets this spectacular finding as a higher sign, stopping her from committing adultery. At first, Dellarobia keeps her discovery a secret, but when she finds out her father-in-law plans to sell the plot of land where the butterflies roost, she asks her family to join her on a walk up the hill under the guise of seeing the land and trees once more before selling their property. Thus, the family hikes up the hill and discovers the miraculous sight of countless orange and black butterflies. The following Sunday, they share the news with their church community, making the butterfly miracle the talk of the town. As the news continues to spread, townspeople and tourists begin to visit their land to see the foreign insect species with their own eyes.

The news about the unusual migration pattern of the monarch butterflies eventually reaches the scientific community, too, when entomologist Ovid Byron comes to Feathertown.

Byron, who has dedicated his entire academic career to the scientific research of this particular butterfly species, begins to collect data about this new monarch colony. The arrival of winter and possibly cooler temperatures – even snow – threatens the survival of the monarchs and puts the research team under time pressure. When they are looking for additional help, Dellarobia joins the group of scientific researchers, taking her first professional job since having children. She supports Byron's research by doing simple, yet essential, tasks, such as counting butterflies on the ground, or measuring their size and circumference. Through their conversations and her work, Dellarobia begins to realize the appearance of the monarchs in Tennessee is not a lucky coincidence, but rather the result of climate change; as the climatic conditions in their original roosting sites in Mexico have changed, they are fleeing to other places. As the months pass, Dellarobia and Byron begin to believe wintry temperatures and snow will spare Tennessee this year and the butterflies might survive in the milder than usual weather. But when the season is almost over, a winter storm hits Feathertown, causing Byron and Dellarobia to fear the monarchs have died. They are surprised to discover a significant portion of the colony was able to withstand the cold and snow and has begun to resume their usual spring migratory patterns. At the same time as Dellarobia watches the butterflies show their resilience in this changing environment, she herself decides to change her life by ending her unhappy marriage and entering college for a degree in biology.

Like *Oryx and Crake*, Kingsolver's *Flight Behavior* has been characterized as literary science fiction, or even more specifically, as climate fiction. However, compared to Atwood's work, the narrative is less futuristic and is set in a *storyworld* that resembles the present more than the future. It is not just the treatment of time that makes the narrative less speculative and fictitious, but also its portrayal of space. Too often the discussion of global anthropogenic climate change focuses on the issue's implications and future consequences in larger geographical areas, or more relevant urban centers, such as large coastal cities or economic epicenters. Feathertown, Tennessee, the imaginative setting of Kingsolver's narrative, bears no economic or political

relevance, yet the effects of the global climate threat are detectable there, too, when the colorful orange monarch butterflies make the town their new roosting site. In the beginning of the narrative, their sudden appearance is celebrated as a miracle, fostered by the strong religious belief of the community. In light of their socio-economic hardship and the town's general degradation as a consequence of growing urbanization, many people in Feathertown, initially even Dellarobia, believe the discovery of the monarchs could revive the town, making it attractive to tourists. When visiting with a Mexican immigrant family, though, she learns that prior to their arrival in Tennessee, the monarchs used to roost in the immigrant family's hometown, bringing visitors from all over the world until their sudden disappearance. Dellarobia begins to realize that their fortune has come at a cost for others. She exclaims, "miracle or not, this thing on the mountain was a gift. To herself in particular, she'd dared to imagine. Not once had she considered it might have been stolen from someone else" (Kingsolver 101). As the narrative does not offer a scientific explanation as to why the butterflies came to Feathertown, the first part of the text focuses on the living conditions in rural America that influence education, economic prosperity, political beliefs, and religious faith. The inclusion of current socio-political topics emphasizes the present relevance of Kingsolver's narrative, and describes how the issue of climate change is viewed outside of the more progressive urban centers in the United States.

The absence of extensive scientific explanations for the appearance of the butterflies throughout the first one hundred pages of the book shifts the focus to the main protagonist, Dellarobia, and her everyday life. Distracted by the problems in her daily life, she fails to perceive the environment and its changes around her. Her lack of environmental concern becomes evident in her first encounter with the monarchs. When she sets out to meet with her secret lover, she consciously leaves her glasses at home, influencing her ability to see the surroundings. While wandering to the meeting point through the hilly, forested area, she thinks of new diseases that have infested the local trees according to the explanations of her husband, Cub. She reflects, "trees

were getting new diseases now. Cub had mentioned that. The wetter summers and mild winters of recent years were bringing in new pests that apparently ate the forest out of house and home" (Kingsolver 12). Her walk through the local forest gives her the chance to look for visual evidence of her husband's explanations. The higher she climbs, the more visible the changes seem to become. "The trees above here were draped with more of the brownish clumps, and that was the least of it. The view out across the valley was puzzling, and unreal, like a sci-fi movie" (Kingsolver 13). Without her glasses and the ability to see clearly, Dellarobia mistakes the discolorations on the tree trunks as signs of the mentioned disease. Only a sudden outpouring of sunlight causes her to realize her misconception, as the brownish spots turn orange, revealing "unearthly beauty […] to her […]" (Kingsolver 15). To Dellarobia, the change of light transforms the initially identified destruction into incomparable beauty. And while she regarded the presumed damage on the trees as signs of environmental destruction, the marvelous sight of the monarchs initially seems like a wonderful coincidence.

The arrival of the monarch butterflies is just the latest examples of the environmental changes that have become noticeable in rural Tennessee. Compared to the bright orange butterflies, the other alterations are more subtle. Dellarobia, for instance, notices the weather in recent years has changed; during the fall, the heavy amount of rainfall is continuously addressed in the narrative's description of her everyday life. In December, as Christmas is approaching, the narrative describes:

> Preston [Dellarobia's five-year old son] gave up hoping for a white Christmas and asked if Santa knew how to drive a boat. That's the kind of December they were having. It fell on them in sheets and gushes, not normal rain anymore but water flung at the windows as if from a bucket. […] Groundwater was rising everywhere. The front yard became a flat grassy pool. Dellarobia couldn't let the kids play out there unless they wanted to pull on their rubber boots and splat around on it. She would have considered putting them in their swimsuits, if it was just a hair warmer, so they could run around as they did in summertime under the sprinkler. (Kingsolver 123)

Dellarobia does not regard the unusual weather as signs of global climate change, but rather as an inconvenience to her life as a mother. When she describes the heavy precipitation by comparing it to the sight of an abrupt splash from a full water bucket – relatable to most of the reading audience – she does not yet perceive the changed weather as a threat, but instead as something she must adapt to with her daily routine. Climate change is indirectly integrated into Kingsolver's narrative when it is disguised as textual depictions of the local weather.[128] Though the rain is visible, familiarity with it as a general weather occurrence, combined with the distractions of her daily life, cause the precipitation's connection to climate change to go unnoticed by Dellarobia. The fact that the weather is not yet ominous to her life distinguishes the weather in *Flight Behavior* from depictions of the burning UV rays in *Oryx and Crake*, or the extremely high temperatures and increased levels of ozone in Liane Dirks' *Falsche Himmel*.

