TEACHING AND LEARNING ABOUT CLIMATE CRISIS: AMBIVALENCE AND ASPIRATION

by

ELAINE ALVEY

(Under the Direction of H. James Garrett)

ABSTRACT

This dissertation undertakes the question, *what are the implications of engaging climate crisis in social studies education?* Employing the theoretical notion of difficult knowledge (Britzman, 1998; Pitt & Britzman, 2003), the analysis of data attends to the multitude of challenges teachers face as they grapple with the content of climate crisis for themselves and as they plan for the pedagogical demands of engaging young adolescents in these issues. I use psychosocial qualitative inquiry methodologies (Hollway & Jefferson, 2012: Hoggett, 2019; Lertzman, 2012a, 2015, 2019) to collect and analyze teacher interviews and written reflections to explore the emotional and affective experiences of teaching climate crisis, the pushes and pulls of wanting to know and to look away, of worry and hope, of struggling to find some path of appropriate action, and the associated complex pedagogical and curricular implications. I find that teachers often distance themselves and their students from the bleakest consequences and many of the most implicating causes of climate crisis. I theorize the ways ambivalence and aspiration

are circulating through this sense-making process in order to argue that it is ambivalence, not apathy, which allows continued attachments to the status quo and that diminished imagination is partially to blame for increased toleration of the tragedies of climate crisis. I explore the ways these themes and their implications invite the field of social studies education and individual teachers to include this topic more robustly and attend carefully to climate crisis as difficult knowledge.

INDEX WORDS: Climate change education; difficult knowledge; social studies education; psychosocial qualitative inquiry

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DEDICATION

To Leopold and children everywhere- may we do right by you.

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Hanging in the foyer of my home is a framed postcard that reads, *We Might Just be the Luckiest People Alive*. As I think about the incredible and generous team that has supported me and the work of this dissertation, I am reminded how true this is. These words of thanks are a meager offering in relation to the profound sense of gratitude I feel for the many people who have supported and inspired me along the way.

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I also want to acknowledge the placement of the desk where wrote most of this dissertation was upon the stolen and unceded lands of the S'Klallam people on the coast of the Salish Sea in northwest Washington. I wish to express gratitude for those whose territory upon which I reside and recognize the ways that indigenous communities have shaped this land for time immemorial. Colonialism is ongoing and there is so much work still to be done.

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PREAMBLE

As I wrote this dissertation I was grappling with my own grief and sense of loss over the climate crisis against the backdrop of the COVID pandemic. I welcomed my first child and after years of a largely nomadic and minimalist life, my husband and I bought a home and filled it with furniture. After all, a baby needs lamps, area rugs, couches, and endless accoutrements. As I read during the day about the experience of loss, anxiety, and grief, and then in the evenings washed and folded new baby clothes, I felt myself fill with an awareness of my moves to distance myself from my own implication in climate crisis. With thrift stores closed as COVID unfurled, I was left to indulge in Amazon purchases delivered to my quarantined front door. I held tightly to my own affectionate attachments in ambivalence. Even though our new home was surrounded by our burgeoning homestead, driven by our desire to produce our food and live a simple slow life, the experience of reading and writing about climate crisis so intimately, particularly during these times, has been deeply affecting and difficult. Rebecca Solnit, whose work is all over this dissertation, wrote of being heartsore at the "quadruple crisis of the mismanaged pandemic, the resultant financial catastrophe grinding down so many people, the climate chaos… and creeping authoritarianism" (2020, para. 1). As I wrote this dissertation, I was indeed heartsore at these seemingly unfathomable circumstances and also at my implications in them.

Price (2020) astutely argued that perhaps it is not simply exhaustion of remote work that is collectively wearing us down in this moment, but instead that it is "emotionally and existentially crushing to have to pretend to be chipper during your company's strategic planning meeting while hundreds of thousands of people are dying and the sky burns" (para. 1). I did find myself both emotionally and existentially drained by the tasks of attempting to carry on as normal in this COVID era. The sky did turn orange with wildfire smoke for weeks above the desk where I wrote this dissertation in the Pacific Northwest. Public health officials warned of serious air quality risks and told everyone to get an indoor air filtration system if they could. Not for the first time in 2020, I stood in an empty store aisle, searching for what I needed to keep my newborn safe. The problems of climate crisis education discussed in this dissertation are not theoretical abstractions, they are immediate, startling, and tangled with other social and environmental injustices.

