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Beyond Dystopia: The effect of reading hopeful climate fiction on climate anxiety and environmental self-efficacy

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Abstract

For the past few decades, climate communication and climate storytelling have been unrelentingly bleak. Stories of disaster, misanthropy, and trauma have dominated the cultural discourse. While such a dour tone is certainly warranted given the severity of the challenges we face, a growing body of evidence suggests that the barrage of negative, technical communication may be resulting in negative mental health impacts and does not necessarily translate into climate action. Rather than continuing to focus solely on technical and fear-based communication, some professionals have called for shifts towards narrative communication and more hopeful alternate communication frames. Despite these calls, research into how other climate media and climate storytelling impacts audiences remains relatively sparse. In order to begin the laborious process of challenging the status quo in climate communication, it is important to examine exactly how people interact with hopeful climate fiction, and how it might impact them. In this study, I investigate what effect hopeful climate fiction has on readers. While there are an endless number of ways I could approach this question, I chose three related avenues of inquiry using the popular solarpunk novella *A Psalm for the Wild Built* as an experimental text. I examined (1) what effect, if any, the text had on readers' climate anxiety, (2) what effect, if any, the text had on readers' environmental self-efficacy, and (3) what elements of the text were salient to participants and how they made meaning from the text. To answer these questions, I turned to the field of empirical ecocriticism, which examines the impact of environmental texts using social science methods. I employed a mixed-methods approach combining a longitudinal survey with semi-structured interviews for a sample of 19 participants. Several findings emerged in regard to how readers digested the text, with many referencing its calming setting, communal society, and green infrastructure as aspirational and very soothing to engage with. There seems to be a notable positive effect on reader's environmental efficacy, particularly regarding community efficacy, although cynicism about the use of individual action remained. The text had a more complex impact on reader's mental health, but appears to have assisted in positively reframing readers' climate action, their role in their community, and their commitment to self-care. This reframing effect appears most strongly for those with mild to moderate self-reported climate anxiety. These results reaffirm recent findings about the importance of community action and framing in other areas of climate research and points the way to many avenues of further inquiry. These results are exploratory, but may be of use to climate communications professionals, writers, mental health professionals, and activist organizers.

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I also want to send so much gratitude to my cohort, my partner Mia, my family, and my friends, without who's unfailing support and patience I would never have made it through. You've all given me so much over the last two years, from deep intellectual conversation to homemade soup deliveries, and I can't thank everyone enough.

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Intro

"*Without constructs, you will unravel few mysteries. Without knowledge of the mysteries, your constructs will fail. These pursuits are what make us, but without comfort, you will lack the strength to sustain either*."

–Becky Chambers, *A Psalm for the Wild Built*

The person who first introduced me to Becky Chamber's sci-fi novella *A Psalm for the Wild Built* described it as reading a warm hug. It's a small story in a genre that is often dominated by sweeping epics and the highest of stakes. Instead of interplanetary battles, there are quiet tea ceremonies; rather than fraught fights for survival, *Psalm* focuses on one person's journey to find existential fulfillment. On its face, there's not much to keep the reader engaged – a pleasant diversion at most. Yet I found myself coming back to the book again and again. It spoke to something deep down that I didn't know I was missing as a climate educator and activist: hope.

I wasn't the only one feeling the weight of our changing climate. Nationally, climate anxiety and stress about the future in general is on the rise, with a recent nationally representative study finding that 61 percent of respondents reported experiencing climate stress or anxiety (Anneser et al., 2024). An international study published in the Lancet also found that 59 percent of youth (16-25) were very or extremely worried about climate change and 75 percent said that they think the future is frightening (Hickman et al., 2021). These trends were reflected in my daily interactions with the high school environmental activists I worked with as well, as my job as an environmental educator shifted more and more to reassuring the teens that there was still a point in working to make their lives, their community, and their world better. The reasons for this hopelessness are complex and multiple, but repeatedly, I would hear the youth, my peers, even seasoned activists say "I can't imagine how it will be better." And every day, I would come home, and think about Becky Chamber's peaceful, verdant world.

According to a growing number of scholars and professionals (e.g. Ghosh, 2017; Mulgan, 2022), we are facing a "crisis of imagination" in terms of climate action. This crisis shows up as a curtailed suite of possible actions the public believe are viable when it comes to climate action. Hand in hand with this restriction of action is a persistent sense that the future will be negative, or even catastrophic. This outcome shouldn't really be a surprise to anyone who has been paying attention to the tone of climate communication for the last couple of decades; visions of fiery hellscapes, arid wastelands, and forlorn polar bears have dominated popular messaging. There are certainly reasons for this trend, which I will discuss in more detail in the following chapters, but whether intentional or not, the public have largely taken those futures to heart.

This brings me back to Becky Chamber's novella. If so many people are feeling hopeless, discouraged, even paralyzed by the current climate narratives, what would happen if they were offered an alternative? What would it mean to hear about a future where climate action was successful, where change was made, and where mutual flourishing was achieved for all, both human and non-human? These seem like important questions, but currently, there are vanishingly few answers, partially because there are still such limited examples of hopeful climate futures. To begin the laborious process of challenging the status quo in climate communication, it is important to examine exactly how people interact with hopeful climate fiction, and how it may or may not impact them.

In this study, I investigate what effect hopeful climate fiction has on readers. While there are an endless number of ways I could approach this question, I chose three related avenues of inquiry using *A Psalm for the Wild Built* as an experimental text:

1. What effect, if any, does reading *A Psalm for the Wild Built* have on reader's climate anxiety?
2. What effect, if any, does reading *A Psalm for the Wild Built* have on reader's environmental self-efficacy?
3. What elements of *A Psalm for the Wild Built* were salient to participants, and how do they make meaning from the text?

To answer these questions, I turned to a new field within ecocriticism called (aptly) empirical ecocriticism, which examines the impact of environmental texts using social science methods (Schneider-Mayerson et al., 2023). While it is a young field, empirical ecocriticism has already produced some exciting work and aligns with my desire to not only look at a specific text in a vacuum, but also to begin to unpick what it tangibly does in the world. To conduct my study, I employed a mixed-methods approach, which is novel for the field, combining a longitudinal survey with semi-structured interviews. I will discuss my rationale for this choice, along with the specifics of how I set up this study in Chapter Four.

Any question concerning either climate change or human behavior is inherently interdisciplinary, I believe: both are vastly complex and, frankly, messy. This study is no exception, particularly as I am working at the intersection of humanities and social sciences. As such, there is a huge amount of background information that potentially has bearing on my specific inquiry. I have tried to streamline this background as much as possible and have broken it down into chapters for ease of navigation and (I hope) comprehension. Chapter One offers an overview of pertinent climate communication trends, including some brief discussion of why our climate imaginary has been so negative for so long. Chapter Two delves more deeply into some of the psychology background pertaining to climate anxiety and the concept of efficacy, as well as some of the mechanism at work in narrative communication – which *Psalm* falls into. Chapter Three is a genealogy of the experimental text, from the early days of environmental writing to the

burgeoning solarpunk genre, as well as an overview of the concurrent scholarly study of these texts. Chapter Four presents a detailed look at my methods for this study and the rationale behind them. Chapter Five breaks down the results of the study by research question, as well as presents a few unexpected results that emerged in the process, and finally Chapter Six brings some overarching conclusions together before offering some possible avenues of further study.

This study was highly generative, and produced more results than can reasonably be contained in this manuscript. However, I've distilled this volume down to some of the most prevalent findings. It was clear that readers enjoyed this text, with many referencing its calming setting, communal society, and green infrastructure as aspirational and very soothing to engage with. There did seem to be a notable positive effect on reader's environmental efficacy, particularly regarding community efficacy, although cynicism about the use of individual action remained. The text had a more complex impact on reader's mental health, but appears to have assisted many participants in positively reframing their own climate action, their role in their community, and their commitment to self-care. This reframing effect seemed to appear most strongly for those with mild to moderate self-reported climate anxiety, as those with little to no anxiety simply found it an enjoyable read, and those with severe climate anxiety or doomism found it difficult to suspend their belief enough to engage deeply with the text. These results reaffirm recent findings about the importance of community action and framing (Latkin et al., 2023; Schwartz et al., 2022) in other areas of climate research, and points the way to many avenues of further inquiry.

Positionality

Before we go further, it is important to note my own positionality, both for transparency and because the specific methods I used in this study are consciously subjective and thus impact the outcomes of my analysis. Throughout this thesis process and within my life, I have been showered with good fortune and privilege. I was raised on the unceded lands of the Ohlone and Miwok peoples in what is now called the San Francisco Bay Area and completed this project on the unceded land of the Lummi, Coast Salish, and Nooksack people, whose continued stewardship I benefit from every day.

I am a white, amab, relatively affluent person educated in “western” academic conventions and systems. I have lived my entire life on the West Coast of the United States, of which I am a citizen. All these markers and more afford me immense privilege, and this work that I present is inseparable from my own positionality. While I seek to present my findings in an even-handed and open manner, I make no claim of an unbiased result, and this thesis is inherently influenced by my own perspective, from conception and design to analysis.

Chapter 1: Climate Communication

Before digging deeper into the specifics of this study, it may be helpful to take a step back and consider some trends in how climate change has been represented in recent years. To start with the obvious, climate change is here, and it's scary. A majority of Americans view climate change as a major threat to the country's wellbeing (Tyson et al., 2023). This belief is likely in part due to personal experience of climate effects such as worsening storms, wildfires, and droughts, but it is ~~also~~ likely also due to this representation of climate change in mass media, which has generally skewed towards negative affect and low efficacy communication, with few opportunities for the general public to feel they can meaningfully act on climate issues (Arnold, 2018; Hart & Feldman, 2014).

I. Information Deficit Model

A significant fraction of climate communication and education practitioners have been operating on the understanding that, if people's technical understanding of climate change increases, they will make better decisions. On its face, this seems like a reasonable conclusion; we are rational beings after all, right? Not necessarily, as it turns out. Increasingly, the conclusion that both individuals and policy makers are rationally directed by scientific information has been called into question, both by theorists (Sterman & Sweeney, 2007; Weber & Stern, 2011) and by the very outcomes of collective decision-making (Sarewitz, 2011). This assumption is encapsulated in the "information deficit" model (Bord et al., 2000) which, in a climate context, very broadly holds that the public lacks adequate information about climate change to consistently prioritize climate-positive actions. As Suldovsky (2017) clarifies, the deficit model is "a one-way communication model where information flows from experts to publics in an effort to change individuals' attitudes, beliefs, or behaviors" (p.1). There are several assumptions baked into this approach which may be challenged, including the role scientists ought to play in conveying information, the mechanisms for motivating action, and the ways most people assess risk. As a result, the wide-scale validity of the deficit model has been called into question in recent years. In subsequent studies, researchers have found that increased education does not necessarily affect people's opinion on

controversial scientific issues (Bak, 2001) and that traditional informative messaging is less effective than other strategies (Sauer et al., 2021). Critically, there is mounting evidence that even climate knowledge and concern does not effectively translate to positive action (Venghaus et al., 2022).

Rather than a lack of information being the major barrier to climate action, it is more likely that a suite of barriers come into play, including "limited cognition about the problem, ideological worldviews that tend to preclude pro-environmental attitudes and behavior, comparisons with key other people, sunk costs and behavioral momentum, discredence toward experts and authorities, perceived risks of change, and positive but inadequate behavior change" (Gifford, 2011). In the past, trust of experts has been a critical component for meaningful cooperation and behavior change based on scientific advice (Shackley & Wynne, 1996), although the epistemological and political challenges of climate change have presented new communication challenges. Still, there is pervasive belief that much of the inaction around climate initiatives and the active denial of climate recommendations we see today is due to a similar distrust of scientists, with many hundreds of academic articles and popular press pieces deployed to discuss the challenges of climate misinformation (e.g. Cook et al., 2017; Maertens et al., 2020). While this is certainly a factor in the overall landscape of climate communication and behavior change, it appears to be a smaller factor than many perceive it to be.

II. Appeal to Fear

Another method that has been used to motivate public climate action in concert with the information deficit framework is an "appeal to fear" - the social psychology theory that people are best motivated by pinpointing the potential damages and losses that a certain action or lack of action may cause (Leventhal, 1971). Appeals to fear (or "fear arousal" in some of the literature) have frequently been used in medical communication, where much of the scholarship examining its effectiveness is focused. It is a strategy that does have some situational utility, particularly for issues which have clear action steps and imminent, tangible outcomes. Nevertheless, some controversy still exists about its utility. A comprehensive meta-analysis of the past sixty years of fear appeal research in medical communication

found that fear appeals are often not deployed in a manner that promotes desirable action (Ruiter et al., 2014). Counterproductive responses are particularly likely in scenarios where severity is conveyed without corresponding efficacy messaging. According to Witt and Allan (2000) “fear appeals should be used cautiously, since they may backfire if audiences do not believe they are able to effectively avert a threat” (p. 606). With this in mind, it is unsurprising that fear appeals are less productive when applied to diffuse, existential threats like climate change. For example, recent studies have indicated that catastrophic stories may be less effective in motivating pro-environment intentions (Baden, 2019) and that fear-based messaging may be counterproductive with climate deniers (Stern, 2012).

III. Emerging Climate Communication Trends

At this point, climate professionals have a workable understanding of the mechanisms driving climate change and the steps needed to take to mitigate these effects. The slew of international climate conventions, resolutions to action, and detailed multi-national scientific working groups show that, on a policy level, people in the US do not lack for information. The questions now are largely those of values, distributions, and costs. In such a debate, traditional science communication may take the role of a rhetorical cudgel. Science is certainly flexible enough in its scope and interpretation that either side of the highly polarized US climate debate can legitimately use it to gain the veneer of objectivity (Collingridge & Reeve, 1986; Sarewitz, 2004), and thus the public moral high ground (Porter & van der Linde, 1995). This begs the question, then, of how action may be prompted on both a public and policy level.

Science communicators are still grappling with exactly what best motivates individuals to engage in climate-positive behavior. As with any wide-ranging, wicked problem, there will never be absolute answers to this question – people are, after all, messy. However, there have been some studies pointing to techniques which are more effective than the flawed deficit model and appeals to fear. It appears that climate action is much more readily motivated by values, past experience, social pressure, and small-scale nudges, among other mechanisms. At a macro-level, there is some indication that a major gap in the public’s awareness of climate change is a feeling of efficacy, rather than a lack of information (Baldwin et

al., 2022). Communication that targets individual efficacy (the belief that one's own actions will make a difference; (Bandura, 1986), response efficacy (the belief that one's actions will have the outcome they desire (Maddux & Rogers, 1983), and collective efficacy (the belief that a group can act together to make a difference; Bandura, 2000) are all key for improving the translation of climate concern into climate action (Chen, 2015; Hornsey et al., 2021). The particulars of how this may be achieved goes far beyond the scope of this paper, but there is growing evidence that action and solution-oriented communication is more tangibly effective (Baden, 2019), and that amplifying stories of successful community action may improve both self and communal efficacy (Bamberg et al., 2015).

There is also growing evidence that narrative communication – that which uses storytelling frameworks or even fiction – may be more digestible and effective in communication intended for the general public (Dahlstrom, 2014; Hinyard & Kreuter, 2007; Strange & Leung, 1999). Narrative communication can take an enormous number of forms, but in general, relies less on complex jargon and high-level data literacy needed for more technical science communication methods. In addition, the case has been repeatedly made that humans are particularly adept at unpacking complex elements of narrative over other communicative forms (Gottschall, 2012). The public engages most often with narrative media, which has the double-edged benefit of cultivating an increased attraction to familiar forms of media and greater practice at digesting narrative media over other forms. I will unpack a few of the mechanisms which make narrative communication particularly effective at conveying persuasive messages in the next chapter.

Chapter 2: Psychology and Sociology Mechanisms

I. Climate Anxiety

The impacts of the deeply negative framing in climate communication goes beyond messaging efficacy, though. While negative framing in mass and artistic media alike (more on that later) can be potentially motivating for short term actions or for gaining attention, it isn't very effective in the sustained, existential connects of climate communications (Ettinger et al., 2021; O'Neill & Nicholson-Cole, 2009). In addition, it can backfire by worsening the already profound negative impacts of climate change on mental health (Kelsey, 2020; Ray, 2020). The term climate anxiety (also related to or used interchangeably with eco-anxiety, eco-grief, climate grief, and solastalgia [Albrecht, 2019]) has become increasingly widespread as an understanding of anthropogenic climate change grows. The mental health impacts of climate change are diverse and far-reaching, ranging from post-traumatic stress disorder and increased suicide ideation to reduced reported life satisfaction and happiness (Clayton et al., 2017). Stress (American Psychological Association, 2019) and grief (Cunsolo & Ellis, 2018) are common effects, especially in front-line communities, underserved communities, and youth (American Psychological Association, 2018; Pennea et al., 2021).

As a note, the distinction between impairing climate anxiety and productive climate anxiety, or motivating stress, is blurry. Some studies have theorized that a moderate level of stress may be motivating to take action (Luo et al., 2020; Maran & Begotti, 2021; Sarrasin et al., 2022), which is one of the main theoretical bases for appeals to fear. However, other studies have indicated that climate anxiety produces mental, emotional, or behavioral impairment, and disincentivizes positive climate action or produces counter-action (Dodds, 2021; Wu et al., 2020). While this distinction is important to trace, it is largely beyond the scope of this study, which will look at climate anxiety in general. I will instead consider a related psychological concept – efficacy – to help begin to make sense of the connection between climate anxiety and action.