With the arrival of the entomologist Ovid Byron in the fifth chapter, the narrative begins to address the scientific aspects behind the arrival of the monarchs. Despite Byron's extensive biological expertise on the butterfly species,[129] he at first does not reveal his worrisome suspicions as to why the monarchs have left their original habitat in Mexico. As Dellarobia gets more and more involved in the scientific research, she realizes the unusual migration of the monarchs to her home is more problematic than originally thought. While counting dead monarchs, "she wondered, were they looking at some kind of disaster here?" (Kingsolver 141). It is not until later that Byron reveals more of his findings to Dellarobia, translating his scientific data for his untrained aide. The narrative, for example, depicts in detail how Dellarobia assists with the lipid extraction experiment that seeks to record the number of parasites on the monarch butterflies. After describing the experiment's preparation work - the process of collecting the individual specimen on their roosting

[128] See Schulz, for a compact history of weather depictions in Anglophone literary fictions and its relevance in contemporary literature.
[129] After his arrival in Feathertown, Dellarobia invites Ovid Byron over for dinner. There, he explains that he has studied the monarchs "taxonomy, evolution of migratory behavior, the effect of parasitic tachinid flies, the energetics of flight. Population dynamics, genetic drift" (Kingsolver 121).

sitting, putting each insect into individual envelopes, then weighting the filled envelopes before drying them overnight in an oven and putting each dried insect body into its own test tube (cf. Kingsolver 238) – the scientists would ultimately be able to identify if the butterflies were infested by parasites with the help of the microscope. When Dellarobia is looking at the visually enhanced butterfly bodies, she describes what she can see while Byron interprets what the visuals mean:

> […] a strange collage of ridged, transparent ovals that overlapped slightly like roof shingles. These were the scales that covered the butterfly's wings, he [Ovid Byron] said, magnified three times hundred. Nestled among the scales she saw smaller, darker shapes like water beetles, and these, he told her, were the parasites. OE for short. He would write down the whole name for her later, it was easier to learn that way. (Kingsolver 243)

Here, the narrative documents in detail one of the scientific experiments Dellaboria witnesses through her new occupation. Byron's arrival, and his need for an assistant, allows her to enter the scientific sphere from which she, as so many others, had been excluded. Her work offers the opportunity to view the findings with her own eyes, helping her realize the appearance of the monarchs in her backyard is no miracle, but rather the consequence of anthropogenic climate change.

Dellarobia's new occupation and her subsequent education influences the course of Kingsolver's narrative and its literary genre. By including actual climate science and biological facts about the monarch butterflies, the text qualifies as climate fiction (cf. Goodbody and Johns-Putra 9), and also, more generally, as a science novel (cf. Haynes 134-135). While the migration of monarch butterflies into the continental U.S. is a purely fictional scenario, the incorporation of actual scientific research on climate change creates a realistic scenario, especially when compared to works of fiction set in future *storyworlds,* such as Dirks' *Falsche Himmel* or Atwood's *Oryx and Crake,* which appear more foreign in their connection to the present. The strong focus on the psychological and intellectual education of Dellarobia as the text's main protagonist allows the narrative to be classified as bildungsroman (cf. Mayer 30-32, Wagner-Martin 1-20). The insights she gains in her

new job help her better understand the environment around her, and also reveals the connections previously invisible to her. Moreover, in the process of her enlightenment, biology and climate science are not depicted as foreign disciplines, but rather as scientific areas that are approachable and comprehensible to laypeople, such as Dellarobia.

The portrayal of science marks the strongest difference from the German narratives discussed in the context of this research project. Only Ilija Trojanow's *EisTau* incorporated a scientific aspect into the text by making Zeno Hintermeier, a former glaciologist, the novel's primary narrator. His depictions of his former occupation, though, do not focus on his previous scientific research but are instead influenced by his subjective sentiments and nostalgia for the loss of his research object, a glacier in the Alps. Therefore, his text does not inform readers about scientific measurements or experiments similar to those in Kingsolver's *Flight Behavior.* The recurring, detailed depictions of the scientific research on the monarch butterflies demonstrates the meticulous, time-consuming work of scientists. Often their findings do not automatically translate into general conclusions and require further extensive experiments. While Dellarobia's concern for the monarchs and the environment grows based on their scientific findings, Byron reminds her more than once of the primary task of scientists: "our job here is only to describe what exists" (Kingsolver 148). In spite of the visual proof from the research experiments, their visible observations do not automatically count as facts, but require further inquiry. This scientific approach differs from the general assumption that visibility equals factual existence, and hence complicates the accessibility of scientific data for laypeople like Dellarobia, and Kingsolver's readership.

Similar to Zeno, Ovid Byron also criticizes the systematic difficulties he continually faces as a scientist. Many of his experiments require time that exceeds the attention span of journalists, media outlets, and consumers alike. The text explains that

> science as a process is never complete. It is not a foot race, with a finish line. He [Ovid] warned her [Dellarobia] about this, as a standard point of contention. People will always be waiting at a particular finish line: journalists with their cameras, impatient crowds eager to call the race, astounded to see the scientist's approach, pass the mark, and keep running. It's a common misunderstanding, he said. They conclude there was no race. As long as we won't commit to knowing everything, the presumption is we know nothing (Kingsolver 351)

Here, the narrative compares the work of scientists to the act of running. The search for scientific answers resembles a marathon rather than a sprint; while the findings of individual scientific studies can help understand one aspect of a larger problem, researchers like Byron hesitate to regard these individual findings as conclusions for larger processes. He believes the appearance of the monarch butterflies in Feathertown is connected to the globally changing climate, though his research centers on the living conditions and development of the insect species and not on climate change. His research enables him to describe how the monarchs have adapted, and continue to adapt, to their new habitat; he is unable, yet, to show how these findings connect to their migration from Mexico. Even though Dellarobia trusts Byron's theory and shows willingness to share the news with the locals, the scientist himself remains unwilling to inform others about his thesis. He knows his hypothesis remains incomplete, as he cannot produce enough evidence to prove that the monarchs' new migration pattern is the result of climate change.

The overall skepticism towards scientists depicted in Kingsolver's narrative is not restricted to their research methods. In *Flight Behavior,* and its rural setting in the small town of Tennessee, Ovid Byron and his team also face opposition due to the supposed conflict between science and religion. After Dellarobia's education as a result of her new profession, she repeatedly realizes her newly gained perspective differs from those around her. During a conversation with her husband, who originally taught her about the conditions of the environment due to his occupation as a sheep farmer, it is now Dellarobia who wants to explain to him why the butterflies migrated to their home:

> "[…] He [Ovid] says it's due to climate change, basically." "What's that?" She hesitated. "Global warming." Cub snorted. […] "Al Gore can come toast his buns on this." It was

> Johnny Midgeon's line on the radio, every time a winter storm came through. "But what about all the rain we had last year? All those trees falling out of the ground, after they'd stood a hundred years. The weather's turned weird, Cub. Did you ever see a year like we've had?" […] Cub shook his head. "Weather is the Lord's business."
> (Kingsolver 260-261)

According to Cub, the noticeable changes in the weather near their home are not related to global climate change. For him, it is a higher religious power that governs over the weather. The confrontation between Dellarobia and her husband mirrors here an ongoing debate within the wider American culture: the conflict between climate change deniers like Cub, and people like Dellarobia, who trust scientists and their research on the issues.[130] Cub's knowledge on the topic stems from a local radio host, as he quotes the tag line used by the host when uncommon cold weather hits the area. The slogan marks a verbal affront to Al Gore, one of the country's leading political climate change activists, who also served as senator of Tennessee.[131] Cub's perspective is influenced by his religious belief, his political affiliation, and his upbringing in a conservative small town. According to George Handley, it is a combination of these three factors that fuels climate skepticism in the United States. Handley argues, "climate skepticism stems from a way of life and a way of belief about the nature and temporality of the world, the boundaries of community, the historical past and the future" (Handley 141). Handley illustrates his far-reaching claim by analyzing the rhetoric of prominent American political figures, such as Oklahoma senator Jim Inhofe. Inhofe denounced climate change in his homonymous book by citing verses from the Bible, such as Genesis 8:22; he also argued that stricter environmental policies would create economic disadvantages for more rural states, such as Oklahoma or Tennessee (cf. Handley 145-148). [132]

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[130] See Handley, 133-179, for a detailed analysis of recent climate skepticism in the United States.
[131] Handley explains that the conservative media landscape in the United States often functions as a mouthpiece for politicians and members of the Republican party who, in general, does not agree with the rather liberal global climate change movement (cf. 133-134).
[132] "As long as the earth remains, /there will be springtime and harvest, /cold and heat, winter and summer, /day and night."