As Albert Einstein posited, we are always writing and thinking in the context of our moment. There were many moments when my encounters with the world during this COVID era collided with this project, in every stage from data collection to analysis. As I read of the reasonableness of climate anxiety given the realities, I thought about the way I had stockpiled a few jars of peanut butter and an enormous amount of homemade blackberry jam in my garage. This happened as the pandemic stretched into its sixth month and I read in the Seattle Times that the state of Washington was stockpiling millions of pounds in food in a warehouse in Tacoma for the anticipated economic disaster associated with a winter spike (Patrick, Aug 8, 2020). The insufficiency of these gathered cans of beans does not come near to the heart of the matter. Similarly, so much

of what we offer to students as climate crisis pedagogy also avoids the real causes and consequences and fails to come near to the heart of the matter.

When I read that the R.E.M. song, *The End of the World as we Know it*, had record-breaking downloads the week the quarantine started (Kaufman, 2020), the line "[i]t's the end of the world as we know it, and I feel fine" struck me. This lyric became a refrain that shaped my thinking about climate crisis denial and all of the psychical moves we make to "feel fine" as the elements of normalcy fall away.

To add to my grief, and the collective grief of people around the world, the murder of George Floyd, Breonna Taylor, Ahmad Arbury, and countless other people of color also happened during this period. The streets filled with collective anger and sadness and heartbreak. A tumultuous presidential election cycle unfolded during this season of writing and I felt uncertainty about the durability of American democracy. The moment seemed dire and consequential in so many ways, but Solnit (2020) also wrote that "anguish and hope can coexist" (para. 1) and I felt that deeply as I wrote with a wiggly, giggly, baby in my arms.

At the outset of the pandemic, I was captivated by the moment when it seemed possible to shift massive systems overnight. When there was an emergency, we could reimagine and redesign everything on a dime. As the graph in Figure 1 suggests, there was a significant global reduction in carbon emissions. Despite such uncertainty and fear, I felt a glimmer of hope. By the seventh month, more and more of my neighbors returned

to their lives regardless of the continued raging pandemic and the collective conversations called for a "return to normal". I came to see what Bathsheba Demuth saw in declaring that COVID and climate crisis are both "fevers stoked by related patterns of economic production, patterns both relatively new and seemingly inevitable…COVID and climate crisis are alike in this: live ill for long enough, and the absence of health threatens to become normal" (2020, para. 5).

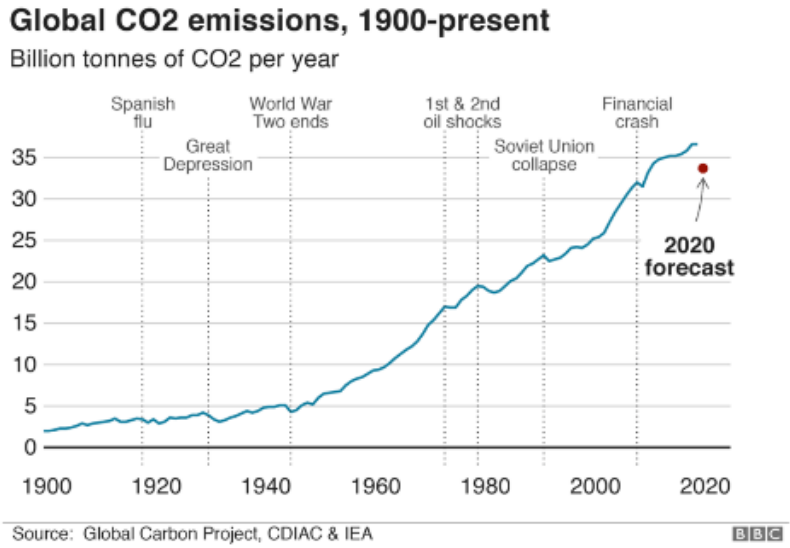

Figure 1: Global Carbon Emissions 1900-Present

All of this global context is paired with my own long-held concerns about climate crisis and environmental justice. These personal and professional commitments to researching environmental justice and climate crisis as major issues in education are born from my experiences growing up in a resource extraction zone in Kentucky and have been solidified through my experiences as an elementary and middle school classroom teacher in some of the most climate-vulnerable and resource exploited communities in the United States, including rural Idaho and Alaska. The challenges, implications, and intersectionality of the impacts extractive processes and a changing climate have on communities, their water supplies, their health, and their children have been tangibly present in my classrooms. My students in rural south-central Alaska held mastery of complicated and advanced scientific knowledge around water-

temperature patterns, climate crisis, and migratory paths rooted in fishing experiences rather than academic study. The impacts of industry were ever-present and expanding there in the form of mining, oil extraction, and commercial fishing along with the rapidly increasing impacts of a changing climate. My students understood these impacts in profound, sophisticated, and perhaps most importantly, existential ways.