II. Efficacy/Behavior Motivation

As I mentioned above, there are three main categories of efficacy as studied in psychology: self-efficacy, communal efficacy, and response efficacy. Self-efficacy was first proposed by Albert Bandura, and refers to an individual's level of belief that they can take an action (Bandura, 1997). This later grew into a theory of communal efficacy, or the belief that one's group can successfully take an action, and response efficacy, or the belief that one's action will have the desired result (Bandura, 2000). I will be focusing on self-efficacy for the purpose of this study, as I will be measuring individual response and self-efficacy is generally the most studied of the three. However, the other types of efficacy will certainly be important to consider in future study.

As I noted earlier, there is a complex relationship between efficacy and climate anxiety that is still being uncovered. On the one hand, climate anxiety may reduce willingness to engage in climate mitigation activities. Brulle & Norgaard (2019) propose that climate change may produce a sense of "cultural trauma," in which customs and traditions as well as cultural narratives are disrupted. Social inertia often results, as people seek to protect that which is familiar in the face of bewildering change, and thus are loath to alter their current behavior or take on new ones. In addition, extended intellectual engagement with climate change and climate anxiety may result in burnout or disengagement (Cox, 2011; Head & Harada, 2017; McCallum, 2022). However, other research indicates that a certain level of climate worry may increase intention to act (Maran & Begotti, 2021; Sarrasin et al., 2022) and that taking tangible action – action that is mediated largely through one's sense of efficacy - may help alleviate symptoms of climate anxiety.

III. Negative Efficacy

This returns us once again to how climate communication affects efficacy. To begin to answer this question, however, we need to put a few pieces together. I've already discussed the use of fear appeals as a motivating tactic, and the potential backlash the strategy may have on individual efficacy and threat response. Yet at the same time, climate news has been utterly dominated by negative framing and fear

messaging (Arnold, 2018). More concerning, however, is that this glut of negative messaging has not been paired with any significant amount of positive efficacy messaging (Hart & Feldman, 2014). As a result, a large portion of the climate-aware public is facing a "hope gap" – a relatively high level of climate knowledge with relatively low corresponding climate action (Upton, 2015). This hope gap stems, at least in large part, from the fact that the general public is presented with threat messaging, but is rarely offered positive alternate framing or meaningful ways to engage in climate action, which frequently results in elevated levels of climate anxiety, hopelessness, and doomerism (Feldman & Hart, 2021). Of course, the effect of affective frames, emotional arousal, and other messaging strategies vary widely, and often present differently based on political ideology. Nevertheless, the status quo of climate communication has recently been called into question, with narrative communication (Bloomfield & Manktelow, 2021), efficacy messaging (McLoughlin, 2021), and alternate climate framings (Suttie, 2018) all being proposed as potential solutions for public efficacy and climate anxiety issue. Let's continue to unpack some of those pieces, starting with how narrative communication can change minds.

IV. The Mechanics of Narrative Communication

Humans are naturally storytelling creatures. Evidence suggests that stories have been an important part of our social and cognitive development for nearly as long as we have been a species (Boyd, 2009), from the earliest cave paintings to soap operas, myths to Macbeth. The hold creative stories play in human history has not diminished with time either; they still wrap themselves into our lives in all manner of ways. Certainly, books, movies, plays, and other traditional artistic mediums all involve some form of storytelling and narrative, but so do the commercials that play during that movie, the pop song playing at the store, and the gossip shared over a cup of coffee. All ask us, the audience, to engage imaginatively with a constructed world. These stories do more than just entertain, though. They shape how people understand the world, how they view themselves, and what they will do in the future. As such, some climate communication professionals have begun to turn towards narrative communication, or even narrative persuasion (closely linked but not entirely identical endeavors) as an alternative to

technical science communication. Pinpointing precisely what it is in a narrative that alters an opinion or behavior is an impossibly complex task that is still being unpicked, but there are some theories that may begin to explain in part what is happening when stories change someone's mind. Let's take a moment to examine some of the theory behind how narratives influence people's experience of the world.

A. Social Learning theory

One of the foundational concepts undergirding narrative persuasion is social learning theory. This theory, proposed by Albert Bandura (Bandura, 1977), holds that many of the skills and experiences we use to navigate the world comes from observing the example of others rather than through direct experience. The theory has expanded since its inception to include verbal and symbolic modeling as well as direct behavior modeling (Bajcar & Bąbel, 2018; Bandura, 1977). Symbolic modeling is the pertinent mode in this case, as it includes imaginative media such as tv, movies, books, and even video games. In a small nutshell, social learning works through four pillars: *attention*, or the motivation and energy to meaningfully engage with an observed experience; *retention*, or the ability to hold and recall the modeled information; *reproduction*, or the ability to produce the modeled behavior; and *motivation*, or the drive to actively engage in reproducing the modeled behavior (Bandura, 1986; Fryling et al., 2011). Narrative media is particularly well suited to engaging a consumer's attention through a compelling story, and reproduction, in that a narrative asks the audience to cognitively reproduce the modeled behavior to engage with the story.

B. Simulation Heuristic

It is easy to imagine how one may learn from direct observation and modeling, but how exactly do stories on a page or images on a screen translate to personally held beliefs? One of the mechanisms that may drive that social learning through symbolic modeling is the simulation heuristic. The theory behind the simulation heuristic states that, when confronted with unknown or new situations, people will often "simulate" possible outcomes in their head before performing an action (Kahneman & Tversky,

1982). This may occur in a short-term context, like imagining how a specific conversation might play out, or in a broader context, like daydreaming about what alternate life paths might entail.

Narratives function largely by introducing skeletons of alternate realities around which the audience sketches a simulation (Gavins & Lahey, 2016). As Jonathan Gottschall put it in *A Storytelling Animal*, good narrative "gives us expert line drawings with hints on filling in the scene" (Gottschall, 2012, p.5). In doing the cognitive work to produce these simulations, the audience reinforces the salience of the subjects contained within the storyworld; they become more real to the consumer of the story, even if they are in fact fictions (Escalas, 2004; Martínez, 2014). The audience find it much easier, then, to plan for, prioritize, and act on that which they can already imagine. Evidence shows that simulation increases the perception that an imagined scenario is true, allows space to organize the new (hypothetical) experience into existing organizational frames, and provides a way to generate motivating emotions (S. E. Taylor & Schneider, 2011). While climate change is inherently difficult to imagine – with its diffusion across time and space – compelling simulations about how climate futures may look can help people prioritize climate-positive actions in their present moment.

C. Transportation

Narrative media is particularly good at engaging the imaginative functions of the mind to do the simulation work discussed above. Many people describe being "transported" into the story, "living in the character's shoes" or experiencing their reality in some way. While these experiences are of course not happening to the reader directly, they are still engaging their brain in meaningful ways. This process of inhabiting a character's reality is known (aptly) as narrative transportation, in that the audience is cognitively transported into the storyworld (Green & Brock, 2000). As Green and Brock (2000) state, "While the person is immersed in the story, he or she may be less aware of real-world facts that contradict assertions made in the narrative" (p. 702). There is even some indication that this transportation raises audience's likelihood to believe the facts in the story (Green & Brock, 2000). The extent to which an individual is "transportable" does very from person to person; those who are more empathetic or

sensation seeking, for example, tend to be more transportable than those who are less (Thompson et al., 2018), and transportation also impacted by the environment and circumstances in which the story is experienced. If one is trying to read while distracted – say in a busy room or with small children running around – they are less likely to experience transportation. If one is seeking to relieve boredom or avoid an unpleasant task, however, they tend to be more transportable (Green et al., 2004).

V. Social Imaginary

The bridge from individual narrative transportation and simulation to societal action adds yet another layer of deep complexity, which is further complicated when the surprisingly malleable understanding of a collective future is introduced. To delve deeper into this complex dynamic, it is important to consider how groups arrive at what they think the future will hold and how that view of the future translates back to present-day action.

A modern understanding of the concept of futures informing present action has its roots in the idea of the social imaginary (Canceran, 2009). To clarify, "imaginary" in this context refers to the sociological term developed by the likes of Charles Taylor (2004) and Manfred Steger (2009), but which reflects a related psychoanalytical concept theorized by scholars like Sartre and Lacan concerning the relationship between observation, which is inherently partial, and imagination, which, since it is produced solely in the mind, is complete (Sartre, 1940). We will put this definition of the imaginary aside for the moment, though, and focus on the social imaginary. At its broadest, the social imaginary refers to the set of rules, symbols, norms, and so on, which bind society together. As Cornelius Castoriadis expresses it, the imaginary is "societies' ability to self-institute, i.e., to create and recreate institutions, norms and social relationships by first creating shared ideas or meanings about the reality of these (Castoriadis, 1987, as cited by Milkoreit, 2017).

As the understanding of the social imaginary has been refined, so too has the understanding of its modes of expression and role in creating, rather than simply reflecting, societal action (Canceran, 2009;

Hopkins, 2019; Streeby, 2017). Jasanoff and Kimm pushed the idea of social imaginary from a largely present and historically-oriented concept to a future-oriented one with their theory of a sociotechnical imaginary, which are "collectively imagined forms of social life and social order reflected in the design and fulfillment of nation-specific scientific and/or technological projects…[which] at once describe attainable futures and prescribe futures that states believe ought to be attained" (2009, p. 120). This work reflects a continued proliferation of scholarship expanding the idea of social imaginary, including (most relevantly to me), a socio-climactic imaginary. The socio-climatic imaginary was recently defined as:

> Collectively held visions of the future that include the natural environment (informed by climate change science) possibly even as an agent rather than a mere object or context, are informed by beliefs about patterns and pathways of environmental and social change (including political, economic and technological change), pay attention to the complex interactions between natural and social systems over time, and can include desirable, undesirable and mixed visions of possible futures. (Milkoreit, 2017)

Embedded within the concept of the social imaginary are two distinct but linked processes; the first is the "cognitive-emotional" imagination, or the process of an individual's generation of the imaginary. This process is limited by individual heuristics, cognitive processes, and personal experience. The second is the "socio-political" imagination, or the collective process of social groups agreeing upon and reinforcing plausible or desirable scenarios (Milkoreit 2017). In addition, Jasanoff and Kim (2015) codified the formation of these social imaginaries into four general phases; origins (the creation of the initial idea, usually stemming from individual works of imagination), embedding (production and proliferation of the new imaginary), resistance (pushback from proponents of the dominant imaginary), and extension. This emerging understanding of social imaginary generation acknowledges the role of narrative futures in shaping broader imaginaries, which for the purposes of this broader inquiry, are broadly situated in the origin and embedding phases. In the next chapter, I will discuss the genealogy of narratives which may influence climate imaginaries in more detail.

Chapter 3: Literature

I. Environmental Literature and Cli-Fi

There is a long tradition of storytelling that explores the relationship between humans and their environment. Many myths and legends are foundational in this tradition, and even the western "canon" of environmental literature has deep roots, ranging from Thoreau and Wordsworth to Abbey and Leopold. Jim Dwyer offers an excellent overview of the history of ecofiction in his book *Where the Wild Books Are: A Field Guide to Ecofiction* (2010b). As Dwyer lays out, ecofiction has its roots in some of the most ancient storytelling traditions, as natural themes and elements are common in many Indigenous and First People's story traditions, classical works like Ovid's *Metamorphoses* and Latin pastoral writing, and medieval European tales. In the extended anglophone and broader European literary cannon, there has been a long-standing tradition of nonfiction nature writing, notably including the long line of British natural philosophers and later American transcendentalist writers like Thoreau and Emerson. This thread of anglophone nature writing eventually gave rise to the modern American environmental canon, in which authors like Carson, Abbey, Leopold, and others wove traditional naturalist writing together with other subject areas like natural sciences, policy, etc.

On a related literary branch, the rise of the modern novel around the 17th century paved the way for the contemporary version of fiction, in which environmental features are frequently used as a mirror for the narrative action (e.g. the sea in *Moby Dick*, the geography of Margarete Perkins Gilman's *Herland*, and nearly every location in H.G Wells' work) but wasn't as commonly the focal point of the story – with some notable exceptions. The true environmental novel, where the relationship between the human and non-human became a central element in fictional stories, began to gain steam in American literature starting in the 1930s and 40s, but came to a peak in the 1970s, roughly corresponding with the rise of a broader environmental movement and the first Earth Day in April 1970 (Dwyer, 2010b). Dwyer defines this new wave of ecofiction (based on Lawrence Buell definition) as works where:

- The nonhuman environment is present not merely as a framing device but as a presence that begins to suggest that human history is implicated in natural history.
- Human interest is not understood to be the only legitimate interest.
- Human accountability to the environment is part of the text's ethical orientation.
- Some sense of the environment as a process rather than as a constant or a given is at least implicit in the text. (Dwyer, 2010a)

Since the explosion of the ‘60s and ‘70s, ecofiction has proliferated widely, taking up all manner of issues and broadening beyond the originally rather limited cadre of writers and subjects. Contemporary authors like Amitav Ghosh, Barbara Kingsolver, and Richard Powers continue to push the genre in new directions.

This study is concerned specifically with the effect of climate-change-focused fiction – a subset of environmental storytelling generally referred to as “cli-fi” (Holmes, 2014). Cli-fi follows the long tradition of storytelling that grapples with contemporary environmental concerns; drought, industrialization, habitat loss, and more have all been the focus of a corresponding wave of storytelling. Thus, it should come as no surprise that a body of work has risen in recent years in tandem with our growing understanding of the climate crisis (IPCC, 2022). This genre is generally considered to have begun in earnest in the 1960s and ‘70s with works such as J. G. Ballard’s *The Drowned World* and Ursula K. Leguin’s *Always Going Home*. It has subsequently seen an explosion of work in the last twenty years as writers from all over the world add their own depictions of a climate present and future to the conversation (Trexler & Johns-Putra, 2011). Modern climate fiction has been typified into three main categories: tales of “denial, avoidance, and acceptance;” “cautionary fables of the Anthropocene;” and a small group of stories exploring the “ecopolitics of resistance, reform, and revolution” (Schneider-Mayerson, 2018a). My experimental text falls loosely into this last category, which I will discuss in more length below.

II. Climate Futures

Before I delve deeper into the specific subgenre of cli-fi this study will be working with, it may be helpful to briefly survey the current landscape of scholarship surrounding climate futures as a whole. Specifically, this section covers the secondary scholarship concerned with the production of climate futures – in which cli-fi plays a significant role –along with their implications and impacts in the world. It is, admittedly, a somewhat scattered field, containing entries from applied philosophy to organizational studies and beyond. With that being said, a steadily growing body of work is emerging from the field of ecocriticism as well as other critical humanities disciplines.

To simplify a very diverse field, much of this work can be separated into three broad categories. The first contains those studies concerned with the cultural production of climate futures. This thread of scholarship is the most tightly focused on the media presenting futures themselves. For example, Herr (2022) examines popular climate non-fiction to gain insight into common threads in how experts are discussing futures. On the other hand, Strauss (2015) chooses two focal texts to highlight how climate futures are being constructed in popular fiction. This body of work is, unsurprisingly, centered around the cultural criticism and media studies disciplines, but has started to bleed outside of these expected boundaries as scholars in philosophy, geography, race and gender studies, and more take up the task of unpicking the myriad themes embedded within climate futures.

A second category of scholarship is concerned with the social construction of climate futures, extending the work of the first category to consider the social and cultural implications of particular climate futures. Often, the direction of inquiry is inverted from the first category – which looks at specific pieces of media, and then speculates on what these might mean about current or future society – and instead considers how the collective weight of a future (or the interaction of conflicting futures) shapes and is shaped by large-scale behavior. This scholarship may focus on typifying existing social futures, like the “climate imaginaries” framework put forward by Levy and Spicer (2013) or may be focused on the mechanisms of constriction and implications of these futures, like the work Milkoreit (2017) presents.

This literature naturally tends to congregate around fields working with large social groups such as sociology, political science, communications studies, etc. While they are sometimes grounded in specific pieces of media, these studies more often approach climate futures from an abstract lens – relying on an understanding of collectively constructed narratives rather than focusing on specific texts

Finally, there are those scholars concerned with the behavioral impacts of climate futures. This broad body of literature follows a similar overall logic to the second category, in that it seeks to uncover the behavioral mechanisms and implications of particular climate narratives, but generally focuses on the individual as the unit of study rather than a society or political entity. Hall (2013) and Aufrecht (2017) are good examples of this literature, in that they question how climate narratives may modify individual behavior, and how the communication of normative climate futures may be altered to enhance desirable behaviors. This body of literature contains both theoretical work, like that of Hall and Aufrecht, and empirical work examining the psychological and behavioral effects of specific climate future elements. (e.g. Baden, 2019; Janpol & Dilts, 2016; Rooney-Varga et al., 2018). This topical focus spans a wide range of fields, but is generally most concerned with the tangible outcomes of specific representations of climate futures, rather than the production of said futures.