This ongoing conflict between climate change skeptics or deniers, and people who recognize climate change as an environmental threat, marks one of the most controversial environmental debates within the US-American culture. Here, perspectives on climate change have become reflections of their political beliefs and values, and appear to remain unaffected even by scientific discoveries. While Kingsolver decided to include in her narrative coherent and understandable scientific information about climate change and its impact on one particular insect species, the monarch butterflies, the overall cultural controversy proves that scientific evidence is not enough to validate the existence of climate change. In the text, the tensions between Dellarobia and her husband, Cub, ultimately end in their separation. This conflict is distinctive to American culture, and thus readers of *Flight Behavior* from other parts of the world might not be able to relate to this public controversy on climate change. While the book has been translated into German as *Das Flugverhalten der Schmetterlinge,* it was widely overlooked.[133] Kingsolver's novel was not reviewed in any of the major German newspapers, and has only received marginal attention from hobby readers in online bookstore reviews, or personal reading blogs. This disinterest in the text can be the result of the different cultural views on climate change in both countries. Comparing the public discourse on climate change in Germany and the United States, Axel Goodbody explains,

> the political and ideological polarization that characterizes the United States, where one can make a good guess at a person's opinion on global warming by ascertaining their views on abortion, same-sex marriage and gun-control, is almost absent in Germany, where there is a widely shared sense of the intrinsic value of nature and inter-generational responsibilities, and religious fundamentalism (creationism) is insignificant. (Goodbody 2019, 94)

The different cultural implications in environmental thinking can complicate the comprehensibility and accessibility of literature about ecological threats from cultures unfamiliar to the reader.

[133] The German translation of the original title demonstrates two significant differences. First, it explicitly mentions that the novel picks out butterflies and their migratory behavior as a central theme. This information is omitted in the English version and kept rather open. Second, the translation of "flight behavior" to "Flugverhalten" removes the ambivalence of the English term when interpreting it as directly as the scientific term. The English term though indicates more openness when flight can also mean fleeing.

Despite the global relevance of many of these hazards, their presentation and discourse are often culture specific.

These different cultural views of environmental topics, such as climate change, are thus also evident in their respective literary voices and the generic composition of their narratives. The German climate change narratives analyzed in this project, Ilija Trojanow's *EisTau* and Liane Dirks' *Falsche Himmel*, are highly subjective narratives that focus on the feelings and sentiments of their first-person narrators. The narratives widely abstain from including information about climate science. In *Falsche Himmel*, for instance, the nameless protagonist records the temperature and ozone value for her textual account. She is capable of retrieving these numerical values without any advanced scientific training or knowledge, only relying on the help of fairly simple technological measurement devices, such as a barometer. This extensive absence of natural science in German environmental narratives distinguishes these works from the examples of North American literature about environmental hazards and the Anthropocene. Barbara Kingsolver's *Flight Behavior* and Margaret Atwood's *Oryx and Crake* follow the guiding premise of climate fiction, or Anthropocene fictions, by intertwining actual scientific information into their personal, fictional plots. While these narratives are as similarly hybrid in their genre as the German examples, these texts offer an interdisciplinary perspective, too. They combine the human protagonists' personal reflections, and experience with the scientific information, and ultimately portray the humanistic and scientific significance of the Anthropocene in conjunction with each other. In the German texts, Wolf's female narrator, or Frisch's Herr Geiser, have access to scientific and historical data, but their human characters ultimately struggle to comprehend and analyze the meaning of the scientific information in the context of their personal lives.

Literary texts and their generic composition mirror and shape the sentiments of the culture in which they are written, and which they, in most cases, also portray. Reading environmental literature from one's own culture, or cultural contexts one is familiar with, often only reiterates the

ecological issues in known forms and discourses. North American readers who already believe in the severity of climate change will continue to make this topic their priority after reading Kingsolver or Atwood's text. And skeptics might recognize themselves in Dellarobia's husband in *Flight Behavior,* or dismiss the destructive potential of science portrayed in *Oryx and Crake,* as too exaggerated, futuristic, or overblown. Examining and analyzing readers' responses in connection to their more general environmental awareness is the goal of empirical ecocriticism, one of the most recent interdisciplinary fields of interest in the Environmental Humanities. Defined more closely by scholars Alexa Weik von Mossner, Matthew Schneider-Mayerson, and Wojciech Malicki empirical ecocriticism seeks to combine the fields of literary scholarship and environmental communication, and conduct empirical research on readers' responses to works of climate fiction, or Anthropocene literature via empirical interviews, surveys, or experiments (cf. Schneider-Mayerson et al 327-330). Instead of assuming how readers might respond to literary narratives about the environment, empirical ecocriticism seeks concrete answers, and also analyzes the reactions of people from different societal groups, and in particular, those outside of already educated academic circles and college classrooms. The contributions of empirical ecocriticism show great promise for the study of environmental literature in the future. One interesting, initial insight revealed by the comparative analysis of North American narratives and German texts is that these literary works echo the discourse of environmental threats in familiar forms and structures. Thus, reading outside of the familiar cultural realm can help gain new knowledge about environmental aspects through unfamiliar discourses, genres, and forms that can trigger the readers' curiosity and spark new interests in the environmental issues.[134]

[134] Due to the novel of empirical ecocriticism, only few studies have been conducted on the readers' responses to climate fiction. In Matthew Schneider-Mayerson's study on contemporary Anglophone climate change literature Barbara Kingsolver's *Flight Behavior* was the most read narrative and the reactions of readers of the survey recognized the text's intention to create more awareness for climate change as well as its far-reaching consequences for other species such as the monarch butterflies. The participants of the survey, among others a female freelance writer, noted that the novel "[…] 'made her' concerned about climate change

Literary Protagonists and their "Vision" of the Environmental Threat

Within German environmental narratives, the human individual plays a significant role in conveying information about the changes in the environment. Regularly, as shown in the previous analyses of the selected works, the protagonist functions as the text's narrator or focalizer. They become the mediators who report on what they perceive or fail to perceive, what they experience, and how these experiences impact their awareness of the environmental threat, both physically and emotionally. In Atwood's *Oryx and Crake,* as well as Kingsolver's *Flight Behavior,* the narrative centers around one human protagonist and their personal experiences and encounters, too. While Snowman, or Jimmy (in *Oryx and Crake*), and Dellarobia (in *Flight Behavior*), do not function as the text's narrator by writing down their experiences and feelings, as did Zeno, the texts are presented through their lenses as the narratives' focalizers.

Margaret Atwood's *Oryx and Crake* opens with an introduction of Snowman, and a detailed description of his daily routine, which is influenced by the environment and the climate. The foreignness of his current living situation poses the question of what has happened to change human life so significantly. Here, Snowman mentally travels back in time throughout the narrative, whenever he relives his former human life as Jimmy. His depictions of the individual stages in his life are tinted with his present knowledge and consciousness. Therefore, the text resembles the written survival report of the woman in Haushofer's *Die Wand*. Snowman himself comments, though, on the fact he does not record his thoughts in written form, but only in a contemplative manner. He thinks,

> Or he could keep a diary. Set down his impressions. There must be lots of paper lying around, in unburned interior spaces that are still leak-free, and pens and pencils; […]. He could emulate the captains of ships, in olden times – the ship goes down in a storm, the

[…] suggesting that the book exerted a possible unwelcome force by expanding her circle of concern and empathy, eventually leaving her 'sad and in awe'" (Schneider-Mayerson 485).

> captain in his cabin, doomed but intrepid filling in the log book. There were movies like that. Or castaways on desert islands, keeping their journals day by tedious day. Lists of supplies, notations on the weather, small actions performed – the sewing on of a button, the devouring of a clam. He too is a castaway of sorts. He could make lists. It could give his life some structure. But even a castaway assures a future reader, someone who'll come along later and find his bones and his ledger, and learn his fate. Snowman can make no such assumptions: he'll have no future reader, because the Crakers can't read. Any reader he can possibly imagine is in the past. (Atwood 2003, 40-41)

Snowman recognizes that he appears like a futuristic version of castaways, or a shipwrecked captain; unlike these human survivors, though, he does not feel a desire to document in writing his inventory of storage supplies, daily experiences, or even his thoughts. He explains that the desire to write down information stems from the author's wish to leave a record for future readers. He has lost all hope that other humans have survived who would be able to read his written notes. All other living beings are non-human beings and lack the skill of reading and writing. Therefore, he decides to mentally contemplate selective encounters that might have influenced the turn of events in the past and enabled the catastrophe that erased humankind. His decision to not write down the catastrophic events that led to his isolation make them less explicit. While he is able to see the abandoned ruins of former human civilization, they do not tell the complete story of the disaster, and are just fragments of an earlier life. Writing down the entire story, though, would reveal the complexity of the catastrophe, and expose Snowman's own responsibility in the disaster's origin.

Despite the text's point of departure, which centers around a lone human survivor, Atwood's *Oryx and Crake* differs from other environmental Robinsonades, such as Haushofer's *Die Wand.* While Haushofer's nameless female first-person narrator begins writing her report after the death of her dog and during the seemingly never-ending winter months, there is no particular reason or special incident that initiates Snowman's retrospective contemplations. When he is running low on his supplies, he is forced to return to the abandoned compounds and scrounge for food and other items useful for his survival. It is on his way to the compounds that he remembers episodes from his previous life as Jimmy. Here, his reflections follow a chronological structure and

do not move around time, making it easier to follow his retelling of the past and distinguish between his previous self as Jimmy, and his new identity as Snowman. *Oryx and Crake* is more than a personal narrative of his life before and after the catastrophe. Scholar Karin Höpker argues that Snowman/Jimmy can be characterized as a "[…] guide and destitute raconteur. [His] retrospection and reminiscences are our sole source of information about pre-apocalyptic society and the events that led to its downfall" (165). Snowman remains the only living human informant able to describe the downfall of the technology-driven world that was destroyed by the same workings with which it was established. Due to his friendship to Crake, he is the only human who knows the secret about the destructive pandemic that killed humankind. In this regard, Snowman functions as a literary time traveler conveying a cautionary tale[135] to readers living in a time and world that is not yet entirely controlled by science and technology, where the effects of environmental perils cannot yet be fully seen, or experienced.

Jimmy, and later Snowman's, status as an outsider enables his critical view of science and technology and often colors his words with a reproachful tone. Distant to his ambitious father, a high-profile biological engineer, and left by his mother, who could no longer live in this amoral technocratic society, Jimmy spent most of his time alone at home. During his high school years, Crake becomes his first close friend. However, their friendship appears to revolve around only a few words as they play videogames or browse the Internet. While in college, Jimmy leaves the compound for the very first time and begins to explore his own interests, which do not revolve around science, particularly bioengineering. Here, Jimmy develops his passion for books as well as words, and language in general. Studying the humanities and becoming a humanist, rather than a scientist like many others, Jimmy clearly distances himself from the world in which he grew up. The

[135] Leading to the first analepsis that describes Snowman's life before the disaster, the text uses the formulaic beginning of fairy tales to begin its depiction of the past. The text states: "Once upon a time, Snowman wasn't Snowman. Instead, he was Jimmy. He'd been a good boy then" (Atwood 2003, 15).

text describes, "the system had filed him among the rejects, and he was studying what was considered – at the decision-making levels, the levels of real power – an archaic waste of time. Well then, he would pursue the superfluous as an end in itself. He would be its champion, its defender and preserver" (Atwood 2003, 195). Different from Crake, his dad, or the other people in the compounds, Jimmy is able to see the value and significance of the humanities. He seeks to make a difference through his own actions, including often meticulous activities that appear to do little more than provide him with a personal fulfillment, such as compiling, for instance, lists of archaic words collected from older books. The text describes, "he memorizes these hoary locutions, tossed them left-handed into conversations: *wheelwright*, *lodestone*, *saturnine*, *adamant*. He'd developed a strangely tender feeling towards such words, as if they were children abandoned in the woods and it was his duty to rescue them" (Atwood 2003, 195). In a world where language and correct spelling have become insignificant,[136] Jimmy regards himself as their safekeeper. The irrelevance of the correct use of language signals the dominance of results and products, rather than descriptions or explanations of the processes that lead to them. As many aspects of human life have changed by the innovations of bioengineering and technology, words have become obsolete due to the disappearance of the objects, events, or contexts they signified. Words and language are just one of the many areas that have been altered by human action and undergo a similar change to that of the environment.

Prior to the notion of the Anthropocene and the acknowledgement of the growing dominance of human influence, human history has often been regarded as a gradual process. Scholar Amitav Ghosh, for example, compares the history to a steady, gradual process just like a literary narrative (cf. 19-20). Humankind's fairly recent rise to a geological force, though, has

[136] While the narrative itself does not include any spelling mistakes, the scientific corporations and their brands and products utilize familiar words with disregard to their orthography, previously standardized in dictionaries. For instance, Jimmy's father works for HelthWyzer, a company mispronouncing the nouns their compound is made of by disregarding current rules on word separation and capitalization.

changed the course of their own history, as well as the planet's geological history. Historian Dipesh Chakrabarty argues,

> There is widespread recognition now that we are passing through a unique phase of human history when, for the first time ever, we consciously connect events that happen on vast, geological scales—such as changes to the whole climate system of the planet—with what we might do in the everyday lives of individuals, collectivities, institutions, and nations (such as burning fossil fuels). (Chakrabarty 2018, 6)

Chakrabarty explains how the anthropogenic changes in the environment have forced humans to adapt their lifestyles on the personal, nationwide, and global level. These adjustments irreversibly alter the course of human history. Atwood's *Oryx and Crake* offers one possible forecast for the future of humankind by depicting how scientific and technological advancements can alter their livings situations. As a young adult, Jimmy realizes, though, that science's dominance has maneuvered human history into a new stage incomparable to any previous historical era. Worse, he believes humankind has entered a point of no return. When visiting Crake at college, he contemplates, "why is it he feels some line has been crossed, some boundary transgressed? How much is too much, how far is too far?" (Atwood 2003, 206). Triggered by their drastically different living conditions at Martha Graham and Watson Crick,[137] Jimmy realizes he does not agree with the hegemony of science and technology (anymore), but he also cannot imagine society will return to the living conditions described in the books at the Martha Graham library.