There is significant further nuance to unpack in a study of climate futures, but a key point for this study is that climate futures are multiple; many possible and sometime contradictory projections may exist at the same time, and thus the study of futures will likewise require a broad, interdisciplinary approach that goes beyond traditional climate science or ecocritical approaches. As Anna-Zoe Herr argues, climate change is "as much a cultural web of narratives as it is a body of scientifically measurable changes in the atmosphere" (2022, p. 89).

III. Hopeful Climate Fiction

Now, back to the fiction itself. Recently, calls from both popular and academic sources to shift the narratives surrounding climate change in fiction have been on the rise, paralleling those made towards

mass media. The need to combat the climate anxiety, burnout, and action paralysis discussed in the previous chapter are central in these calls because, frankly, the majority of climate fiction is bleak. The genre is dominated by stories of disaster, collapse, damage, and apocalypse. That is not to say that these stories are untrue or lack merit; quite the opposite. Climate change is a bleak prospect, and the stories focusing on its effects will almost by necessity have to grapple with heavy, upsetting themes if they wish to honestly portray a current climate reality and likely climate futures. There are also many compelling reasons why these bleak climate stories are important; they can offer cultural and political critique, raise awareness of stories that may not otherwise be heard, help process climate grief, and act as catharsis. However, as some voices are now arguing, there needs to be some balance in these narratives. Most of all, we are conspicuously lacking climate hope. Again, it is important to clarify terms here that hope is a vast term which can mean anything from unrealistic optimism to a well-founded projection of future outcomes. In this context, calls for increased climate hope center on a form of "gritty optimism," which acknowledges the magnitude and hardship of addressing climate change, but which nevertheless still pushes for positive action (Doyle, 2021; Romano, 2018). This style of hope, and the hopeful narratives that help spread it, may be a key factor in building mental resilience in the face of climate change (Clayton, 2018; Pihkala, 2018; Ray, 2020). Elin Kelsey expands the call for hopeful narratives to the wider public in her book *Hope Matters*, arguing that society must change the way it thinks about climate change in order to see meaningful action. Kelsey proposes that by hyper-fixating on the enormity of the problems we face and the many flaws in our response, we are practically guaranteeing our failure (Kelsey, 2020).

IV. Solarpunk

Calls like those made by Kelsey have begun to be reflected within the realm of climate fiction, albeit slowly. Movements of hopeful storytelling and imaginative work have been on the rise in recent years, starting as grassroots collections of art and community (like Commando Jugendstil and Solarpunk

Surf Club), and recently gaining momentum in more mainstream settings (e.g. Grist's "Imagine 2200" short story contest and the Verge "Better Worlds" project).

One prominent example of this hopeful climate fiction turn is the solarpunk genre. Solarpunk is a related political movement and aesthetic genre that works within "an area of counter-cultural hope" (Reina-Rozo, 2021, p. 1). Solarpunk is highly flexible in its presentation and style and bases itself on a premise of realistic optimism. However, solarpunk fiction is specifically concerned with addressing environmental crises in concert with social justice and political issues, often with a focus on renewable energy, sustainable design, New Urbanism or New Pedestrianism, and community adaptation ("A Solarpunk Manifesto," n.d.; Reina-Rozo, 2021). While these are some of the common trends, solarpunk is inherently hard to cleanly quantify, as one of the principles of the Solarpunk Manifesto is that "Solarpunk embraces a diversity of tactics: there is no single right way to do solar punk. Instead, diverse communities from around the world adopt the name and the ideas, and build little nests of self-sustaining revolution" ("A Solarpunk Manifesto," n.d.). Nevertheless, action, resilience, and community remain integral pieces of the genre. The idea of solarpunk as an extant genre seems to have first appeared in text around 2008 in a blog post titled "From Steampunk to Solarpunk" ("From Steampunk to Solarpunk," 2008), which was fleshed out by scattered posts and blogs in the following years (Andrewism, 2020; Flynn, 2014; missolivialouise, 2014). It has since gained momentum, with numerous online communities, videos, story collections, and activist groups forming under the label "solarpunk."

Solarpunk is grounded in collectivism, as co-ops and non-hierarchical organization are a common element in solarpunk stories. There is often an affinity for anarchist organization, although this is not a universal, and strong anti-capitalist sensibilities. Attention must also be paid to the suffix "-punk." Like some of the other "punk" genres which solarpunk grew out of – especially cyberpunk (commonly cited as the precursor of all other punk genres and first attributed to Bruce Bethke in his 1980 short story of the same name) – the "punk" in solarpunk refers to its opposition to the status quo political and societal structures. The speculative work solarpunk does is inherently activist, as it imagines what a "better" or

different world might look like, rather than simply extending the current systems into the future, as much of the current crop of cli-fi does. Adam Flynn puts it eloquently: “We’re solarpunks because the only other options are denial or despair” (Flynn, 2014). He goes on to describe solarpunk as beginning with *“*infrastructure as a form of resistance” which making use of “innovative dissent.” This is not to say that solarpunk narratives must inherently be based around activism and opposition; rather, the very substance of the creative works are radical by their nature. The potential of solarpunk, and hopeful cli-fi in general, has been theorized in a number of settings (Munteanu, 2022; Więckowska, 2022), with claims ranging from modest benefits to mental health to an ability to change society writ large. This study will begin to empirically examine some of these claims.

V. Ecocriticism

Again, before I delve into exactly how I will investigate these claims, a brief detour in the other primary body of scholarly literature informing the study is necessary; namely, the extensive field of ecocriticism. Ecocriticism is a school of critical literary study focusing on the interaction between humans and the non-human world in literature which began to gain momentum around the same time climate fiction was first developing in the 1970s. Broadly, ecocriticism is concerned with “the interconnections between nature and culture, specifically the cultural artifacts of language and literature” (Glotfelty & Fromm, 1996, p. xix). It seeks to examine how the non-human world is represented in literature and what that representation means about the society it is produced in. The field quickly expanded beyond the limits of literature, however, to include broader critical humanities work studying film, photography, art, theater, and more (e.g. Armbruster & Wallace, 2001; Iovino & Oppermann, 2014; Ladino & Bladow, 2018). It has since blossomed into many different subfields, found intersections with other disciplines, and proliferated around the globe. Some of the major arms of ecocritical inquiry are Pastoral Ecology, Wilderness Ecology, Animal Studies, Ecofeminism, and Urban Ecocriticism. While climate change was somewhat slow to appear wildly in ecocritical work, possibly in part due to an emphasis on British romanticism and American transcendental ideas of nature and place as a fundamental concept rather than

a mutable and contextual phenomena, it has recently gained significant momentum in the field. Work like Adam Trexler's *Anthropocene Fictions* (2015) and Ursula Heise's *Sense of Place and Sense of Planet* (2008) are early examples of this trend that has only continued to expand in recent years.

According to Adam Texler and Adeline Johns-Putra (2011), the broad field of ecocriticism has settled into three main threads in recent years. The first grouping contains those scholars concerned with the representation of nature in literature (previously, this scholarship was particularly focused on the British romantics and American transcendentalists, although the subfield has broadened substantially since its inception). The second are those concerned with "exploring ties between literature and ecology, human and physical geography, biology, and evolutionary sciences" (p. 192). Lastly, a robust body of ecocritical work is rooted in the activist impulse charted by "other subdisciplines, including feminist and gender studies, race-based studies, and postcolonialism" to enact social change through critical work. These scholars broadly seek to use "literary critique to show the shortcomings of our current environmental ideas, to draw attention to environmental issues, to develop new ways of thinking about the environment, and to energize environmental activism" (p. 192). This activist impulse is obvious in a large fraction of environmental literature and art (Holmes, 2014; McKibben, 2005), and can be easily extended to many ecocritical scholars as well. As Schnieder-Mayerson et al. (2020) note, many authors and literary theorists (e.g. Buell, 2001; Glotfelty & Fromm, 1996; Slovic, 1992) hope that works focused on environmental issues, and climate change specifically, will improve individual understanding and societal action on their focal issue. William Rueckert, credited with the first formal description of ecocriticism in his essay "Literature and Ecology: An Experiment in Ecocriticism," proposed that literature "could transform culture and help bring our destruction of the biosphere to an end" (Rueckert, 1978). Lawrence Buell later theorized that eco-fiction can: build empathy with other's experiences of suffering, be they human or non-human; connect them with the experience of specific landscapes; direct their thoughts toward alternate futures; and alter their emotional attachment to the physical world (Buell, 2001). Others, like Kate Rigby, posit that climate writing must help us "find new ways of raising our

voices from the level of 'idle chatter' to that of biting and stinging ecoprophetic witness" (Rigby, 2009, p. 184). Can environmental writing enact this type of sweeping behavioral and social change?

VI. Empirical Study of Narrative

As I covered in the previous section, there is a reasonable, though still incomplete understanding of the psychological mechanisms within narrative persuasion as a whole. The body of work linking the mechanics of narrative communication with specific works, however, is somewhat spotty. Unsurprisingly, existing studies are dispersed across a wide range of fields and employ a plethora of research methods. While this is by no means an exhaustive survey, a brief look at a few of the fields that already use empirical methods to study narrative will be instructive.

A. Business Communications

One of the primary collections of work empirically studying the effects of narrative is in the discipline of marketing and business communications. For the most part, this body of literature focuses on small snippets of text (or "textoids"), visual ads, or video ads rather than on whole texts. This is the source of some controversy as to what constitutes a complete narrative and what type of media is able to elicit phenomena like transportation and simulation. There is a particular emphasis on affective engagement and narrative transportation within advertisement, (e.g. Escalas, 2004; Phillips & McQuarrie, 2010; Wang & Calder, 2006). Widely distributed questionnaires and focus groups are the most commonly used methods for this field.

B. Public Health

Public health and medical communication are two fields with relatively deep roots in the study of narrative persuasion. Naturally, the field of narrative medical communication could be the subject of a paper all on its own, but a few common strands that are more relevant to this study are those works concerned with how information is digested by an audience when presented in a technical form versus in narrative form (Kreuter et al., 2007; Shen et al., 2015). As Hinyard and Kreuter clarify:

> To date, the dominant paradigm in health communication has involved using statistical evidence, probability, and appeals to logic and reason to persuade and motivate people to adopt behavioral changes. Increasingly, however, health communication developers are turning to narrative forms of communication like entertainment education, storytelling, and testimonials to help achieve those same objectives. (2007)

Another interesting body of work lies in the somewhat defunct field of entertainment education, which sought to study the effects of embedding particular messages – in most cases large-scale public health messages - in popular media (Singhal & Rogers, 1999; Slater, 2002). Some studies of the public health impacts of mass media do still crop up (Dal Cin et al., 2012; Moyer-Gusé & Nabi, 2010), but the specific efforts to inject messaging into mass media seem to have declined. In almost all cases, the driving motivation behind these studies is improved patient outcomes and public health messaging uptake. Both the focus on narrative vs technical communication and the role of intentionally produced mass entertainment messaging have bearings on recent questions in climate communication and offer an important jumping-off point for climate communications study. A wide range of methods have been used in these studies, some of which have been borrowed and adapted by empirical ecocritical scholars (more on this field below).

C. Humanities

Empirical studies of narrative do exist within the more traditional humanities fields, but seem to have had a fairly fraught history within literary criticism and critical humanities. Two major criticisms leveled at many of empirical studies of narrative (depending on their home discipline, of course) are that this type of study unnecessarily, or even harmfully, seeks to instrumentalize artistic media, which risks obscuring creative production and the less-easily quantifiable functions of creative media such as witnessing, catharsis, cultural diagnosis, etc. (Seymour, 2018). The other major strand of criticism is that these studies frequently seek to "scientize" the humanities by bringing the appearance, and thus prestige, of scientific inquiry without the corresponding rigor (Herrnstein Smith, 2006; Smith, 2016). Nevertheless,

subfields such as literary darwinism (Carroll, 2004, 2010) and cognitive literary theory (Starr, 2018; Zunshine, 2015) have appeared with greater or lesser degrees of staying-power. It should be noted that while the two previous bodies of literature focus most strongly on narrative persuasion, the general humanities literatures look at narrative effect more broadly. Depending on the particular subfield, these empirical studies seek to produce theoretical knowledge (Dahlstrom, 2015; Dodell-Feder & Tamir, 2018; Martínez, 2014) concerning the fundamental mechanisms of how readers process a text, make meaning, etc., or lean more on a subject area application – where the concern is how a particular work or body of works interact with an extra-textual entity. These external elements range broadly, from dietary choices (Hormes et al., 2013) to prejudice against Arab-Muslims (Johnson, 2013). My study, and the broader field of empirical ecocriticism which I will discuss next, fall into this latter category.

VII. Empirical Ecocriticism

The specific applied question that has recently been taken up among some ecocritical scholars broadly asks what environmental media actually does in the world. As I mentioned previously, there is a common assumption, either implicitly or explicitly, in ecocriticism that engaging with environmental texts will help people behave in a more desirable way – or at least change something about their thinking and behavior in regards to the non-human world. That assumption, however, is only recently being systematically examined by a new subfield of ecocriticism called empirical ecocriticism (Schneider-Mayerson, Weik von Mossner, et al., 2020). The field is also sometimes called experimental ecocriticism, as coined by Wojciech Małecki (2019), although empirical ecocriticism seems to be the preferred term as of this writing (Schneider-Mayerson, Weik von Mossner, et al., 2020; Schneider-Mayerson et al., 2023). In general, ecocritical scholars have followed the methods and conventions of the wider literary criticism field, with a strong emphasis on hermeneutics and theory generation as the primary drivers of new knowledge. Empirical ecocriticism seeks to complement this work by expanding the mode of knowledge generation with social science methods and experimentation. There is certainly potential for tension between these different philosophical positions, but the early stated intent of empirical ecocriticism, at

least, is to enrich the field of ecocriticism rather than critique existing work (Schneider-Mayerson, Weik von Mossner, et al., 2020).

It is important to also clarify that, while empirical ecocriticism has meaningful similarities and largely operates in parallel with environmental communication, it is distinct. Empirical ecocriticism has a strong focus on narrative media, rather than environmental communication's attention to mass and public media (Comfort & Park, 2018). It also often includes textual and literary analysis and, as Schneider-Mayerson et al. (2020) state:

> environmental communication scholars have rarely been concerned with the formal and aesthetic features of the texts they have studied, while nuanced narrative elements, such as narrative voice and perspective, genre, fictionality, and the construction of the protagonist, are of crucial importance to empirical ecocritics. (p. 329)

There are also many parallels with the wider umbrella of the empirical study of literature, which I briefly touched on above. In this case, a distinction can be made by the field's thematic emphases and intended application. As Schneider Mayerson et al. (2023) lay out, empirical ecocriticism is generally interested in findings that can be applied in society, on inquiry about whole texts rather than specific elements, and is focused on a specific set of themes and issues.

Some of the first wave of studies in this nascent field include examinations of the behavioral effect of portrayal of textual animals (Al-Tehmazi, 2021; Małecki et al., 2016, 2019, 2021), studies on the impact of climate fiction (Schneider-Mayerson, 2018; Schneider-Mayerson et al., 2020), and the ability of dystopian fiction to convey environmental messages to readers (Mcphaul-Guerrier, 2019). While the research that is emerging in the empirical ecocriticism field is wide ranging, one path of scholarship has thus far revealed, and in turn been influenced by, a reality of the wider cli-fi field that the vast majority of stories are pessimistic, emphasize catastrophe frames, or generally have negative affect. As Matthew Schneider-Mayerson clearly summarizes: "The affective responses of many readers suggest that most

works of climate fiction are leading readers to associate climate change with intensely negative emotions, which could prove counterproductive to efforts at environmental engagement or persuasion" (Schneider-Mayerson, 2018b, p. 1). This negative affect goes beyond the direct subject of the narrative which, as I touched on, is also largely bleak with a strong focus on natural and human-made disasters (e.g. *The Windup Girl* by Paolo Bacigalupi or *Termination Shock* by Neil Stephens) and is also indicative of a pervasive pessimism towards humanity's response to these challenges. This study is intended to extend the existing body of empirical ecocriticism work by investigating the burgeoning hopeful climate fiction genre, as described in the section above. In addition, this study will add to currently the limited palate of qualitative studies in the field.

Chapter 4: Methods

I. Research Questions and Framework

Thus, this finally brings us to the specific research questions of this study, which will investigate what effect hopeful climate fiction has on readers. Specifically, I chose to examine this question via three related avenues of inquiry:

1. What effect, if any, does reading *A Psalm for the Wild Built* have on reader's climate anxiety?
2. What effect, if any, does reading *A Psalm for the Wild Built* have on reader's environmental self-efficacy?
3. What elements of *A Psalm for the Wild Built* were salient to participants, and how do they make meaning from the text?

I broadly based this study's methodology on the Interpretive Description (ID) model, as described by Thorne (2008). While ID was originally developed for use in the nursing and applied health fields, it has since found a home in other applied fields of qualitative research, as it "accommodates the understanding that human experiences are comprised of complex interactions between psychosocial and biological phenomena. The discovery of recurrent patterns, or shared realities, within these experiences is at the core of this disciplinary knowledge" (Thompson Burdine et al., 2021, p. 336). The method is specifically mentioned in Paul and Nicolette Sopcak's chapter "Qualitative Approaches to Empirical Ecocriticism" (2023) in the recent disciplinary text. ID is tailored for the analysis of "phenomenon with the goal of identifying themes and patterns among subjective perspectives, while also accounting for variations between individuals. ID is grounded in an interpretive orientation that acknowledges the constructed and contextual nature of human experience" (Thompson Burdine et al., 2021, p. 337). There is no single proscriptive approach in ID, but the method draws most strongly from ethnography, phenomenology, and grounded theory. As such, there is an emphasis on careful participant selection, inductive coding, and constant comparison analysis, although the particulars of how these show up in

each study may vary. While a number of methods would likely produce interesting outcomes for this study, ID seems most well-suited, as it "was designed to explore and to understand how individuals and groups make meaning and act in real-world situations" (Thompson Burdine et al., 2021).

While I follow many of the most commonly described elements of and ID study, I chose to use a mixed-method approach which, as far as I know, has not yet been implemented in ID, in the field of empirical ecocriticism, or the wider field of cognitive literary studies. This method consisted of three instances of a survey paired with a single semi-structured interview (see Figure 1). The choice to use pre-validated psychological instruments in a largely qualitative and interpretive study may seem unusual, but there are several reasons why I believe it is a useful method for this context.

First, the use of surveys allowed for significantly increased research efficiency. Data from both before and after participants read the experimental text offers more insight into what effects the text might have on participants, as it allows for direct comparison, which a single point study would lack. In addition, the few studies that have been done thus far on the effects of reading climate fiction point to a drop-off in effect for most respondents after only a few weeks (Schneider-Mayerson, Gustafson, et al., 2020). In adding a third time-lagged instance of the survey, I was able to continue to test this trend. While there is little literature to back it up, I also had a hunch that my longer experimental text might require a longer period for some readers to digest and integrate into their own lives. Thus, this data-collection framework required at least three separate responses from each participant. With a similar sample size to other qualitative studies in the field (approx. 20) then I would need somewhere around 60 discrete survey responses for even a modest participant pool. Using a more traditional qualitative method for all 60 responses, like interviews, would quickly result in an unfeasible amount of work due to time and resource constraints, and would require a prohibitive amount of engagement from most participants. Surveys, however, are easily scalable, require significantly less time to administer and respond to, and can (sometimes) be faster to glean findings from (Kuter & Yilmaz, 2001).

Second, using a survey allowed me to make clear and direct comparisons between emotional state and sense of efficacy. While interview methods are well suited for gathering deep and nuanced data, surveys allow for a level of rigidity that makes comparison over time much more accessible. This rigidity is, of course, a double-edged sword – the rigidity that allows for more consistent comparison over time also means I am unable to dig any deeper into the other effects that might be influencing participant responses outside of the experimental text. In addition, individual experience is necessarily collapsed by the constrained nature of the survey questions and scalar answer style. Many studies attempt to reconcile these limitations by pulling from a much larger sample and using statistical tests to find an experience or set of experiences that is common enough across the sample to act as a standing for *most*. Often, I find this collapsing of nuance too incomplete when it comes to reader's response and affective media, so I chose to take the opposite approach by using the interview portion of the study to help fill in some of that missing individuality and outside context, which then informs my interpretation of the trends that appeared in the survey. In a sense, I sought to give voice to the survey data though the addition of an interview.

The third reason to use a survey in concert with semi-structured interviews in this context was, frankly, curiosity and exploration. As stated above, I knew going into this study that I wanted to focus my research question on the application and practical response of the text, but also didn't want to collapse my participant's responses and in so doing lose their individuality. I still have yet to encounter a study using this combination of methods with a qualitative focus in the extended field of empirical literary studies (or any other social science field for that matter, although I have no doubt they do exist). So, I wanted to see how they might interact. In doing so, I hope to offer a starting point for other researchers thinking along similar lines. Now, down to the nuts and bolts of this study.

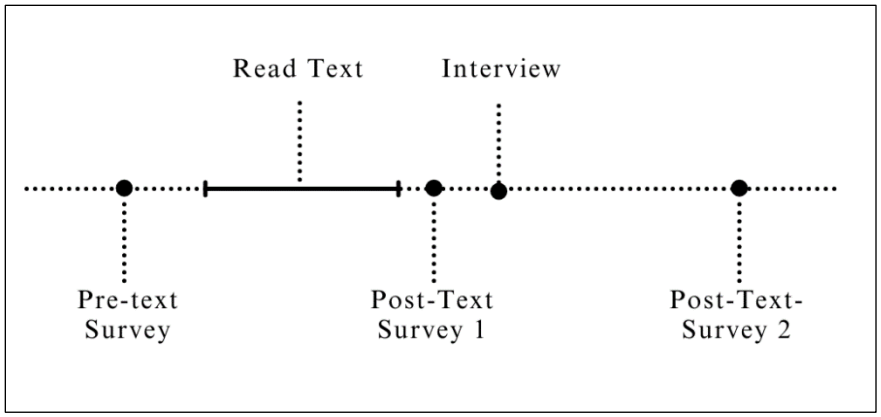

Figure 1 - Participant research timline

II. Experimental Text

The specific text I will use to conduct my research is *A Psalm for the Wild Built* by Becky Chambers, published in July 2021 as the first book in the Monk & Robot series. The text is 160 pages long - approximately 49,000 words - which will take the average reader approximately three hours to complete, according to howlongtoread.com, and is readily available at most book retailers and libraries. The text is approachable for a young adult reading level, although there are a few adult themes that make it more suited to adult audiences. It received a series of awards and is included on a number of best-seller lists. The novella is set on an earthlike world called "Panga," in a semi-utopian post-petroleum society. The story follows Sibling Dex, a nonbinary monk dedicated to a god of small comforts, who's vocation is to travel from town to town making tea and being an outside listener to personal and social problems. Midway through the story, Dex travels into the large swath of the planet set aside as a nature reserve by the request of the planet's robot inhabitants who all gained sentience many years before the action of the story and have retreated into the wilderness to contemplate the natural world. In the preserve, they meet Splendid Speckled Mosscap, the first robot to make contact with humans in generations, and the two travel together to an abandoned hermitage from Dex's youth. The narrative drama is primarily philosophical and introspective in nature, as Dex grapples with feelings of dissatisfaction and restlessness even when everything in their life seems to be going well, and as Mosscap seeks to answer their one simple question "What do humans need?"

The text has been described as solarpunk, and I believe it fits into that category well. The setting is a lush blend of sustainable design, innovation, and intention to live in a society that not only impacts the natural world lightly, but which accommodates and embraces all human identities. The story world is not perfect, and conflict does arise, but one of the foundational conceits of the book seems to be that humans have the capability of mutually flourish with the non-human world.

I chose this text for a few reasons. First, it is short and uses approachable language, which was intended to make study participation less daunting and increase the chance that participants finish the text. Second, it depicts a deeply optimistic future. Full-length, optimistic, future-oriented climate fiction is still uncommon at this point. A substantial number of solarpunk and hopeful climate short stories have been published as of this writing, but few full-length novels are in circulation. Third, the worldbuilding prominently features both physical climate adaptations and altered social and political structures. These social adaptations are often neglected in climate fiction, but still play a vital role in overall adaptation. Other texts that were considered include *A Ministry for the Future* and *New York 2140* by Kim Stanley Robinson, and *Everything for Everyone: An Oral History of the New York Communes* 2052-2072 by M. E. O'Brien and Eman Abdelhadi, but they were deemed unsuitable for this particular study.

While this is an excellent text overall, it does have limitations in the context of this study. First, it is not set on earth, which can impact readers' ability to apply textual elements to their own life. Secondly, while the main character's non-binary identity may increase engagement in some populations, the use of they/them pronouns has the potential to be confusing or off-putting to other populations. Lastly, while the novella is firmly grounded in a solarpunk setting, the narrative drama does not necessarily focus on environmental issues, and climate change is only tangentially mentioned. These limitations do not detract from the quality or depth of this study's results – they are simply elements of the text to be considered, and are all the more reason to conduct further research of this type with a diverse selection of texts.

III. Sampling and Recruitment

Originally, my goal was to recruit at least one community reading group or book club as well as a Western Washington University class in the College of the Environment. Ultimately, I ended up drawing participants from a large, queer community organization with over 1500 Facebook members, an email listserv from a dormant climate action book club run by a local non-profit, and members of a small writing group at Western Washington University. These participants were recruited through email outreach, and partnership with group organizers.

I chose to work with these groups for a number of reasons. First, I hoped that engaging groups already participating in fiction reading and production – as in the case of the book club and writing group – would increase response rate and retention. Second, these recruitment sites tend to be geared towards those already practiced at critically engaging with texts, and thus were likely to produce richer qualitative content to inform future study. Lastly, they were groups I already had access to, and allowed me to recruit a robust sample with limited resources and time. Each sample site potentially brought their own influence to this study: for example, there is some indication that LGBTQ+ people are more concerned about climate change than the general public (Whitley & Bowers, 2023) and the climate action book club is likely composed of those already more willing to engage with climate topics, although responses were of course particular to each individual. This style of purposive sample is common in mixed qualitative methods (Palinkas et al., 2015) and, I believe, resulted in a rich dataset.

It should be noted that my sample was geographically limited to the greater Bellingham area. Bellingham is a community in Western, WA, near the Canadian border of roughly 93,000 people, with smaller surrounding rural communities. It is 80 percent white (*U.S. Census Bureau QuickFacts*, n.d.), and is known to generally politically skew liberal/democratic (*Bellingham, WA Politics & Voting*, n.d.). While my sampling method didn't specifically select for any specific demographic factors, the composition of the community in which this study was conducted will inherently inform the readings, opinions, personal context, and outside influences participants brought to the study.

My final sample size was 19 participants, as a few possible respondents dropped out. This sample size is comparable to similar studies in the field of empirical ecocriticism (e.g. Al-Tehmazi, 2021; Iossifidis, 2020; Toivonen, 2022) and offers a diversity of experience and response while still feasibly fitting within my time and resource constraints. While it would be helpful to gather a larger participant pool in order to gather a potentially more diverse dataset, Thompson Burdine et al. (2021) clarify that "Data saturation is not a desired outcome in ID because the … experience can theoretically possess infinite variation. Instead, the focus should be on obtaining a deeper understanding of participant perspective while recognizing that variation in perceptions and outliers may exist."

The participant group was well-distributed in terms of age. Three (3) participants were 18-24 years old, five (5) were 25-34, six (6) were 35-44, and five (5) were 45-54. The group was heavily skewed towards female participants, with 13 self-identifying as female, 4 identifying as male, and 2 as non-binary/third gender. The majority have received some form of higher education, although the group was evenly split between those who had received a bachelor's degree (8 participants) and those with a graduate or professional degree (9 participants). Two participants have received some college education, but no degree. The group was relatively mixed in terms of household income: the largest group (7) self-reported as less than $25,000, and the second largest group (5) reported $100,000-$149,999. Three (3) participants reported $25,000-$49,999, two (2) reported $75,000-$99,999, one (1) reported $50,000-$74,999, and one (1) reported over $150,000. Virtually the entire participant group identified as white/Caucasian, with one participant identifying as "White Latino." Participants self-identified into several different religious affiliations, describing themselves as "Jewish," "Christian," "Universal Unitarian," "Spiritual/Agnostic," "Atheist," with some individual variation and previous affiliations listed. Finally, the group was almost entirely left leaning politically, with individual responses including "moderate Democrat," "leftist" or "far left leaning," and "progressive." This uniformity of left/democratic/progressive political standing generally indicates that this participant group are more likely to be concerned about climate and environmental issues (Leiserowitz et al., 2021).

Participant ID	Age Range	Gender	Education	Income Range	Race
0021	45-54 years old	Female	Graduate or professional degree	$75,000-$99,999	White
0005	35-44 years old	Female	Bachelor's degree	Less than $25,000	White
0016	25-34 years old	Female	Bachelor's degree	Less than $25,000	White
0007	45-54 years old	Non-binary / third gender	Graduate or professional degree	$100,000-$149,999	White
0004	35-44 years old	Female	Graduate or professional degree	$100,000-$149,999	White
0017	35-44 years old	Male	Graduate or professional degree	$50,000-$74,999	White
0009	18-24 years old	Female	Bachelor's degree	Less than $25,000	White
0008	35-44 years old	Female	Graduate or professional degree	$100,000-$149,999	White
0012	25-34 years old	Female	Bachelor's degree	$75,000-$99,999	White
0014	45-54 years old	Female	Graduate or professional degree	$25,000-$49,999	White
0003	18-24 years old	Female	Bachelor's degree	Less than $25,000	White
0010	25-34 years old	Female	Some college, but no degree	$25,000-$49,999	White
0018	25-34 years old	Female	Bachelor's degree	$25,000-$49,999	White
0006	25-34 years old	Non-binary / third gender	Some college, but no degree	Less than $25,000	White
0020	18-24 years old	Male	Bachelor's degree	Less than $25,000	White Latino
0013	45-54 years old	Female	Graduate or professional degree	$100,000-$149,999	White
0015	35-44 years old	Male	Bachelor's degree	$100,000-$149,999	White
0011	45-54 years old	Male	Graduate or professional degree	$150,000 or more	White
0019	35-44 years old	Female	Graduate or professional degree	Less than $25,000	White

Figure 2: Selected participant demographics

IV. Longitudinal Survey

The first element of this study is a survey designed to address the specific effects of the experimental text on climate anxiety and environmental self-efficacy (See Appendix 2 for the complete survey instrument). Survey instruments have been employed in a number of empirical ecocritical studies (e.g. Al-Tehmazi, 2021; Małecki et al., 2021; Schneider-Mayerson et al., 2020), though never to my knowledge in a qualitative setting or alongside interview data.

I conducted a brief longitudinal survey, which allowed me to track effects of the experimental text and begin to judge whether the effects are persistent (Lynn, 2009). I administered the same survey instrument three times: at the beginning of the study (pre-reading), directly after the participant finished reading the text, and roughly one month after they finished the text. The first two instances of the survey provide a before and after snapshot for each participant, and offer insight into any changes in reported

climate anxiety or efficacy the text may have brought about. The third instance provides insight into whether there were persistent or time-lagged effects.

The survey consists of four sections:

1. A battery of basic demographic questions, including age range, educational level, race, gender, political affiliation, and religious affiliation, if any. These questions were only asked once, during the first instance of the survey. The demographics questions were drawn from a standard array used in many social surveys and the US Census.
2. A measure of climate anxiety adapted from the instrument developed by Clayton & Karazsia (2020). This instrument was validated for a sample that roughly corresponds with Bellingham's demographics. While the statistical validity is less pertinent for this particular study, the testing process does allow me to feel more confident that this instrument would elicit a roughly faithful response from my participants. The instrument contains subscales measuring cognitive-emotional impairment of climate anxiety, functional impairment due to climate anxiety, experience of climate change, and behavioral engagement. These questions were measured on a 5-point Likert scale.
3. A measure of environmental self-efficacy based on Albert Bandura's model for measuring efficacy (Bandura, 2006). These questions were measured on a 10-point numerical scale, and asked how capable participants felt of completing a range of common pro-environmental and pro-climate actions. I followed Bandura's model of using specificity to reach participant's perceived self-efficacy for this category of actions rather than a general efficacy measure, like those developed by Schwarzer & Jerusalem (1995).
4. A free response section which allowed participants to offer any additional personal context or commentary that could not be captured by the other elements of the survey. Seventeen out of nineteen participants offered at least one additional comment, which was included in the final collection of individual data.

I chose to use Likert and numerical scale questions for the majority of the survey because a) they appear to be the most common instrument to pinpoint opinions and beliefs while maintaining survey efficiency (Joshi et al., 2015), b) they are the question-type each instrument was designed with and changing the response type would fundamentally change how the question is interpreted, and c) they allow me to standardize and more easily digest a large volume of responses. I used the Qualtrics survey platform to design and host my survey, which is accepted as an industry standard and is considered sufficiently secure.

V. Semi-Structured Interviews

The second element of my study was a single semi-structured interview with each participant conducted as soon as possible after they finished the experimental text. Semi-structured interviews – qualitative interviews in which a set list of questions are prepared, but in which follow-up and additional questions may be asked – offer an appropriate balance between rigidity and flexibility for this study. The structure allowed for focused thematic inquiry, but also allowed for details, fruitful lines of thought, and emergent themes to be pursued (Berg & Lune, 2017; Galletta & Cross, 2013). This flexibility is particularly important when critically discussing a full text, as the process of discussion may raise new insights for the subject. Participants were asked approximately 15 questions, with some variability due to additional probe questions or comprehensive responses. The average interview was approximately 35 minutes, with the shortest lasting 25 minutes, and the longest running 53 minutes. Interviews were almost evenly split between in-person and remote collection.

The goal of this interview was to uncover the specific elements of the text that were most impactful, emotions that arose, any extratextual events or experiences that impacted the reader, and to add nuance to their experience of climate anxiety and sense of self-efficacy. They were conducted either in person in a neutral location such as a café or park or over Zoom at a time agreed upon by the researcher and interviewee. All interviews were audio recorded and transcribed using Otter.ai. This ultimately produced a denaturalized transcription, for ease of analysis. The average

As far as I can find, only one empirical ecocritical study has used semi-structured interviews at the time of this writing (Toivonen, 2022), although related qualitative methods have been employed by the likes of Mcphaul-Guerrier (2019), who used focus groups, and Iossifidis & Garforth (2021), who used direct observation of online discussion groups. With that being said, the semi-structured interview is a staple for qualitative analysis in a number of fields like anthropology and sociology (Fontana & Frey, 1994), and is frequently referenced in the recent disciplinary text *Empirical Ecocriticism: Environmental Narratives for Social Change* (Schneider-Mayerson et al., 2023).