Despite his doubts and apprehension, and in striking contrast to his mother who fled the compounds as a form of protest against the supremacy of science, Jimmy becomes a part of the scientific community when he accepts Crake's job offer after graduation. While not directly involved in the development and engineering of new technologies, he creates ad slogans and marketing

[137] During their walk through, Crake, for instance, explains that geological rocks have been replaced by Rockulators, human-engineered fake stones that can absorb the air's humidity and release it in times of drought (cf. Atwood 2003, 199-200). Here, human scientists have begun to reproduce natural entities that they might have destroyed along the process. Moreover, these non-human entities resemble their original predecessors in their appearance, but additionally also fulfill functions beneficial for humans.

materials for the new products released from the RejoovenEssense compound. Here, Jimmy never questions the work of his friend Crake and his scientific colleagues, and never asks about their ulterior motives or intentions. His comfortable lifestyle[138] makes him complacent, and, when he promotes the BlyssPluss pill without inquiring about its details or ingredients, complicit in the extinction of humankind. Untrained in science, Jimmy blindly trusts the explanations of his friend and starts advertising the product after an allegedly successful clinical trial period. Even when media reports about a mysterious new disease surface, Jimmy initially does not recognize the correlation. The narrative describes,

> At first, Jimmy thought it was routine, another minor epidemic or splotch of bioterrorism, just another news item. […] Anyway, it was in Brazil. Far enough away. But Crake's standing order was to report any outbreaks, of anything, anywhere, so Jimmy went to look. Then the next one hit, and the next, the next, the next, rapid-fire. Taiwan, Bangkok, Saudi Arabia, Bombay, Paris, Berlin. The pleeblands west of Chicago. The maps of the monitor screens lit up, spackled with red as if someone had flicked a loaded paintbrush at them. This was more than a few isolated plague spots. This was major. (Atwood 2003, 324)

As with many environmental threats, the effects of the danger appear to Jimmy too geographically distant to cause worry. The spatial distance causes indifference, and his concerns about the disease only grow when reports emerge about outbreaks closer to home. Shortly before her death, it is Oryx who recognizes the connection between the BlyssPluss pills and the global pandemic, and she informs Jimmy about her suspicion. Crake's assassination of Oryx, and Jimmy's subsequent murder of Crake, render impossible a revealing conversation between the two former friends. As a consequence, the narrative does not offer answers about Crake's motives and intentions and instead leaves us with only Jimmy's perspective.

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[138] After graduation, Jimmy reenters life in the compounds, describing his everyday life as follows: "After a while he was granted a promotion. Then he could buy new toys. He got himself a better DVD player, a gym suit that cleaned itself overnight due to sweat-eating bacteria, a shirt that displayed e-mail on its sleeve while giving him a little nudge every time he had a message, shoes that changed colour to match his outfits, a talking toaster" (Atwood 2003, 250).

Jimmy's involvement in the destruction of humankind, and his overall complacency after his graduation from college, makes him the narrative's anti-hero. Despite his distrust and suspicions over the supremacy of science, he did not protest, nor question, the scientific developments he ultimately became a part of. Instead, he turns into a quiet observer who does not utilize the critical thinking skills he learned in college. He maintains this role while witnessing the end of humankind from the comfort of his living room, incapable of reacting or feeling anything. "He was in shock. That must have been why he couldn't take it in. The whole thing seemed like a movie. […] The worst of it was that those people out there – the fear, the suffering, the wholesale death – did not really touch him" (Atwood 2003, 343). Isolated from the catastrophe in the safety of the compound, Jimmy becomes numb to the visible consequences of the disaster unfolding on his TV screen. He does not leave his apartment until he believes the majority of his fellow humans are dead. The narrative does not reveal his reasons, but Jimmy's overall emotional apathy allows the assumption that he sought to avoid being questioned by other human survivors over the whys and the hows of the catastrophe. His behavior equals an indirect confession of guilt for his shared responsibility in the unfolding of the disaster. By not making any attempt to rescue other humans from the engineered virus, Jimmy also reveals his disdain for his peers, who, in their awe for new technologies, have become undeserving of being saved. Moreover, humankind's extinction opens a new chapter for Earth, which, without human population, has the chance to overcome the anthropogenic changes. By freeing the Crakers from the laboratory, he allows the human-like species to become the new settlers of the planet. Their implanted simplistic mindset, and their lack of awareness of their human relatives, resembles a blank slate and signals a restart for life on Earth.

Jimmy's actions towards the end of humankind reveal he has lost his hope in his human peers, and even with himself. An outsider from the beginning, his friendship with Crake marked the only close relationship he ever experienced. But their friendship can be characterized by mutual betrayal; he was manipulated by Crake into helping him destroy humankind, but he also betrayed

his friend by having a secret affair with his girlfriend. Additionally, Crake, a strong believer in the power of science and technology, stood for everything that Jimmy despised when studying the humanities in his college years. His disappointment in humankind and himself makes him see the catastrophe and the extinction of humankind as a new beginning: without humans, their history will end. While not yet knowing about the other human survivors he will encounter at the very end of the narrative, Jimmy believes he is the last living human. With him, human history will die. In his new role as the teacher of the Crakers, he recognizes the need to distance himself from everything that has happened. The narrative describes his initial introduction to the Crakers, as follows: "'My name is Snowman,' said Jimmy, who had thought this over. He no longer wanted to be Jimmy, or even Jim, […]. He needed to forget the past – the distant past, the immediate past, the past in any form. He needed to exist only in the present, without guilt, without expectation" (Atwood Oryx and Crake, 348-349).

Overall, Atwood's narrative draws a pessimistic picture of the future of humankind. The growing influence of technology and bioengineering over other disciplines could change human living conditions in the near future. Relying on scientific and technological innovations to adapt to continuous environmental threats, such as climate change, might only function as a short remedy. These apparent solutions produce a new form of invisibility when they render unnecessary the contemplations of the hazards' origins, and humankind's responsibility in their creation. Jimmy as the anti-hero, similar to Zeno in Trojanow's *EisTau*, does not offer advice on how to turn humankind's path from impending disaster. Thus, it is once more up to the reader to learn from Jimmy's cautionary tale. But what if humankind has already crossed the invisible threshold and entered a dystopian time with no chance of hope? After all, Jimmy only realized after it was too late that humankind and their urge for scientific and technological progress had gone too far. In this case, *Oryx and Crake* would offer no lesson for its readers.