VI. Coding

I broadly followed the Reflexive Thematic Analysis method as described by Braun and Clark (2022) to code the interview data and qualitative survey responses, as this coding framework seems to complement the Interpretive Description framework well. I diverged slightly from a fully open coding approach, as I started with six general thematic categories based on the overall themes of my interview questions and the general body of literature around reader response (book reactions, emotion, personal salience, personal identification, and outside connections). As I went through the first round of coding, I added emergent themes as they appeared, ultimately finishing the first round with 41 codes. I also made extensive use of memos to note possible subcodes and patterns. From there, I revisited each of these broad thematic codes and split them into more specific subcodes. For example, “Emotion” was split into “Emotion- Positive,” “Emotion- Mixed,” and “Emotion- Negative.” These were further split into specific emotions. A full list of the final codebook can be found in Appendix 3. After this adjustment phase, I did a second round of coding with the refined set. This ensured that the new codebook still applied correctly in each instance, and allowed me to apply emergent themes that may have arisen part way through the first round to the entire set of transcripts. While I sought to be as open as possible during this process, the iterative, thematic coding process is inherently subjective. As Braun and Clarke put it, “themes do not passively ‘emerge’ from the data but are actively produced by the researcher through their systematic engagement with, and all they bring to, the dataset” (2022, p. 8). In this way, the coding process also

became an early phase of interpretation, as I continued to familiarize myself with the data, uncover patterns, and form connections within the data. I ultimately ended with 134 codes and subcodes.

VII. Interpretation

The interpretation process continued with the addition of the survey data. Rather than assessing statistical significance, I instead relied on basic descriptive statistics and data visualization. I chose this approach because my sample size is relatively small and not intentionally selected as a representative group, and thus would it would be difficult to extract generalizable conclusions from the date. In addition, a central reason I chose this mixed-method approach is to capture the variability and nuance within reader response. Attempting to generalize my results would run counter to this attention to individual difference. As Thompson et al. explain, an "individual differences" approach is often a better fit than seeking generalizable results when:

> 1) The phenomenon is, by nature, continuously variable rather than categorical.
> 2) A trait is difficult to isolate or manipulate experimentally.
> 3) The issue of interest is 94 how or how much (not just whether) a certain trait contributes to a certain outcome.
> 4) The 95 main concern is with a broad view of how the system works, rather than testing each part piece by piece. (2018, p. 6)

All four of these criteria apply to this particular study. I organized the dataset both as individual response sets and by the degree of change between each survey response (Figure 3).

Q2 Which round of the survey are you completing today?	Q3_1 To what extent do you agree with the following statements: - Thinking about climate change makes it difficult for me to concentrate.	Q3_2 To what extent do you agree with the following statements: - Thinking about climate change makes it difficult for me to sleep.	Q3_3 To what extent do you agree with the following statements: - I have nightmares about climate change.
Round 1 (before reading text)	2	1	1
Round 2 (just after reading the text)	2	2	2
Round 3 (1 month after reading the text)	2	2	1

Figure 3: Example of a small range of an individual survey response set

Each participant's response set was given its own sheet both for ease of identification, and to help me focus on the individual responses before examining the dataset as a whole. Each respondent sheet also included some basic data from their interview responses such as reading habits, initial reaction and stated emotional response, emotional reoccurrence, and so on. to form a digestible summary of each participant's response. Once I was well-familiarized with each individual response, I put together a degree of change visualization (Figure 4).

Direction of coding			Neg	Neg	Neg	Neg/Neu
Question			Q3_1	Q3_2	Q3_3	Q3_4
Participant ID // Interval of change	0006	1-2	-2	-1	0	1
		2-3	0	1	0	0
		1-3	-2	0	0	1

Figure 4: Example of a small range of the degree of change vizualization

The degree of change visualization included the amount all 19 participant's responses changed between the three survey responses. This allowed me to more easily glean patterns across the dataset and investigate how the themes participants were mentioning in the interviews was showing up in their survey data. Going forward, I will refer to each survey instance as S1, S2, and S3 for the first, second, and third survey respectively.

With this complete dataset, I delved even more deeply into the process of finding patterns across responses, pulling out emerging themes, and constantly validating or rejecting possible results against the original record. Thompson Burdine et al. describes this process well: “As coding allows for making connections within the data, analysis progresses to interpretation, including consideration of options from the initial theoretical scaffold. As analysis and interpretation deepen, a more complex picture is constructed from the data. Isolated themes are jettisoned and a more cohesive concept of the participant experience begins to take shape” (2021). This interpretive construction was done through constant comparison between the survey and interview data, where a trend in one data would inform further investigation in the other, and vice versa in a fluid interplay. Finally, after numerous iterations of theme creation, validation, modification, and reevaluation, I landed on a working set of themes. These themes (Appendix 3) are by no means an exhaustive representation of the data; they are instead informed by the guiding research questions and emergent meta-themes.

This research was conducted in compliance with standard human-subject research ethics, and went through Western Washington University’s Internal Review Process. The study was judged to pose a minimal risk for participants, and reasonable precautions to maintain participant’s safety and privacy were maintained at all times. It was deemed exempt by the WWU IRB office. The memo confirming IRB approval is included below in Appendix 4.

Chapter 5: Results

It is important to situate the presentation of my findings. First, as I discussed above, this analysis is subjective and deeply embedded in my own positionality, experience, and engagement with existing literature. These results are particular to the place, time, and specific character of my participant group. With that in mind, I attempt to offer a balance between presenting intriguing individual outcomes – generally outliers from the overall participant pool or particularly clear presentations of a trend – and more consistent emergent themes. While these themes are not necessarily generalizable to other places or populations, they may point towards fruitful avenue of future study. I will discuss this more in the final section. Second, this style of thematic qualitative analysis generally produces a large volume of potential findings, and thus the outcomes must be culled to only the strongest or most interesting trends. The results presented here are representative of the data, but are by no means exhaustive. So, with those disclaimers aside, let's dive in.

I. Effect on Climate Anxiety

What effect, if any, does reading A Psalm for the Wild Built *have on reader's climate anxiety?*

First, let's look at the blunt question of whether this text effects climate anxiety. The reductive answer is that yes, it seems do so something, but not in a consistent way. No single strong pattern emerged in the survey responses indicating either a positive or negative impact, although the vast majority of participants did experience changes in their responses over the course of the study. Overall, the clearest trend in the results from the climate anxiety survey instrument was a modest positive effect on cognitive/emotional impairment. However, climate anxiety was frequently mentioned in interviews and qualitative survey responses. From this, we can infer that, while reading this text didn't seem to have a clear linear impact on anxiety levels, it does seem to have a notable impact on how people are thinking about climate anxiety and how it is expressed in their daily lives.

Most participants entered the study with some level of expressed climate anxiety, which largely presented as cynicism towards personal efficacy, frustration at the role large entities play in climate action vs. the individual, and despair/cynicism towards human nature or society as a whole. A smaller subset of this group also expressed some level of burnout or feeling overwhelmed in the face of climate change. As one participant stated, "[I] *Always feel like I should be doing more*" (0011 S1 Qual). While the number of participants experiencing climate anxiety (ex. 15/19 participants reported that they "Agree" or "Strongly Agree" with the statement "Thinking about climate change makes it difficult for me to concentrate" at the start of the study) may be slightly elevated over the average in America – 67% of adults report that they are somewhat or extremely anxious about the impact of climate change on the planet, as of 2020 (APA, 2020) – this is generally in line with the overall demographics of Bellingham, and this sample in particular. Mental health impacts due to climate change are on the rise in the US according to the APA (2020), and those who agreed to participate in this study are likely already at least somewhat conversant with climate issues, and thus aware of its impacts. With that being said, there were a few exceptions to the overall trend towards climate anxiety. Participant 0018, for example, stated that "*I'm aware climate change is a serious issue, and I personally want to do more to combat it. Simultaneously, I feel a lot of hope for the future in terms of sustainable innovation*" (0018 S1 Qual). This mixed response was unusual in the participant pool, as the rest of those who reported lower anxiety reported that they just didn't really engage with the issue most of the time.

Overall, though, while the level of impairment stemming from climate change varied from participant to participant, it is safe to say that the vast majority of participants were aware, concerned, and often distressed by the potential impacts going into the study.

A. Intermittent Anxiety: Action, Oscillation, and Reassurance

One significant pattern from the data is that the experience of climate anxiety and cynicism is dynamic. This should come as no surprise to anyone who has experienced climate anxiety themselves; some days the world looks better, and some days it does not. In practice, this shows up for some of the

participants as a tick-tock movement between hope and cynicism. Within my participant group, the cadence of this movement seems to vary widely. One participant expressed that their experience of hope and anxiety was highly and rapidly variable: *"My relative level of hope (both collective and in my own ability to act) varies widely day to day."* (0017 S2 Qual) while others seemed to experience a longer cycle of hope and cynicism over weeks or months. Again, this is likely unsurprising on an anecdotal level, but such rapid dynamic change doesn't appear to be reflected in much of the existing climate anxiety literature, which instead treats the phenomena as a static experience. However, this pattern does align closely with a newer, more nuanced eco-anxiety model proposed by Panu Pihkala (2022). The full model is much deeper than I can unpack here, but a central feature is the "Coping and Changing" phase of eco-anxiety which, he states, consists of action, grieving, and distancing. He goes onto state that "if there is trouble in any of these three dimensions, adjusting will be more difficult" (p. 1). Most pertinent to this study, Pihkala's model of eco-anxiety based on "phases and oscillation" presents a more complete understanding of the lived experience of eco-anxiety. While a movement and balance between all three elements of the coping and changing phase are necessary for constructive coping, exclusive engagement with only one phase can be maladaptive. Many of the participants in this study described moving between the three stages to a greater or lesser extent, but those with more acute expressed climate anxiety seemed to have trouble engaging in one or more components of the process. Interestingly, engagement with the study text seemed to modify reader's experience of all three coping stages: it ameliorated grieving, as it was partially able to break some participants out of a hyper-fixation on negative affect emotions; encouraged positive engagement with distancing; and reframed action.

Again, in alignment with Pihkala's model, multiple participants expressed that action plays a central role in their experience of climate anxiety. This also lines up with previous research on climate anxiety (Ogunbode et al., 2022) which clarified that pro-environmental behavior is widely linked to climate anxiety. However, this linkage is also strongly associated with negative mental wellbeing, which aligns with previous empirical studies (Schwartz et al., 2022). As one participant expressed: *"I continue to take small actions that make me feel better for a short time, before sliding back into anxiety and self-*

recrimination." (0011 – S3 Qual). The feeling participant 0011 expresses here reinforces a strand of existing coping scholarship, which theorized that a more effective approach to combatting large-scale existential threats like climate anxiety lies a balance between problem-focused and emotion-focused coping – which results in meaning focused-coping (Ojala, 2012). This participant has already integrated a number of climate-positive actions into their life, but still feeling the pressure to do more, as expressed by their "slide back into anxiety." Such a pattern is indicative of a double bind many participants expressed, in that the only actions that are presented as doable are small scale, but that they simultaneously understand that the problem is larger than individual action. While this is a dynamic that could be the subject of its own extensive study, I will touch on the effect scale had on efficacy in the next section.

For most participants, particularly those who stated they generally only engaged in individual action, this text seemed to help balance the interplay between action and emotion-oriented coping, and move them at least temporarily towards meaning-focused coping. As one participant articulated:

> *I feel like my cynicism goes in and out, like ebbs and flows, and my willingness to like, take action, mostly in my own personal life ebbs and flows in accordance with my cynicism, I would say. So, I would say the biggest difference that I've noticed in myself is like, it [the text] kept my cynicism at bay.* (0012 Interview)

This experience is reflected in the survey responses for this participant as well, as they reported positive results across the board for the climate anxiety instrument between S1 and S2, but saw diminishing effects between S2 and S3, in line with the pattern they describe. While it is clear that no one text will fully alleviate a reader's experience of climate change – barring a few possible outliers – there does seem to be a potential short-term ameliorative effect, particularly in readers who engage most strongly in individual action as a coping mechanism, perhaps to the exclusion of other important elements of coping.

B. Commitment to Care

Another avenue in which the text interacted with reader's climate anxiety is in relation to the distancing component of Pihkala's model. Distancing in this case can be both adaptive and maladaptive. Generally, scholarship around distance from climate change has been focused on disengagement and reduced intent to act, but there are also legitimate and important functions of distancing – namely self-care and prevention of burnout. The intense focus on action that some participants engage in which I gestured to above is a very normal and sometimes beneficial response to a negative societal state. However, as I have nodded to, continued focus on action can often result in burnout. While the text provided some participants an avenue to temporarily balance their coping mechanism, it reminded other participants of the importance of rest and care.

The reminder of care was integrated by participants in two main ways: community care and self-care. Within the text, a number of readers expressed significant enjoyment and resonance with the commitment to acts of care and support the textual society held. Unsurprisingly, the concept of a tea monk in general was flagged as appealing (7 instances), as was the inversion of the tea monk duties that Mosscap performs for Dex at the end of the book (Chambers 2021 pp. 144-147). This comforting content was described as pleasant and, in some cases, hopeful in and of itself, but also reminded readers of moments of community care and its importance in their own life: **"***we can only hold community for so long without being held ourselves. And so there is that, like, balance of showing up for community, but also trusting that community is going to show up for us to care for us as well*" (0005 Interview). While it remains to be seen whether the textual engagemnet with community care will translate into consistent action, it almost certainly raises the salience of community care actions for readers.

Other participants also found this text helpful as a reminder to extend a degree of rest, care, and gentleness to themselves. For example, one participant described their process of reading a passage discussing the neccesity of small comforts:

> *I'm all about like, yep, we need constructs, we're going to unravel mysteries like we're going to study we're going to make things we're going to like, be productive citizens or whatever. Yep, got it, got it, got it. And without comfort, you will lack the strength to sustain either. And that, like put me back on my heels. […] I struggle with that. And so reading that was incredibly like, like, 'Ah shit, they're talking to me.* (0008 Interview)

This particular participant mentioned in their interview that they weren't certain that this revelation would translate into habit, but they did express some renewed optimism in their ability to find moments of rest and healthy distancing. Another participant (0011) stated in their interview that the text made them think more about their own balance between action and rest, and that it encouraged them to stop and rest a little more. In the survey, they reported modest increases in efficacy across the board between S1 and S2, but saw a modest decrease between S2 and S3, ultimately landing them at slightly higher efficacy than they started. While they expressed that they felt the text had changed their prioritization of action versus rest, they also stated that prioritization of time was a continuing hurdle: "[the] *Biggest constraint for me is time - between work and family commitments, I never have as much time as I'd like for climate stuff, and it always feels like a tradeoff between taking action vs having a cup of tea and catching my breath*" (0011 S2 Qual). The search for balance between self-care and action was a fairly common sentiment among those participants who regularly engaged in climate activities.

The trend seen in 0011's efficacy survey – a short term response to a text that trails off after approximately a month – holds true for about half of the respondents as well, and lines up with previous studies of cli-fi (Schneider-Mayerson, Gustafson, et al., 2020). While it is likely that the text simply diminished in salience over time for participants, it is also possible that the diminishing effect of the text for this participant may stem from them accounting for their time differently, with more time allotted for rest. To once again return to Pihkala's model, this movement in percieved capability for action engegement may be modified by a temporarily increased need for distancing – or perhaps even the arrival at healthier balance between action and rest. More study will be required to continue to unpack the

extended effects of such texts. Interestingly, though, the drop-off in reported efficacy changes after a month it isn't uniform across the rest of the participant pool. About half of the respondents followed diminishing effects over time, but the other half held steady in their efficacy estimation after a month or continued along the trend they reported in the second survey. This result runs somewhat counter to the previously mentioned study results, and bears further examination.

C. Antidote for Isolation

To unpack one last way the text interacted with participant's experience of climate anxiety, we need to take another detour into theory. The term pluralistic ignorance refers to "the shared false ideas of individuals about the sentiments, thoughts, and actions of others" (O'Gorman, 1986). This can take a number of forms, but in this case, evidence suggests Americans vastly underestimate public support for climate initiatives (Sparkman et al., 2022). Again, there are many overlapping reasons for this, from the politicization of climate topics to strategic counter-communication and the simple fact that it scares people. Regardless of the reason, this pluralistic ignorance often results in a feeling of isolation and futility for those who care about climate change. How can I, a single person, the thinking may go, make an impact on such a massive issue when no one else cares?

This trend is likely less pronounced in my sample than it might be in other communities, since Bellingham touts itself as highly environmentally-conscious and is majority liberal-leaning – thus mitigating much of the political tension experienced elsewhere. Still, some participants expressed feeling isolated or unusual in terms of their climate concern. The text interacted with these feelings in two main ways. First, reading the experimental text helped remind some participants of existing community they could tap into, but had not thought of or taken the time to engage with yet. As participant 0015 explained: "*[the book] reminded me that […] there's people out there, like, people that I am close to and can build community with people I haven't met. That I can build community with people who're dreaming a better, better place. A more just place*" (0015 Interview). Those who specifically stated that this book reminded them of people or actions referred almost exclusively to elements within their community. For 0015, that

was specifically couched as “people that I am close to,” while 0009 called out numerous friends and acquaintances they saw as working towards a future that more closely aligned with that of the text. In each case, the knoweldge that others shared their concern already existed, but was for some reason innaccessable in their daily lives.

The other way the text interacted with participants’ sense of isolation around climate concern was as a more general reminder that, somewhere out there, other people saw the future as more hopeful. The two participants who particularly found the presence of alternate imagined futures to be helpful were both fairly skeptical of the plausability of the storyworld itself. Nevertheless, the text’s hopeful future offered something helpful for them. As one participant expressed: “*even though ultimately, I feel like it's not plausible that we'll ever be there, there's still that hope that there's someone out there in the world who sees that there is a better way of doing things that could be achievable*” (0010 Interview). This response points towards an interesting nuance within the climate hope/cynicism dynamic. While these participants cannot quite bring themselves to buy into an alternate future other than the one they themselves project - be that because of past experience, emotion, or something else – they do not entirely reject the idea out of hand. It doesn’t seem that the experience of this single text is enough to entirely alter their cynicism, but the willingness to accept that others’ hope may indicate that their cynicism is less stable than they themselves believe. As with all the findings in this study, more work is required to investigate how a hopeful climate text might be part of a larger climate anxiety intervention and how repeated engagement might impact this trend.

II. Effect on Environmental Self Efficacy

What effect, if any, does reading A Psalm for the Wild Built *have on reader's environmental self-efficacy?*

Unsurprisingly, impacts on efficacy varied widely amongst the participants, with many citing past experiences in education or activism, current events, and even their perception of human nature or societal character as strong influences. However, there did seem to be a surprisingly strong positive change across the participant group as a whole. Across the entire efficacy instrument, there were seven mixed responses (both positive and negative changes between S1 and S3), nine entirely positive or neutral responses, one entirely negative or neutral response, and two incomplete. The data around the influence of the text itself, however, paints a complicated picture. It appears that the text had a more pronounced positive effect on community and regional/national efficacy, but had less intense, more mixed impact on personal and relational efficacy overall. Let's break these two trends down.

A. Positive Community and Regional/National Efficacy

Overall, (between S1-S3), community and regional-level action efficacy appears to have increased the most noticeably across the dataset, with only 3/17 respondents (roughly 18%) who finished the surveys showing any decrease in perceived efficacy for community efficacy, and 4/17 (roughly 24%) for regional efficacy in one or more of the three questions. While this overall trend isn't all that surprising given the text's emphasis on community cooperation and relationship, the consistency of response across the participant group is unexpected.

Community

The community efficacy cluster saw the most consistently positive response across the participant pool, with only very modest negative changes from three participants (between a -1 and -3 degree of change on a 10-point scale). One question in this set, "*How capable do you feel of taking environmental action on a local community scale? - Physical: helping to organize a community work party*" saw no decrease in perceived efficacy from any participants. This is particularly notable given the expressed

cynicism and life history of a few of the participants, who otherwise saw very uniform decreases in efficacy across the surveys.

The positive response towards communal action showed up strongly in the interview responses as well, with participants consistently noting both the text's representation of a more communally-organized society as aspirational, and pointing out existing efforts within the Bellingham community as sources of inspiration: *"just from like, the context of existing in this world and hearing positive stories and living in a community like Bellingham that's really like, you know, sustainably driven and environmentally focused, I think, I think there's definitely- we're seeing little shifts that could potentially lead to something like this [the storyworld*]" (0018 Interview). While most participants called out communal elements in the text as appealing, such as the near-post currency economy, smaller communities, and slower pace of life, the quote above is illustrative of the secondary function these elements played in reminding readers of these elements in the Bellingham community. As in the Antidote to Isolation section, the text seems to be nudging reader's attention towards existing actions that they are aware of on some level, but may not be thinking about. Awareness of existing community engagement translates into increased personal efficacy and, possibly, intent to act through a number of avenues, including an individual's drive to align with a desired group or identity (Ellemers & Haslam, 2012), a reminder of a perceived social norm (Thøgersen, 2008), and even as a way to restore an individual's "sense of global control when *personal* control is questioned" (Fritsche et al., 2013, p. 1). Precisely which one – or more likely which mixture - of these mechanisms almost certainly varies respondent to respondent, and requires further study to unpack. Nevertheless, the result was significant for many of the participants.

There was also significant comparison between the storyworld and the reader's reality (11 instances), which may play into the readers' increased efficacy. Essentially, many participants seem to desire or align with elements of the text's society, since almost all participants pointed elements out in the story as things they gravitated to or liked. They also frequently made the comparison between how their personal, community, and national context differs from that of the storyworld. Critical textual engagement

of this type is indicative of successful textual simulation, as discussed in the simulation heuristic section, and may be a sign of narrative transportation as well. The process of comparison is not necessarily motivating on its own, but when paired with the aforementioned reminders of established community action, it may prompt readers to consider how they might act to bring their own reality and that of the storyworld closer together. Ultimately, this may result in increased efficacy on the merit of increased salience. This result does seem predicated somewhat on the Bellingham community and specific sample I gleaned, in which many participants are already engaging in some form of climate activism and/or community activism. In this case, when there is already a reasonable amount of activist motivation, the presentation of a concrete target future or appealing goal to work towards that is still recognizable. The key here, it seems, is a balance between motivating futurity – a storyworld far-enough removed that it presents a compelling alternative to the reader's own – and coherence – or, in this context, "the logical relations between sentences but also […] their content and relations to the world" (Tuzet, 2022, p. 461). It should be noted that this is certainly an extension of the data, however, and is particular to this sample.

Regional/National

Regional/National efficacy also saw notable changes, although slightly less consistent than for community efficacy. However, regional efficacy did see the largest single degrees of change of the four categories, both in a positive and negative direction. Two participants reported significant negative jumps in efficacy (5 points or more out of a 10 point scale) between S1 and S3, while two different participants reported similarly large positive jumps (jumps of up to 7 points on a 10 point scale). The rest of the participants reported modest increases across the board. This is surprising, as there is little to no discussion of large-scale action, or really much engagement with regional or national political systems in the study text. The closest the text gets to discussion of large-scale entities are the descriptions of loosely connected religious infrastructure and trade relationships between the city and smaller communities. One possible entry point for this thematic scale, then, might be the evidence of past large-scale social

transformation – as evidenced by the 50/50 split in Panga's land management. Nevertheless, regional/national elements are by no means a significant element of the story.

Some other potential vectors for such strong responses in this efficacy category are that (a), this scale of action is one that participants engage with less consistently, and thus have less firmly established efficacy beliefs around those actions, or b) that there is some transference between other concurrent efficacy categories, particularly civic and educational, in other focal arenas. For example, one participant stated: "*I've gotten to be a part of and witness to some really inspiring organizing in support of Palestinian liberation and a ceasefire on Gaza, and I'm learning a lot about how to organize. It's definitely empowering me in ways that help to make organizing around climate change and other things I care about feel possible*" (0019 S3 Qual). This participant reported consistent increases in regional/national efficacy between both surveys, despite low expressed connection to the text and high levels of hopelessness around climate issues. This points toward the role of transferring efficacy from other avenues of action. While it is unclear whether the text had a significant effect, there is a potential that engaging with the narrative might have played a role in raising psychological salience of those related actions.

B. Static Personal and Relational Efficacy

Unlike communal and regional efficacy, the personal and relational efficacy measures saw comparatively little change across the surveys, despite significant discussion of personal action in the interviews. Change in personal efficacy was fairly modest; two participants saw an overall decrease in efficacy, which largely aligned with their expressed history and overall cynicism around the efficacy of climate action. One participant saw a very mild mixed result (of the three questions in the cluster, one increased by one point, one decreased by one point, and one was entirely neutral). The rest of the respondents either showed no change (3 participants) or mild increases in personal efficacy (11/17 full responses or roughly 65% increased between 1 and 4 points out of 10 from baseline). While the changes between S1-S2 and S2-S3 were mixed, the change between S2-S3 (from just post-reading to one month

post reading) was largely neutral to negative, once again in line with previous studies indicating diminishing effects of climate fiction over time (Schneider-Mayerson, Gustafson, et al., 2020).The relational efficacy cluster saw a similar distribution (three negative/neutral, two mixed, one fully neutral, ten positive/neutral or fully positive), although with slightly more dramatic changes in both positive and negative direction. The direction of change remained significantly more mixed across both intervals, though, as some respondents seemed to continue to increase in relational efficacy even a month after reading.

A possible explanation for these less pronounced changes in comparison to community/regional efficacy may be that participants are already highly engaged with personal or relational actions. There was significantly more reported participation in individual and relational actions in both the qualitative survey question and interview than the two larger-scale categories. A small number of participants work in environmental or climate jobs, and thus do engage with large-scale action professionally, but the majority of participants described their climate actions (if any) as driving electric vehicles, limiting travel and purchasing choices, reducing energy consumption at home, etc. As a result, most participants may already have a well-established sense of their individual and relational action efficacy, with less potential for significant movement. With that being said, a number of participants stated that they wanted to share their experience of this text with others in their family or close social network, and that they thought the positive emotional boost they experienced from the text would help others they knew who struggled with climate doom or cynicism. This desire to engage with others in their network may also prompt participants to consider other actions they might share with those in their close networks.

C. Conflict Between Individual Vs. Systemic Action

However, while most participants already engage in individual actions, there was a pervasive distrust that these actions were not all that worthwhile in the face of systemic issues. While participants didn't generally state that they had stopped their individual actions, there was a significant sense of fatigue amongst many. As one participant put it: "*The actions I have taken are largely individual, which*

some seem to agree and disagree on the "effectiveness" of those choices, such as composting or becoming vegetarian. Most of my actions don't include others because I have a hard time believing that my voice would change how they want to live. I oscillate between thinking it is my responsibility and not mine (as in, the fault of the corporations and therefore a job for legislation" (009 S1 Qual).

The struggle between justifying doable, small-scale actions and the sense that they are not helpful was common amongst respondents. In most responses, the theme of balance: "*I think a lot about the balance of personal responsibility vs. systems change when it comes to climate change*" (0012 S1 Qual) and responsibility: "*big corporations are the ones that I feel really need to change to make a lasting affect*" (0005 S1 Qual) were expressed in some capacity, and was often connected to the percieved presence, or lack thereof, of familiar capitalist or other social systems in the study text. Most participants called out the text's discussion of the transiton away from contemporary systems as interesting or aspirational. There was a significant divide in responses, however, as to whether that transition was beleivable, aspiational, or impossible, and a few participants even connected those sections with their own inability to be convinced of alternative social systems, despite a deisre for one: "*Maybe it's too hard for me to imagine that it [capitalism] doesn't exist and I just imagine that it does*" (0016 interview). Such a deep cynicism, or even antipathy, towards our current system with simultanious inability to extracate oneself from the system was a strong theme across the responses. I will discuss the range of participants' responses to the presentation of an alternatively organized society more below. This struggle runs deep for most participants, and most reported only mild releif – if any – from reading the text. However, as discussed above, the text's apparent utility in nudging readers' towards considering community action may go some way towards ameliorating this tricky double bind. Time and further study will tell if this reframing will continue to have an effect for readers.

These results, while certainly highly preliminary, may point towards a complex relationship between textual content and efficacy beliefs of readers. In this text, the protagonists did not actively engage in what would generally be considered activist behavior. Instead, the reformist content (if indeed it

can even be categorized as such) is embedded in a positive storyworld itself. This leaves it up to the reader to make the comparative leap between their own social and material reality and that in the storyworld. Depending on how appealing, coherent, and transportive the storyworld is for the reader, they may be motivated to try to take on actions that move their lived reality closer to the compelling storyworld. As is the refrain for this paper, more study will be needed to unpack exactly if and how this function is enacted.

III. Elements in the Reading Process

What elements of A Psalm for the Wild Built *were salient to participants, and how do they make meaning from the text?*

For this final question, we will return to reader-response theory. As a refresher, reader-response theory is an "extreme antiformalist position, arguing that the meaning of a text is constructed (or coconstructed) by its readers" (Schneider-Mayerson, 2018b, p. 473). Essentially, the theory makes the claim that reading is individual and contingent on a wide array of factors, from personal history to cultural influences, extra-textual events, other people, etc. A complete representation of an individual's meaning-making process under this theory, then, would likely enter the realm of ethnography, which is far beyond the scope of this study. While I of course cannot get remotely close to presenting each factor that influenced each reader's experience, I can point out a few noteworthy elements from across the participant group.

A. Emotion

Participants described the text as eliciting a very wide range of emotions, including those with a positive, negative, and mixed affect. A complete list of the described emotions are provided below, along with the specific frequency each was mentioned.

Code	**Frequency**
Positive Affect	**59 (Across 53 quotes; some multi-coding)**
Calming	7
Comforting	10
Faith	1
Funny	2
Happiness	8
Hopefulness	6

Joyfulness	4
Meaning	1
Nostalgia	2
Peaceful	2
Reassuring	6
Relaxing	8
Wholesome	2
Mixed Affect	**14 (Across 11 quotes)**
Bittersweet	1
Childhood	1
Compartmentalization	2
Cry	4
Mixed Affect - General	3
Realization	3
Negative Affect	**9**
Anger	1
Anxiety	1
Cynicism	1
Disappointment	1
Fear	1
Frustration	3
Melancholy	1

Figure 5 Emotions codebook subsection with counts

The vast majority of emotions linked to the text were positive, with "comforting" as the most common descriptor. "Happiness," "hopefulness," and "calm" were all relatively common emotions as well. These emotions, particularly comfort, were most often tied to descriptions of the storyworld, the pacing of the text, and the presentation of the textual society and its norms. Interestingly, some

participants described positive emotions, particularly calm and hopefulness, lingering past the experience of the text, sometimes up to a month or more. Others described returning to the text in order to reexperience those positive emotions, and stated that they were looking forward to reading the second book in the series.

However, not all the emotions this text elicited were positive. While mixed and negative emotions were significantly less common among the participant pool as a whole, two participants described their primary emotions from the text being frustration and anger, respectively. These emotions were rarely directed towards the action of the text itself, but rather at the reminder of the perceived flaws in the participant's own experience. The other source of negative emotion was around the function of the text itself. One participant stated their first reaction was distrust and criticism for what they perceived the book was trying to make them feel "*I found myself angry at points that... not at the book in particular or the plot or anything that was happening, because I was entertained and sort of engrossed, but I found myself angry that I needed to figure out and articulate those moments why it wasn't believable*" (0017 Interview). Another expressed frustration that the text was failing to make them feel what they had hoped: "*I want art to make me feel more hopeful. And, and this wasn't doing that for me, so there was this, like 'Agh! Damn it'*" (0019 Interview).

While this text eliciced some emotion for nearly all participants, it seemed to have less pronounced positive effects for those on either extreme of the climate anxiety scale. Those participants who felt relatively hopeful going into the study generally enjoyed the book, but didn't express as deep a response as others. Similarly, those who expressed deep levels of cynecism and climate doomerism still generally appreciated the text as a piece of art, but seemed to be blocked from the type of emotional transportation that others expressed. Again, multiple factors are likely at play here, but a major factor may be that the text did not offer sufficient emotional or narrative coherence for them to effectively suspend their disbelief. However, those who were able to engage emotionally with the text appear to have also engaged more strongly with the behavioral effects of the text.

B. Prominent themes for readers:

Participants discussed a wide range of textual themes as being salient, interesting, or important to them, but a few themes were most consistently mentioned. These themes are, of course, entirely specific to the particular text and participant group, but offer insight into what topics were the most top of mind for participants:

Nature, land management, relationship to land

Readers frequently mentioned the relationship the text's society had with the natural world. The preservation of 50 percent of the planet was both a source of admiration and skepticism for some readers (13 codes: Natural world – Human Relationship/LNT), while the integration of natural elements into urban spaces was almost unanimously enjoyed. This participant group of participants also contained a number of people with seemingly high biospheric attitudes (Stern & Dietz, 1994) and who connected the non-human elements of the storyworld with those of the Bellingham region. Other repeated sentiments were the concept that "nature will survive" even if humans do not, and that the representation of the story's pre-transition infrastructure (mostly seen in terms of road infrastructure and a water pumping plant) being reclaimed by nature was a point of reassurance. One participant even connected the overgrown ruins of the "petroleum age" in the story with their own experience seeing similarly overgrown buildings. Three participants drew a connection between their own ethos when traveling in natural spaces and those exhibited by Dex in the story.

It should be noted that Bellingham is a hub for outdoor recreation in the greater region, and many people are attracted to the city for its natural beauty and access to lush forests, state and national parks, and picturesque waterways. Thus, it is unsurprising that many participants would react particularly strongly to natural elements in the text. This cultural congruence likely played a role in the strong positive response nearly all participants had to the text.

Social structure, regionalism, communalism, influence of education

Another broad section of the text that received a significant amount of attention from participants was the representation of the storyworld's society and social norms. As I discussed in the previous section, many participants enjoyed the text's portrayal of a more communally-oriented society. Many participants stated that both the city and the villages in the story felt smaller than what they generally experience, and that "technology" seemed to play a less pronounced roll in everyday life, favoring instead interpersonal relationships, barter, and artisan skill. Again, these values align with a common representation of Bellingham's culture, particularly as it distinguishes itself as different from the two major, tech-focused cities nearby (Seattle, WA and Vancouver, BC). Thus, it seems reasonable to assume that those who are drawn to this community which often advertises itself as a smaller, more community-minded alternative to either major metropolis, would resonate with the text's (broadly) similar society.