Barbara Kingsolver's *Flight Behavior* is focalized through the lens of a single human individual, the text's main protagonist, Dellarobia. Over the course of the narrative, she undergoes a psychological transformation similar to the education of the teenage protagonist Janna-Bertha in Pausewang's *Die Wolke*. At the beginning of the text, Dellarobia is introduced as a young mother of two children who has never attended college or held down a serious job. The arrival of the monarch butterflies, and her work with the entomologist Ovid Byron, triggers her personal metamorphosis.[139] Her job as Byron's research assistant, and their work-related conversations, allow her to gain knowledge previously inaccessible to her as a housewife and mother. Because of her work, she begins to understand the appearance of the monarch butterflies was not a lucky coincidence, but one of the many consequences of a globally changing climate. Her earlier situation as a female outsider resembles, in this regard, the situation of other marginalized women protagonists and/or narrators, as found in Wolf's *Störfall*, Pausewang's *Die Wolke*, or Haushofer's *Die Wand.*

Throughout the narrative, Dellarobia compares her own enlightenment and education with allusions and metaphors of vision and visibility. When she first discovers the butterflies on the way to a secret rendezvous with her lover, she is unable to identify them for what they are. Without her glasses, her weak eyesight influences what she can see, and she is only able to perceive the outlines and color, wrongly believing she just received a sign that stopped her from committing adultery. When she revisits the hilltop with her family a few days later, Dellarobia, this time equipped with her glasses, describes her first clear view of the butterflies as follows:

> Butterflies crossed her field of vision continuously at close range, black-orange flakes that made her blink, and they merged in a chaotic blur in the distance, and she found it frankly impossible to believe what her eyes revealed to her. Or her ears: the unending rustle, like a taffeta dress. (Kingsolver 56)

[139] Ovid Byron's first name and the significant role he plays in the enlightenment of Dellarobia allow to notice a possible allusion to the Roman writer Ovid and his poem *Metamorphoses*. The Latin narrative poem retells the history of the Earth, from its creation to the reign of Julius Caesar.

Her first unobstructed sight of the butterflies turns into a full sensual experience when she not only perceives the monarch's vibrant colors, and their quick movements, but also the noise created by the fluttering of their wings. What appeared initially as a warning sign preventing her from cheating on her husband has turned into a magnificent, unusual discovery of an animal species Dellarobia has never seen before.

Dazzled by the butterflies' appearance and the prospect of attracting tourists to the small rural town, Dellarobia and her family members regard their arrival as a blessing. However, doubts first begin to creep into her mind after she learns from an immigrant family from Mexico that the butterflies used to overwinter in their hometown. During the past years, though, the climatic conditions have drastically changed. Here, severely increasing rainfall triggered floods and mudslides that destroyed the surrounding villages and caused not only the flight of the local residents, but that of the butterflies as well. Inspired by their story, Dellarobia searches the Internet for further information about these severe weather events. There, she finds news articles about devastating natural disasters as well as images that show the destruction of the environment. It is then when she realizes how little she knows about the things happening outside of her personal sphere, outside of her house, and outside of Feathertown: "she felt abashed for the huge things she didn't know" (Kingsolver 102). The remoteness of her hometown, her precarious economic situation, and limited Internet access combined with a lack of other sources of information, such as updated reference books and encyclopedias, have aggravated her ignorance of occurrences taking place outside of her world. Dellarobia's situation does not represent a single case, but instead serves as an example for the underprivileged American working class that lives in rural small towns and outside of the urban epicenters. Her position as a woman puts her into an even more

disadvantageous situation, as her life is also impacted by the influence of conservative politics and religious values and beliefs.[140]

The subsequent arrival of entomologist Ovid Byron and his research team offers Dellarobia a reprieve and the opportunity to gain both financial independence and knowledge. Her work and conversations with Byron help to widen her understanding of topics, such as climate change, that exceed the coverage and information she receives through the media, or the internet. Discussing the consequences of climate change with Byron, the scientist explains,

> 'A four-degree rise in the world's average temperature might be unavoidable at this point. So we are headed for the ER, as you put it. The accumulation plays out for a very long time, even if we stop burning carbon.' 'If you stop something, it stops,' she [Dellarobia] said, sounding a little too fine. 'We used to think so. But there are unstoppable processes. Like the loss of polar ice. White ice reflects the heat of the sun directly back to space. But when it melts, the dark land and water underneath hold on to the heat. The frozen ground melts. And that releases more carbon into the air. These feedback loops keep surprising us.' (Kingsolver 279)

In a similar vein to the German works, Byron compares climate change to a form of disease that has already progressed far enough that severe consequences, or rather symptoms, will be unavoidable and will ultimately require hospitalization. In their conversation, Byron functions as an interpreter who explains complicated scientific processes in a simplified manner by, for instance, metaphorically comparing the circumstances to relatable, familiar issues. Despite her trust in Byron and his work, Dellarobia is initially slow to trust him when she asks: "'Is there some part of this I can actually see?' 'You don't believe in things you can't see?'" (Kingsolver 280). For Dellarobia, knowledge equals visibility, meaning if she can visibly perceive processes and events, she accepts their existence and the reality of their nature. As a trained scientist, though, Byron is aware that this perspective creates difficulties. For instance, his research on monarch butterflies consists of numerous smaller, meticulous experiments that involve the help of a microscope to see certain

[140] Throughout the narrative, there are numerous examples that show how Dellarobia is excluded from the decision-making processes by her father. For instance, it is her father-in-law that decides autonomously that he wants to sell parts of his lot to a logging company in order to solve his financial difficulties.

issues, such as parasite infestation or their life span. Here, the human eyesight is insufficient, and it requires verbal explanations or technical tools to depict what cannot be seen with the human eyes.

Over the course of her work as a research assistant, Dellarobia becomes increasingly involved in conducting and recording scientific experiments and measurements. In order to understand the survival of the monarch butterflies in the unusual climate, Dellarobia begins to write down the daily high and low temperatures in Feathertown, creating a graph that shows the increase and/or decrease of the conditions over the course of time (cf. Kingsolver 247). Ovid also explains to Dellarobia that there is more to the temperature than the numerical value on the thermometer. He introduces her, for example, to specialized processes such as thermocline that he, once again, describes to her in comprehensible language. Seeing the signs of frost and below freezing temperatures, she is now able to recognize the processes that once appeared too scientific and specialized. Dellarobia describes,

> She had heard him [Ovid] say the word *thermocline*, and now she could see that too. She had begrudged the clubbish vocabulary at first but realized now she had crossed some unexpected divide. Words were just words, describing things a person could see. Even if most did not. Maybe they had to know a thing first, to see it. (Kingsolver 250)

Dellarobia begins to understand that words and language, especially those used in the natural sciences, refer to phenomena that are part of her own personal sphere. Transcribing and translating the abstract scientific terms into comprehensible explanations helps Dellarobia understand that climate science can be discovered anywhere, even in her front yard. She compares her gaining of knowledge with the crossing of an invisible boundary. The crossing of her threshold, though, is different to the one Jimmy describes in Atwood's *Oryx and Crake*. The crossing of boundaries for Dellarobia is a positive transformation, as it depicts her enlightenment on issues formerly incomprehensible to her. Ovid and his detailed explanations have helped her to visually perceive the intricacies of climate she might have once noticed but could not yet fully understand. Thus, for

Dellarobia, both language and visibility combined are necessary to become aware of what is happening in the environment.

Over the course of her own transformation, she becomes aware that the people around her, including her husband, do not share her concerns for the environment. While her family members also notice the unusual weather and the increased rainfall, they do not acknowledge these are the consequences of climate change. Unlike the presentation of climate change in Trojanow's *EisTau,* where Zeno travels to Antarctica to identify already visible effects, Dellarobia points to the preliminary perceptible consequences in Feathertown. In combination with the planned logging of their forested hilltop behind their house, the rain could turn into an actual danger for their entire family rather than just a nuisance to their daily lives. In a conversation with her husband, Dellarobia begins to explain,

> 'Well, for one thing,' she said, 'when you clear-cut a mountain it can cause a landslide. I'm not crying wolf here, Cub, it's a fact. You can see it happening where they logged over by the Food King, there's a river of mud sliding over the road. And that's exactly what happened in Mexico, where the butterflies were before. They clear-cut the mountain, and a flood brought the whole thing down on top of them. You should see the pictures on the Internet.' She wished she hadn't seen them herself, they haunted her so. […] 'That's Mexico,' Cub said. 'This is here.' (Kingsolver 170-171)

For Cub, the floods and landslides in Mexico, also caused by heavy rainfall, are not comparable to what is happening in their backyard. Despite the similarities in weather patterns, he does not believe they are threatened by comparable natural disasters. While the narrative describes Dellarobia's enlightenment, it also shows that her own transformation is viewed critically by her family, and those who remain suspicious of Byron and his research team. In this instance, her husband distrusts the explanations of his wife despite her close work with the scientific researchers; he stands by his opinion, which is based on his political and religious beliefs.

Throughout her own transformation, her husband is not the only one who remains skeptical of Byron's scientific research. While Byron shares his conclusions with Dellarobia and convinces

her of the danger that emanates from climate change, she remains frustrated that Byron does not talk about his findings with the other residents. When the local media becomes interested in the foreign insect species, she asks Byron: "'But the news people are all over this thing up here,' she said. 'Why on earth wouldn't you tell them what's going on?'" (Kingsolver 229). While Dellarobia regards the media as a possible tool to inform a larger audience about their findings, Ovid and his research assistant, Pete, remain pessimistic. For them, the media is partly responsible for climate skepticism, as the topic often appears too abstract and dreary, causing media outlets to frame their reports in different and often unrelated contexts. Pete explains, "'so every environmental impact story has to be made into something else. Sex it up if possible, that's what your news people drove out here for. It's what sells'" (Kingsolver 230). For the media, communicating the findings of scientists like Byron is not enough to gain the attention of a larger audience. Often, they fabricate additional information and content that is either completely false, or at the very least, taken out of context. Dellarobia takes this experience personally when her interview for the local news channel is altered from its original version and is turned into an image of herself as the *Birth of the Venus*. The narrative describes,

> Someone had put the two images together and sent it out over the Internet. The similarity was surreal. It couldn't possibly be herself, but it was her, her own orange hair blowing loose from its ribbon in back, her left hand in her pocket and her right hand across her chest, posed like the naked Venus girl on the open wings of her shell. […] This image that was not real and had never happened was flying around the world. (Kingsolver 214)

As a consequence, Dellarobia begins to realize not just words, but even images, can be altered and falsified. Thus, the question remains, for us as readers as well as for Dellarobia: how can we communicate environmental threats, such as climate change, if the truth can always be modified and facts are continuously questioned?

Before his departure from Feathertown, Byron finally agrees to meet with the local journalist, Tina Ultner, who has covered the monarch butterflies since their sudden appearance.

During their interview, rather than questioning Byron regarding the reasons for their arrival, Ultner focuses almost entirely on the beauty of the butterflies. Disappointed once again by the media's lack of interest in truthful presentations of environmental topics, the entomologist and the journalist begin a discussion about the existence of climate change. Ultner criticizes, in particular, the lack of visual evidence that could prove the reality of climate change. When Ultner additionally mentions the seemingly scientific controversy, Byron's anger erupts:

> 'What scientists disagree on now, Tina, is how to express our shock. The glaciers that keep Asia's watersheds in business are going right away. Maybe one of your interns could Google that for you. The Arctic is genuinely collapsing. […] We are at the top of the Niagara Falls, Tina, in a canoe. There is an image for your viewers. We got here by drifting, but we cannot turn around for a lazy paddle back when you finally stop pissing around. We have arrived at the point of an audible roar. Does it strike you as a good time to debate the existence of the falls?' Tina sucked her teeth, eyes wide. The effect was not flattering. 'If this were the Niagara Falls, I'd have a decent background,' she said. 'I can't do anything with this without a visual.' Ovid's eyebrows pressed towards the hairline. 'Intangible things are outside your range? Can't you people be a little imaginative?' Tina did not reply. (Kingsolver 367)

The journalist's desire for visual evidence that supports Byron's explanations triggers his fury with the media once again. While Byron is unable to provide her with an image in the traditional sense, he creates an image with words when describing that humankind is about to aimlessly float down the Niagara Falls without being able to turn back towards safe waters. His visual allusion, though, does not satisfy Ultner. For her as a television journalist, images are essential to address the audience and convey her message. Knowing that the interview with its lack of visual support would have never been aired, Dellarobia uploads a cell phone video of their discussion onto the Internet. Here, she finds a way to release the unfiltered and unframed message to a wider audience, hoping they believe Byron's words and his allegory of climate change.

Dellarobia's transformation reaches its final stage when she decides to leave her husband and pursue a science degree at the nearby community college. Influenced by her work with Byron, she seeks independence for herself, and hopes to become a role model for her two kids, who

represent the future, and will thus have to endure the coming consequences of climate change. Her transformation resembles the trajectory of the bildungsroman (cf. Mayer 30-32, Wagner-Martin 1-20); it is a transformation through knowledge, from an uneducated stay-at-home mother to an independent single mother whose concerns for the environment surpass her political views, her religious beliefs, or her economic disadvantages. In contrast to Janna-Bertha's transformation in *Die Wolke,* in which her enlightenment is sparked by her own experience in the wake of the nuclear disaster, Dellarobia's exposure to science triggers her personal development. Her change is guided by Byron as her teacher, who explains the connection between the arrival of the monarch butterflies and climate change. By pursuing a career as a scientist in the end, Dellaboria appears dedicated to making a change in the world. Her metamorphosis represents an idealized outcome that can function as a model for the readers of Kingsolver's narrative. The text's depiction of her transformation though appears almost too perfect; her education is linear, and Dellarobia faces only a few obstacles to her enlightenment, predominantly from her husband and her conservative mother and father-in-law. If her transformation seeks to represent an exemplary for others, the narrative might appear at times patronizing, simulating a path instead of allowing readers to reflect on their own views.

Conclusion

In both Kingsolver's *Flight Behavior* and Atwood's *Oryx and Crake,* the inclusion of science and scientific information is essential to depictions of the possible, near-future consequences of environmental threats, such as climate change. This marks the most distinct difference to the German texts discussed in earlier chapters, where scientific facts relevant to the environmental threats have remained widely absent. Discussing Kingsolver and Atwood's text in conjunction with each other shows how science can be seen as a double-edged sword in the presentation of

environmental changes. In *Oryx and Crake,* the anthropogenic alterations in the environment have enabled the rise of technology, and the natural science, as they promised to offer solutions to imminent problems such as food shortages, or severe weather episodes. These innovative remedies, though, often function as a cover for the underlying, even greater dilemmas that disappear but are never fully resolved. The view of science, especially bioengineering and technology, as a savior for today's threats has been continuously contested in the German cultural context. Here, it was sociologist Ulrich Beck in particular who warned about the use of scientific inventions in an unreflective manner. Their creations often come with undesired, frequently hidden risks, as seen most prominently in the nuclear disaster in Chernobyl, but also Atwood's *Oryx and Crake*. While Jimmy was able to live in the comforts and convenience of the high technology compounds, Crake was working on the development of a lethal pill that would end the existence of the human species.