Gender

Gender was frequently, but briefly mentioned across the participant pool. If it was brought up in the interview (10 out of 19 did), it was generally either a brief statement of appreciation for the normalcy the non-binary main character was treated in society, or enjoyment at reading a book with a narrator that uses they/them pronouns for the first time.

Personal and Existential Resonance

Perhaps the most common element of the text participants mentioned as feeling salient was Dex's search for purpose. The search for purpose is, of course, as old as humanity, and it is no surprise that it was broadly noted by participants, as it is the primary narrative driver for the text. Many readers simply stated that they resonated with some part of Dex's journey, particularly their discontentment with their job at the opening of the book, and their continued feeling of aimlessness/search or meaning even after they had achieved success. A number of readers stated they were envious of Dex's ability to simply switch careers with the support of their community.

A few participants took this resonance a step further, reporting that these sections of the text changed their perspective on their own situation or reminded them to think differently. For example, one respondent stated:

> *we, as human beings, are taught so heartily that if you are living without a purpose, then you are living worthlessly. And this sort of discussion that Dex has with an inanimate robot that is now animate about living is […] kind of mind-opening, because it's kind of that- someone is telling me that it's okay to just be alive and not be purposeful, and that still has purpose.* (0003 Intreview)

This type of engagement with existential topics was helpful for some participants, as this quote illustrates, by offering an alternative way of thinking that was removed from the baggage of their own lived experience. Others, however, simply saw these themes as reflective of their own experience. For example, one respondent reported: "*The desire to get away from everything, I definitely connect with that. And then the finally doing it and not fully understanding why you did it. That too, that kind of emptiness that you get when you achieve something that you've been striving for and it's like, well, what was all this for?*" (0010 Interview). Most of the participants (28 codes for Purpose across 13 interviews) reported some level of personal identifiaction with the broader themes of purpose and meaning in the text. While the particular tenor of each particiapnts identification varied, the text's ability to connect with one key aspect of their own experience may go some way in enhancing reader transportation, and even encourage the uptake of other ideas in the text that readers identify less strongly with in their own lived experience.

C. Believability/Coherence

In my opinion, one of the most interesting outcomes from the interviews was the variety of readers' stances as to whether world in the text was believable or convincing. That wording in and of itself – whether a text is believable – is open to a number of interpretations, and readers generally took it to be asking whether the storyworld is internally coherent, whether the storyworld presents a *possible* future, or whether the storyworld presents a *likely* future. Simply put, participants' responses were incredibly mixed (15 positive believability codes, 19 negative believability codes, and 18 mixed

believability codes). However, the specifics of what readers cited as believable or not were surprisingly consistent, and beg significant further study.

In general, those readers who found the story believable did so because they chose to buy into the premise in some capacity, or it reinforced existing beliefs or patterns they see in the world. This isn't to say that every participant who found the storyworld convincing views our current global issues with rose-tinted glasses; rather, it points towards something Dr. Elin Kelsey has described as a "practice of hope," (Kelsey, 2020) in that participants were often choosing to buy into elements of a more positive future. Most participants didn't see the storyworld as a smoothly connected version of our collective climate future, but they did pick up on elements they found coherent or convincing, and chose to let those elements motivate them. The other common theme amongst those who reported positive believability was a high degree of narrative transportation. Participants described this as the storyworld itself feeling internally consistent or "real," or, as one participant described: "*I felt like I was immersed in the world*" (0009 Interview). This transportation was most often described as stemming from the worldbuilding itself (6 codes in Postive Believability – worldbuilding), or comforting tone and narrative focused on discovery. Narrative transportation is linked with reduced counterarguing and allows readers to feel more connected to the events in the storyworld, thus potentially enhancing the text's believability (Green, 2021). This style of transportation becomes increasingly important when put in the context of positive climate narratives since, as we have seen, many people are unconvinced of their own efficacy or feel that a positive future is unlikely or impossible. While one positive story will not change this belief for most, meaningful engagment and belief in a positive climate future may indeed enhance efficacy by convincing people that there is a future to work towards at all.

These same elements – intentional buy-in and narrative transportation – were central to many of the negative believability responses as well, albeit inverted. The most common reason participants found the storyworld unbelievable was that it was too different from their current context or understanding of human nature to be convincing; they were not able to buy into the world. Numerous readers expressed a

desire to believe in the storyworld, or that it was an appealing future, but stated that it was just too different from reality for them: "*it's just hard to sort of wrap my brain around how that could possibly happen, because that just wouldn't happen here*" (0003 interview). That external incoherence, or lack of transportation, most often stemmed from personal experience, cynecism around action efficacy (e.g. we won't be able to make enough of a change in time to get there), or simply a mistrust of human nature. This mistrust was sometimes directed at our ability to achieve the communal social structure portrayed in the text, but it was also often directed at the textual society's treatment and relationship with robots. While the sentient robots were generally not read as a literal piece of a potential future, a few participants did seem to read them as proxies for human actions towards non-human beings, and their mistrust stemmed from a belief that humans would not act altruistically on a large scale towards non-human entities. In general, these incoherent elements seperated readers from the storyworld and limited their ability to intigrate values or elements from the text into their own lives.

While some readers fell more strongly into finding the text very convincing or not convincing at all, the majority of participants ultimately had a mixed response to believability. This mixed response is nicely encapsulated by one response: "*I think that the author did a wonderful job creating a world that I was able to be consumed by. And so in that way, yes, very convincing, I could put myself in that world and follow along in this story in that world. Convincing in that, like, could I see our world being like the world in the novel? That was harder for me*." (0008 Interview). As stated here, a mixture of some transportation along with some doubt or cynicism about our current moment was most common, although the mix of these two responses and the exact center of coherence/incoherence varied from participant to participant. A few participants aligned, however, on the fact that they had an easier time believing we could achieve something close to the storyworld on a smaller, local scale, but found it difficult to extend that belief to a large national or global scale: "*Would it be realistic to take the current society that we live in and imagine this kind of society on a grand scale? Oh, that would be hard. I feel like this is realistic in the way it- kind of in the way that the book presents it in which these are just communities, like kind of*

small, close knit communities that are connected. And so I think that kind of thing could be realistic." (0005 Interview). While it may seem obvious, this mixed coherence is likely the most common response for texts adressing climate futures, although the specifics of what feels coherent and what doesn't will change based on indiviual and local context.

IV. Emergent Results

A. Network Recommendations

There were a few findings that emerged from the interview portion of the study that were not part of my original inquiry, but are nevertheless interesting pieces to consider. The first of these addresses questions surrounding the potential of climate fiction to change behavior, in that only those who already care or are well-informed about climate issues will engage with these texts. There is plenty to unpack and critique within that claim in and of itself, but this study raised a potential way that climate fiction may expand outside of its accustomed audiences.

Basically, participants want to share this book. Specifically, 15 of the 19 participants stated that they had already or planned to share the book with a friend or family member and wanted to talk about the book with them. Not only does this often increase individual engagement in the text, but expands the text's distribution to those who might not normally pick it up. A few participants specifically stated how they might alter their description of the book to make it more appealing to a family member or friend. While some of this enthusiasm may result from the close values alignment of most participants with the text's overall world, it may also be in part due to the text's positive effect. As the participants repeated frequently, this text is generally pleasant to read, and its size makes it significantly more approachable to those who may not have as much time for recreational reading.

B. Changing Perspective on AI

Another interesting finding that emerged from the interviews was this text's effect on reader's opinions of robots and AI. There were no questions about robots or AI in either my survey instrument or interview guide, but they frequently cropped up in discussions of the text. Certainly, robots, machine sentience, and non-human minds are central themes to the text, so it is not all that surprising that most participants mentioned them, at least in passing. However, a small group (4/19 participants) reported that reading the text changed their opinions about AI/Robots. As one participant stated: "*I think I have been really resistant to like learning or reading about AI because I'm just like, that's scary and I don't like it.*

Which I still kind of feel. Like it gave me a little bit more like, Okay, there, there are elements here that demand inquiry, and it doesn't- it's not black and white, it doesn't have to be as scary maybe as I'm allowing it to be in my own brain, because I'm not allowing myself to think about it" (0012 Interview). This sentiment was echoed by a number of other particpants, all of whom mentioned that they were to some degree more willing to engage with the topic of AI after reading a more sympathetic portrayal in Mosscap. They stated that, previously, the only narratives they had been exposed to about AI were catastrophic or melevolent, *Terminator* in particular was mentioned as an infliuence they drew from. Again, while one text is unlikely to completely change years of learned association, the consistency of response across multiple participants highlights the impact asthetic and emotive media may have in shaping people's understandings of emerging issues.

C. Priming/Psychological Salience:

A final potential finding that emerged from this data is the role reading this text played in altering participant's attention towards certain actions. In particular, it seems that the text played at least a partial role in raising the salience of particular hopeful or efficacy-enhancing activities. Some participants reported taking active steps to alter their outlook after reading the text, participating in a practice of "choosing hope." For example, one participant reported: "*I have been listening to some experts speak and finding things to be positive about. Realizing that it is important to celebrate what have been able to do and see that as a call to action to do more instead of falling into despair and apathy*" (0013 S3 Qual). Others reported intentionally looking for positive community actions to actively combat their burnout. Participant 0005 reported that they were "*Trying to find more joy/satisfaction in the small changes and actions we take every day instead of giving into the burnout*" (0005 S3, Qual). They saw a substantial increase in relational and community efficacy, which may be partially explained by this active reframing the text seemed to prompt. In each case, the participant had the capacity to reframe their situation, and have enough elasticity in their own sense of efficacy that such a reframing produced substantial results. It appears that, for a certain population, the utility of this text lies in its ability to prompt such a reframe –

possibly through the simple expedience of its positive affect and aspirational storyworld, which is such a stark contrast from the usual fear-based mechanisms of past climate communication. Essentially, some folks seemed to want to find a more consturctive outlook, and responded strongly to it when they got there. This book simply gave them a small push and reassurence that they could engage in that space. From my own anecdotal expereince, there is occasionally an underlying sense of earned cynicism in activist spaces, and particularly amongst climate-activism, with an implicit tone that if you really knew what was going on, you would never feel hopeful. That pervasive sense of cynicsim, and sometimes even fatalism in the climate movement, may be a factor in limiting this subgroup's willingness to engage in active hope, and may be why they respond strongly to a counternarrative.

Another group of respondents found that the text simply raised the salience of issues they previously had not committed much attention to: "*it shined a light on things that I don't think about probably enough. It had me thinking about things that I think are both important for me and also just kind of are important in general that I don't spend a lot of time thinking about*" (0008 Interview). More study will be required to uncover how persistant this elevated attention is, and whether it translates to action. Regardless, the ubiquity of this outcome offers interesting insight into the indirect mechanisms through which texts may still impact behavior and beleifs; not through their direct content, but by changing how readers subsequently see and interpret their world.

Chapter 6: Discussion

As I have stated, the specific findings from this study are very particular to the place, time, and context of the participant group I was able to access. Their responses will almost certainly be different than even a similar group from Bellingham, much less a participant pool with different demographics and regional context. In the same way, another researcher may very well reach different conclusions from the data. All of this is not to say that the study has no utility; quite the opposite in fact. The plethora of interesting findings this study produced and the surprising consistency in some themes in this sample gives all the more reason to repeat this style of study across different texts, areas, population, and so on. The deeply embedded analysis this method enables is key for unpacking complex, discipline-spanning factors and effects cli-fi has on readers. In short, this type of complex, local analysis is vital to even begin to approach an understanding of how cli-fi operates in the world. I will discuss some potentially fruitful avenues of further inquiry shortly.

But to address the blunt questions head-on; did reading this text have an effect on readers? Based on this exploratory study, it seems that, yes, it does have an effect, and a generally (though not universally) positive one at that. It seems that, in general, the text has the largest effect on those who experienced low to moderate degrees of climate anxiety, and who are already at least conversant with climate issues. This effect did not often manifest as a direct call to action for readers (this text was certainly not an action-oriented story, as defined by (Meyer et al., 2020), but instead seemed to influence them by promoting a shift in attention and an invitation to reframe existing actions. Most of all, though, this text engaged readers at the community level, both in terms of their engagement with the text and in how they applied that to their lives.

I. Engagement at Community Level

Perhaps the most consistent meta-theme across my findings was the role community played for participants. This sense of community was not uniformly limited to Bellingham, but instead aligned more

closely with Paul James's definition of "a group or network of persons who are connected (objectively) to each other by relatively durable social relations that extend beyond immediate genealogical ties and who mutually define that relationship (subjectively) as important to their social identity and social practice" (James et al., 2012, p. 14). Participants mentioned processing the text alongside small communities of friends and family, engaging with themes and further conversation with online communities, finding resonance between the text's society and activist communities they are part of, and more.

The prevalence of community as a central theme in participant's responses is not all that surprising; people frequently organize their life choices and responses to new stimuli around their membership in identity groups in which they feel they belong, which can range from demographic identity to values alignment or shared action (Harré, 2018). As such, the lens through which most respondents may be making sense of this text, and topics in the outside world, is informed by their network of community memberships and identity affiliations, However, discussions of climate issues are couched in a much larger scale – that of national or international action and effect – which is generally hard for the public to meaningfully engage with even if they care about the issue. It doesn't "connect" in the same way, as most people do not have a tangible connection to a global community, nor are they able to emotionally engage at such scale. This trend has also held true for a significant portion of cli-fi stories thus far, with the cannon largely splitting into action-oriented stories presenting change on a national or multi-national scale (e.g *Ministry for the Future*, *Termination Shock*, or even climate allegories like *Don't Look Up*) or individual-scale stories that limit character's agency to mere flight or bleak survival (e.g. *All City*, *The Water Knife*). While there is already a movement towards place-based or community-based climate communication (Gislason et al., 2021; Khadka et al., 2021), the response this text received shows that those findings around the importance of locality in climate communication may also apply to climate fiction. This is all the more reason to encourage and support a diverse range of authors and stories. The

beginnings of this type of work can already be seen in cli-fi anthologies like *Multispecies Cities* (2021) or *Cities of Light* (2021), but there is still significant room for growth.

The strong community-focused response also makes sense on an efficacy-scale; individual actions are perhaps the most achievable, but they can leave individuals feeling discouraged by the perceived insignificance of their actions and feelings of isolation or that they are "going it alone." Remember that studies indicate Americans vastly underestimate general support for climate initiatives (Sparkman et al., 2022), which can compound questions of action-efficacy raised by the epistemological challenges of climate change and potential strategic counter-communication by carbon-intensive industries. Reading stories of communities working in cooperation, or better yet, enacting that collaborative action, may offer a positive balance between tangibility and approachability of action with enough scale to feel that these actions are effective. While the decision to participate in community action is undoubtedly influenced by a wide array of factors, it seems that this text, and texts like it, may have utility in reassuring climate-conscious readers that they are not alone, and offer a compelling community template to aspire to.

This attention to community both within and without the text overlaps somewhat with the text's previously discussed utility in shifting reader's attention. This altered attention showed up differently depending on the individual's contexts – for those already poised to find optimism, it gave reassurance that "actual hope" (Orr, 2007) is a valid stance and is shared by others; for those struggling with cynicism, it sometimes prompted them to notice the existing actions they and those around them are performing to combat climate impacts on a local level; and for those disengaged with climate topics, it offered an appealing and approachable alternative entry into subjects they might otherwise deem too bleak or harsh to engage with. It is important to note, of course, that a number of participants expressed different, mixed, or complicated reactions to the text as well, although none, I believe, had an outright negative experience. Nearly every participant (18 out of 19) said they would read this text or something like it again, and those

who didn't said they wouldn't due to time constraints or lack of interest in the genre rather than an aversion to the text –not something that can be said for most other climate media.

Finally, while it may not be an entirely novel conclusion, this study offers a reminder of just how important individual context is when considering how meaning is created from person to person. This has bearing both when considering how texts are received by various populations and when investigating the possible roles texts play in various psychological, social, and behavioral impacts. Of particular note for those seeking to produce such studies is the role of framing. For example, this study framed the reading of the text in a certain way. Participants went into the study knowing it was focused on the effects of hopeful climate fiction, and were given the survey with a bank of climate and action-oriented questions both before and after reading the text, which almost certainly raised the salience of those themes for them while reading and digesting the content. A few participants even directly mentioned thinking about the text differently in light of the study instruments. Rather than detracting from the findings, however, I believe this simply highlights the value of framing texts, particularly action oriented, climate texts. Numerous writers and scholars have expressed their doubt as to whether cli-fi can "fix" behavior (for whatever that leaded phrase is worth), or even have a meaningful impact on readers. However, little study has been done on the effect of whole texts in conjunction with intentional framing, it seems, and bears further examination. Such considerations may function both to deepen context and nuance withing academic research and also to underscore role community plays in helping to co-create meaning for the individual.