In contrast, Kingsolver's *Flight Behavior* presents science, and here, in particular, entomology and climate science, in a more positive light, as scientific research is essential for the education of the narrative's main protagonist, Dellarobia. Prior to working as a scientific research assistant, Dellarobia was influenced by her immediate social circumstances in a small, conservative town in rural Tennessee. Her new occupation offers her new insights that help her to understand often discussed issues, such as a climate change, from a different, novel perspective. Here, the access to firsthand scientific data and experiments helps her understand the issues happening in her own backyard. Her metamorphosis, though, is influenced even more by her close work with the entomologist Ovid Byron, who interprets and explains to her what the numbers and facts mean. He uses analogies that compare these scientific processes to everyday, familiar phenomena that help Dellarobia understand what is happening – often invisibly – in the environment. In some instances, she even begins to recognize visual evidence of the newly acquired knowledge in her private life. Thus, in Kingsolver's narrative, access to scientific information equals visibility.

Despite the extensive research of the natural sciences on the Anthropocene and its ecological threats, doubts remain about the truthfulness of the information. These anti-science sentiments are evident in the literary works, too. Here, it is Dellarobia's husband whose skepticism towards the existence of climate change persists despite his wife's education on the issue. And in the German narratives about climate change, both Zeno (*EisTau*), and the nameless woman (*Falsche Himmel*), bemoan the fact that people's knowledge about the environmental threat does not subsequentially translates into greater awareness or changes in behavior in favor of the environment. Accordingly, the scientific findings on these environmental perils do not automatically create greater awareness of the hazards that might be slowly evolving, dislocated or invisible to the human eye. Even science's attempts to visualize their discoveries into graphs, or other forms of visual representations, appear to have only minimal success and little impact, especially among people who remain unconvinced about humans', or their own, destructive impact on the processes of Earth. Thus, it seems German literary narratives on the environment follow a different path than their North American counterparts, as they widely exclude scientific findings from their narratives.

The incorporation of science also limits the literary texts' relevance in the lives of their readers. Within the German narratives, their fragmentary structure, and their subjective tone, offers narrative gaps, or *Leerstellen*, which offer readers room to reflect on the depicted issues in the context of their own lives. The plots in *Oryx and Crake* and *Flight Behavior*, though, portray fictional scenarios that, in the end, appear resolved. In Atwood's narrative, Jimmy's story could be regarded as a cautionary tale for current readers. Despite their apparent advantages, the growing influence of modern science and technology comes with risks and dangers. While Jimmy has been wary of this development, he did nothing to stop this trend and ultimately became complicit in the end of humankind. His role as the text's anti-hero could encourage readers to become more active in their own lives, but at the same time Jimmy's story could also discourage them from critiquing or

seeking to inhibit the growing power of science and technology. As the alterations in the environment are already deemed irreversible, there seems to be no other solution than seeking the assistance of scientific or technological innovation to adapt to the changed conditions. In Kingsolver's narrative, Dellarobia's education through science, and her work with Ovid Byron, transforms her from an ignorant stay-at-home mother to an ambitious science student. Her change, compared to the unaltered opinions of her family and the other residents of her hometown, is idealized and appears to portray the best-case scenario. Thus, the readers cannot learn any lessons from Dellarobia's enlightenment, or envision how they might have reacted when faced with problems, or obstacles, along the way.

The different features that accompany German and North American narratives about environmental threats and the Anthropocene reveal culturally different ways in thinking and communicating these modern, often invisible perils. In the Anglophone texts, the inclusion of scientific information, or characters familiar with science, functions as a strategy to present the imperceptible hazards. Here, they follow the more general public discourse, where the existence and severity of these modern environmental perils is often supported with the use of scientific data and findings. The German literary narratives, especially those analyzed in the course of this dissertation project, follow a different route. The absence of environmental science indicates these literary texts can be seen as counter narratives to the public discourse. Here, the abstract and invisible perils are depicted through the lens of human individuals with no scientific expertise. Confronted with widely imperceptible threats, their textual accounts describe how they experience and envision these hazards in their own individual lives. This emphasis on the personal experience gives literary narratives a greater ability to depict the threats in the framework of an interesting and uncommon human story. Here, the incomparable and novel story can awaken the readers' curiosity and might have more power to increase their general environmental awareness.

Epilogue

As shown, contemporary German literary texts about modern, widely invisible environmental threats function as another form of informing people about the perils that threaten to alter Earth's overall conditions. In these fictional narratives environmental hazards such as climate change are, or become, integral parts of the lives of individual human protagonists. They narrate, describe, and depict how they experience and envision these environmental threats despite their relative imperceptibility. The absence of scientific facts and data clearly distinguishes these literary narratives from reports of the ecological perils in other contexts, such as science publications, or the mainstream media.

However, the problem of invisibility reaches even further and exceeds the character of these modern-day environmental perils. Invisibility can also be a desired outcome for humans to cover up their harmful everyday behavior when deferring environmental perils to other areas. Here, their actions damage the environment and intensify the severity of these anthropogenic environmental threats for other, often already marginalized, communities. Scholar Robert Bullard, one of the first to define environmental racism, describes the issue as "any environmental policy, practice, or directive that differentially affects or disadvantages (whether intended or unintended) individuals, groups, or communities based on race or color" (Bullard 4). Bullard explains that the discrimination against black, Indigenous and People of Color (BIPOC) can occur intentionally but also unintentionally. Here, the latter form implies an undesired, yet often unnoticed deferment of environmental risks and threats. While Robert Bullard has researched the issues since the early 1990s, the topic of environmental racism, particularly in the United States, has gained broader prominence as recently as the spring and summer of 2020 during the worldwide Black Lives Matter

protests. Here, the mainstream media first reported on how BIPOC in the United States are more disproportionally affected by environmental threats such as pollution or climate change.[141]

In Western environmental literature, the voices of BIPOC and their experience of climate change, pollution, or nuclear contamination are widely absent. The perspectives of the human protagonists of the literary texts analyzed in this research project represent the views of white, fairly privileged individuals. Their experiences differ significantly from the experiences of black, Indigenous and people of color, even if they are living in the same country, or the same culture. Thus, if I could expand my research on the topic of environmental invisibility, I believe it is imperative to show how this issue is related to environmental racism. While the number of literary works written by and/or about BIPOC is still very small,[142] it will be important to analyze their views and experiences of modern ecological threats.

[141] In her column, journalist Sarah Kaplan cites several recent scientific studies that prove the inequity in how environmental problems are experienced in the United States. "One study published last year in the Proceedings of the National Academies of Sciences found that black and Hispanic communities in the U.S. are exposed to far more air pollution than they produce through actions like driving and using electricity. By contrast, white Americans experience better air quality than the national average, even though their activities are the source of most pollutants. Another paper in the journal Science found that climate change will cause the most economic harm in the nation's poorest counties; many of those places, like Zavala County, Tex., and Wilkinson County, Miss., are home to mostly people of color."

[142] In the Anglophone context, relevant literary works are Octavia Butler's *Parable of the Sower*, or Ed Roberson's *City Eclogue*. In the framework of German literature, I am yet unaware of the existence of any literary works written by BIPOC.

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