II. Future Study

At the end of the day, this study simply scratches the surface of this topic and will prove useful, I think, in opening up a number of fruitful avenues of future research. The first main thread of future work lies in simply recreating and tweaking this study format. As I stated above, deep qualitative analysis is a fantastic supplement to the broad-reaching quantitative studies from scholars like Matthew Schneider Mayerson and the carefully constricted experimental work from the likes of Wojciech Małecki, as it

allows for further nuance, unexpected connections, and deeply interdisciplinary inquiry to emerge. Repeating this study design with different texts and populations would only add to the depth and complexity of our developing field. In particular, I think a study of a significantly more near-future, action-oriented cli-fi text would be fascinating to begin comparing how the perceived temporality of climate futures affects reader response. Texts like *Our Shared Storm* (Hudson, 2022) or possibly even *Everything for Everyone* (O'Brien & Abdelhadi, 2022) would make for ideal starting points. Despite the logistical challenges, I also think it would be particularly valuable to continue to work with long-form texts in this context, both because it allows for more potential reader immersion, and because there is still a significant dearth in empirical studies of long form fiction. In addition, it would also be fascinating to see how a number of more tightly focused sample populations would respond to the same text. As an example, an earlier design of this study was specifically geared towards studying the response of climate activists. It would be interesting to see how that population would respond to this genre of text, as would the response of those who are highly disengaged from climate topics.

I also think there is significant room to test some of the interesting themes that emerged from this study using other methods. In particular, the surprisingly robust impact this text seemed to have on efficacy bears further study. A more strictly bounded quantitative study would be a fascinating follow-up, although I wonder if such a study would be able to account for the diversity of extra-textual influence that were a part of all participant's reading process. In addition, the relationship between climate anxiety, efficacy, worry, and action is deeply complicated, and still only partially understood. I was unable to delve into the nuances of worry or anxiety as a motive force in this study, or the various mechanisms and expressions of negative climate emotions. Further study with a more nuanced treatment of these complex psychological systems would help deepen this study's findings.

Moving beyond the bounds of this particular study design, my results point towards a number of possible sociological and psychological inquiries. The first would be to delve deeper into people's senses of believability or coherence towards various climate futures; what elements make them believable or not,

how might that interact with current action and future planning, and how malleable is that sense of future coherence? These questions could be approached from so many angles, but I believe specific attention to the role popular narratives play in the formation of futurity coherence would fill an important gap in the existing literature. Another potential future study might be to join the growing stream of scholarship concerned with hope, the formation and utility of hope in a climate context, and the relationship between hope and action. Previous psychological literature has already theorized that there are numerous types of hope, which may have wildly different effects on motivation and behavior. Further examination of these ideas in concert with climate futures would add an important layer of applied communications work to the existing body of literature.

III. Limitations

A major limitation to this study was simply time and resources, which impacted my ability to recruit participants, collect data, and analyze it all in the timeframe of this degree. Ideally this study would have had a much larger participant pool in order to glean a more complex and diverse set of responses. As it is, I believe this sample size provided an adequate dataset for an exploratory study while still being reasonably completed within my monetary and time constraints. Another limitation stems from the composition of the dataset. While I sought to recruit participants with a range of life experiences and backgrounds, I likely recruited a sample who are disproportionately inclined to read and engage with these texts in the first place. Those who did agree to participate and complete the study are likely those who already are more engaged with climate issues or are pre-disposed to respond strongly to prose fiction (generally "booky" people). The methodological approach I chose takes this into account, and I do not believe it ultimately detracts from my findings. However, as I stated above, a more tightly controlled recruitment process may be helpful for future studies.

Conclusion

Finally, I'll bring this lengthy thesis back down to earth and discuss some basic conclusions. At the very least, this text seems to be widely appealing. It elicits positive emotions in most readers and offered a refreshing change in style from what most thought a climate story would be like. If they experience it, the text also seems to do something for readers' sense of climate anxiety, although it is not very effective for those with deeply entrenched climate doom or cynicism born from long personal experience. Its effect also wasn't entirely uniform for less anxious readers, although it did seem to help people think differently about climate action, and thus see their role in the climate movement in a more nuanced way. For some, it even sparked a renewed commitment to actively choosing hope, while for others, it may have offered a reminder that to engage in activism in the long-term requires rest as well as action. Surprisingly, the reading this book did seem to help most people feel more capable in taking environmental actions in their community and even on a larger scale, although a lingering anxiety around how worthwhile their individual contributions are in the face of big systems and entities. Most folks wanted to share this book with someone in their life, and a number also found it helpful in making the topic of AI and robots more approachable – if not fully appealing yet. Most of all, though, this book tapped into people's sense of community. Many participants loved and longed for parts of the community-oriented society in the text, while others saw pieces of that same society reflected in their own communities and connections. Participants also seemed to find the idea of building something like the optimistic world in this book more possible, if not fully likely, when thinking about enacting it on a smaller, community-oriented scale. The enjoyment and excitement many of the participants felt while reading seemed to ripple out – consciously or unconsciously – into their own lives, as folks reported noticing more positive environmental action around them, feeling more motivated, or even seeking out other sources of hope to keep them from slipping back into despair.

At the end of the day, this was just one small book; probably no more than a few hours in the full, complex lives every one of my participants lives. It is unrealistic to expect a single text to have all that

much effect, but it is clear that this text can at least nudge; nudge readers towards a little more hope, a little more care, or just offer enough spark to keep them motivated until the next nudge.

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Appendix 1: Interview Guide

Introduction

First off, I'd like to thank you for taking the time to participate in this interview. My plan is to begin by discussing the informed consent form to make sure you fully understand it and feel comfortable before we proceed. Then I will ask you some questions about the book you read. I am particularly interested in what you got out of this text. I'd also love to know if this text resonated with other pieces of your life, and if so how? I have a few set questions prepared, but please feel free to answer with as much information as you are comfortable offering. I may interject to ask some clarifying questions or dig a little deeper in a response I will give, but I will do my best to not add my own input. I just want to hear about your experience!

You are by no means obligated to answer any or all of these questions, and are not expected to volunteer personal information. My hope is that we can treat this like an casual conversation, like a book club perhaps. Do you have any questions? If you are ready, lets begin!

General reading impression

1. Tell me what you thought about the book

2. What stood out to you when reading?

    -Did anything seem particularly relevant or resonant with you?

    -Did anything seem off-putting or give you a negative impression?

        -did you identify with any particular characters? Places? Situations?

3. Is there anything in the setting that you remember or that struck you?

    How would you describe the setting?

4. Is this something you would normally read?

    -Would you read something like this again?

Emotion

4. People often talk about books as making them experience a range of emotions from happy to sad to angry. Did this book bring up any emotions for you?

    -You mentioned feeling ___, is there a particular scene that prompted this feeling?

    -Does talking about the book today bring up any of the emotions you described?

    -Can you describe any parts of the story or world that you remember bringing up these emotions?

    -How would you describe the intensity of those emotions? Were they fleeting? Did they stick with you?

5. Now that you have finished this book, how would you say it made you feel?

Extratextual Connections

6. Did anything in this book connect to anything in your own life?

7. People often talk about how a particular book changed their perspective or life. Do you resonate with this feeling regarding this book? More specifically, has this book impacted your life in any way. *This could be a small impact such as ___, or a larger impact such as ___.*

> -How influential do you think this book has been to your life currently? Do you see this book having an influence on your life moving forward?

8. Did this book change your mind about anything? If so, what? And how?

9. People often discuss the books they are reading with others. Have you discussed this book with others? If so, what did the discussion center on?

10. This book is known as a solarpunk book. Based on your experience with this book, do you think you will seek out other books in this genre?

Optional

11. Do you normally read fiction?

> -if so, what do you normally read?
>
> -if not, movies? tv? Other?

Appendix 2: Survey Instrument

#	Question Text	Question Group
1e	Which round of the survey are you completing today?	Logistical
2	How old are you?	Demographic questions (asked once)
3	How do you describe yourself? - Selected Choice	
4	How do you describe yourself? - Prefer to self-describe - Text	
5	What is the highest level of education you have completed?	
6	What was your total household income before taxes during the past 12 months?	
7	How would you describe your race?	
8	How would you describe your religious affiliation?	
9	How would you describe your political stance?	
10	What is your email?	Logistical
11	To what extent do you agree with the following statements: - Thinking about climate change makes it difficult for me to concentrate.	Climate Anxiety – cognitive-emotional impairment
12	To what extent do you agree with the following statements: - Thinking about climate change makes it difficult for me to sleep.	
13	To what extent do you agree with the following statements: - I have nightmares about climate change.	
14	To what extent do you agree with the following statements: - I think, “why can't I handle climate change better?”	
15	To what extent do you agree with the following statements: - I go away by myself and think about why I feel this way about climate change.	
16	To what extent do you agree with the following statements: - I write down my thoughts about climate change and analyze them.	
17	To what extent do you agree with the following statements: - I think, “why do I react to climate change this way?”	
18	To what extent do you agree with the following statements: - My concerns about climate change make it hard for me to have fun with my family or friends.	Climate Anxiety – functional impairment
19	To what extent do you agree with the following statements: - I have problems balancing my concerns about sustainability.	
20	To what extent do you agree with the following statements: - My concerns about climate change interfere with my ability to get work or school assignments done.	
21	To what extent do you agree with the following statements: - My concerns about climate change undermine my ability to work to my potential.	
22	To what extent do you agree with the following statements: - My friends say I think about climate change too much.	
23	To what extent do you agree with the following statements: - I have been directly affected by climate change	Climate anxiety – experience of climate change
24	To what extent do you agree with the following statements: - I know someone who has been directly affected by climate change	
25	To what extent do you agree with the following statements: - I have noticed a change in a place that is important to me due to climate change	
26	To what extent do you agree with the following statements: - I believe I can do something to help address the problem of climate change	

27	On a scale of 1-10, with 1 being least and 10 being most, how capable do you feel of performing the following action categories? Try to estimate how capable you feel of completing this action, not how much you do these things. The activities that are listed are examples of the broad category of action; try to think about the actions broadly rather than the specific example listed.	Framing: No response
28	How capable do you feel of taking an environmentally positive action in your personal life? - Physical: biking or walking rather than driving, planting trees, etc.	Efficacy – Personal action
29	How capable do you feel of taking an environmentally positive action in your personal life? - Civic: signing a petition for an environmental initiative	
30	How capable do you feel of taking an environmentally positive action in your personal life? - Education: educating myself about aspects of climate change I didn't know about	
31	How capable do you feel of taking an environmental action on a relationship or interpersonal scale? - Physical: Talking to a family member or friend about how they can make sustainable choices like driving less or energy consumption	Efficacy – Relational action
32	How capable do you feel of taking an environmental action on a relationship or interpersonal scale? - Civic: encouraging someone close to me to vote or sign a petition for an environmental initiative	
33	How capable do you feel of taking an environmental action on a relationship or interpersonal scale? - Education: educating someone close to me about climate change	
34	How capable do you feel of taking environmental action on a local community scale? - Physical: helping to organize a community work party	Efficacy – Community Action
35	How capable do you feel of taking environmental action on a local community scale? - Civic: organizing or starting a community-level sustainability initiative	
	How capable do you feel of taking environmental action on a local community scale? - Education: helping people in my community who I don't know start sustainable actions	
36	How capable do you feel of taking environmental action on a larger-than-community scale? - Physical: working on a state or national environmental project	Efficacy – Large-scale action
37	How capable do you feel of taking environmental action on a larger-than-community scale? - Civic: Taking part in a state or national demonstration or protest	
38	How capable do you feel of taking environmental action on a larger-than-community scale? - Education: Advocating for a climate issue on a county, state, or national level	
39	What else should I know about your perspectives on climate change and actions you have taken?	Optional Commentary

Appendix 3: Codebook

Code Group	Code	Subcode
Emotions		
	Emotion: Mixed Affect	
		Mixed Affect - Bittersweet
		Mixed Affect - Childhood
		Mixed Affect - Compartmentalization
		Mixed Affect - Cry
		Mixed Affect - General
		Mixed Affect - Realization
	Emotion: Negative Affect	
		Negative Affect - Anger
		Negative Affect - Anxiety
		Negative Affect - Cynicism
		Negative Affect - Disappointment
		Negative Affect - Fear
		Negative Affect - Frustration
		Negative Affect - Melancholy
	Emotion: Positive Affect	
		Positive Affect - Calming
		Positive Affect - Comforting
		Positive Affect - Curiosity
		Positive Affect - Faith
		Positive Affect - Funny
		Positive Affect - General
		Positive Affect - Happiness
		Positive Affect - Hopefulness
		Positive Affect - Joyfullness
		Positive Affect - Meaning
		Positive Affect - Nostalgia
		Positive Affect - Peaceful
		Positive Affect - Reassuring
		Positive Affect - Reflective
		Positive Affect - Relaxing
		Positive Affect - Wholesome
	Emotional Reoccurrence	
	Anxiety	
		Anxiety: Action and anxiety
		Anxiety: Balm to anxiety
		Anxiety: Climate impacts
		Anxiety: cynicism/despair
		Anxiety: Generational Anxiety/Kids

		Anxiety: Negative news
		Anxiety: Systemic Damage
		Anxiety: Undecided
Text Elements		
	Believability: Positive	
		Positive Believability - Human/non-human relationship
		Positive Believability - Innovation
		Positive Believability - Pleasant/Intentional Buy-in
		Positive Believability - Promotes Faith
		Positive Believability - Undecided
		Positive Believability - Urban life
		Positive Believability - Worldbuilding
	Believability: Mixed	
		Mixed Believability - Communalism/regionalism
		Mixed Believability - General
		Mixed Believability - Passage/progression of time
		Mixed Believability - Societal Optimism
		Mixed Believability - Societal Pessimism
		Mixed Believability - Worldbuilding
	Believability: Negative	
		Negative Believability - Cynicism
		Negative Believability - General
		Negative Believability - Human nature
		Negative Believability - Lack of reader transportation
		Negative Believability - Lack of tech/regression
		Negative Believability - Robot Independence
		Negative Believability - Too Different From Current
	Environmental Text	
	Geography	
	Power of Story	
	Specific Text Moments	
Text Effects		
	Changed Mind	
	Discussion	
		General Discussion
		Recommend/Read with Network
		Undecided
	Personal Salience	
	Possible Recommendations	
	Reader Transportation	
	Reading Impact	
	Reinforced Ideas	
Text Themes		

	Natural World	
		Natural World - Experience of the Wild
		Natural World - General
		Natural World - Harmony
		Natural World - Human Impact/LNT
		Natural World - Natural Recovery
		Natural World - Natural Resource Use
		Natural World - Resonance with Nature
		Natural World - Robots and Nature
	Built Environment	
		Built Environment: "Wild" vs "Cultivated" Nature
		Built Environment: Remnants of Old World
		Built Environment: Renewable/sustainable building
		Built Environment: Small Communities
		Built Environment: Urban/Nature Integration
	Education	
	Non-Binary/Queer	
		Non-Binary/Queer: Confusion around Pronouns
		Non-Binary/Queer: Enjoyment of Queerness
		Non-Binary/Queer: First Nonbinary Narrator
		Non-Binary/Queer: Normality of Queerness
		Non-Binary/Queer: Undecided
	Past/Transition	
	Purpose	
	Religion	
	Robot/AI	
	Society	
		Society: Acceptance/Safety
		Society: Community
		Society: Current Society vs Storyworld
		Society: Integration of Mental Health
		Society: Natural World Integration
		Society: Relationship with Technology
		Society: Role of Education
		Society: Skepticism
		Society: Social Transition
		Society: Tea Monk/Dex
		Society: Utopic Society
	Solarpunk	
External Themes		
	Activism	
		Activism: Activist Burnout
		Activism: Burnout

		Activism: Community
		Activism: Integration into life
		Activism: Sustained Activism
		Activism: Systematic Vs Individual Action
	Capitalism	Activism: Undecided
	Climate Change	
	Education	
	Hope	
	Mental Health	
Reader Info		
	Personal Identification	
	Personal Salience	
	Reading Habits	

Appendix 4: IRB Confirmation Memo

To: Brandon McWilliams
Faculty Advisor: David Rossiter
Project Title: Beyond Dystopias: the influence of hopeful cli-fi on climate anxiety and self-efficacy

Protocol Number: WWU085/2023
Date: 6.12.2023

The Western Washington IRB has determined that the study referenced above qualifies for Exemption as defined by 45 CFR 46.101(b) Categories of Exempt Human Subjects Research.

Exempt Category 1 & 2

This exemption is given under the following conditions:

1. The research will be conducted according to the protocol. *Please be sure to use any IRB approved recruitment, informed consent forms or information letters.*

2. The research will be conducted in accordance with the ethical principles of Justice, Beneficence, and Respect for Persons, as described in the Belmont Report, as well as with federal regulations and University policy and procedure.

3. All research personnel remain up to date with CITI training through data collection.

4. IRB approval will be obtained **prior to making any modifications** that change this research project. This includes changes to study personnel, research participants, recruitment methods, compensation, consent process procedures or documents, or changes in study materials that deviate from the approved scope.

5. All research records will be maintained in accordance with WWU's guidelines for document retention.

6. The IRB will be promptly informed of any issues that arise during the conduct of the research, such as adverse events, unanticipated problems, protocol deviations, or any issue that may increase the risk to research participants.

Thank you for your attention to these details. If you have questions at any point, please contact a Research Compliance Officer.