Having been around brilliant folks, teachers, and activists working on issues of environmental and climate justice for nearly 2/3 of my life, I bring with me to this writing long-standing questions about what is going wrong in our collective response to climate crisis. Even as I understand more and more about the neoliberal discourses, capitalist structures, and political circumstances in which we find ourselves, our collective and individual inaction is infuriating. To echo Greta Thunberg, "I want you to act as you would in a crisis. I want you to act as if our house is on fire. Because it is" (Thunberg, 2019, par 20-21), yet the alarm bells seem broken. Each time I think about the fact that "we have done as much damage…since Al Gore published his first book on climate than in all the centuries—all the millennia—that came before" (Wallace-Wells, 2019, p. 1), I am newly befuddled, enraged, and sad, but also complicit and implicated. This cartoon I stumbled across in the writing of

Figure 2: Climate Messaging Cartoon (Lazarovic, 2020)

this dissertation (Figure 2) exemplifies the feelings of frustration I feel around climate crisis. How could we not understand the danger? How could we not act more swiftly and with more gusto? How could we be so consumed by our consumption that our extinction is now in question? How could the messaging *possibly* be any clearer!? These frustrations and disappointments have been unfolding for years in my thinking. These are the frustrations which led me to frame this dissertation with the theoretical notion of difficult knowledge, which I think offers important ways to approach these questions.

This is the moment that contextualizes this work. My grief around the climate, years of climate activism, teaching in climate-vulnerable communities and resource extraction zones, frustration, and disappointment, COVID, and the interwoven issues of social, economic, and racial injustice, along with the urgency of creating the world I desire as the parent of a newborn, cannot be separated from the preoccupations that drove this dissertation and the theorizing that follows. They are woven together in a myriad of identifiable and unidentifiable ways.

CHAPTER 1

INTRODUCTION

> One of the penalties of an ecological education is that one lives alone in a world of wounds.
>
> Aldo Leopold (1949, p. 165)

This dissertation undertakes the question, *what are the implications of engaging climate crisis in social studies education?* The urgent relevance of this question lays in the challenges of learning and teaching about the direness of our current environmental crisis, the ongoing and impending human-caused harm, the urgency with which we must act, and our implications in these problems, along with the vast under-representation of the climate crisis and environmental issues in social studies educational research and practice.

We live in a time of rapid and accelerating climate crisis.[1] Young people today will bear the brunt of the malignant turning away by those in power during the past

[1] Climate crisis is the set of cascading problems which are directly resulting from an increase in the Earth's temperature through the process of the greenhouse effect. This is distinct from the scientific phenomenon of climate change which causes climate crisis. Yoder (2019) built the argument for this distinction and a pivot towards the phrase climate crisis, noting that polling data shows people respond more urgently to the concept when the word crisis is employed. Climate activist Bill McKibben also reminded us that "*Climate change* has become such a familiar term that we tend to read past it—it's part of our mental furniture, like *urban sprawl* or *gun violence*" (McKibben, 2019). This is also the language chosen by the U.S. House of Representatives Committee responding to the

decades, of an unfailing love affair with capitalism regardless of already unfolding ecological and climate collapse, and a robust dominant discourse that calls into question the very nature of the scientific truth regarding climate. The impending and already unfolding climate crisis is dire and young people need to engage with it in their schooling. As educators begin to confront these issues, they face confounding problems. Among these are the fact that learning about the climate crisis and environmental injustice can take a toll, it can be traumatic to face the ways this crisis will impact us and our communities, and difficult to engage with the trauma and pain of other people (Dickinson, 2008; Cunsolo & Ellis, 2018; Berry, et al., 2010). There are significant tensions and anxieties that are part of the learning and teaching about climate crisis (Marks, 2019).

Conservation theorist Aldo Leopold wrote that to develop an ecological education is "to live alone a world of wounds" (1949, p. 165). His words speak to the notion that learning and teaching about issues of climate crisis and ecological harm can be both difficult and isolating; to know of and face these issues is to see, hear, and hold wounds. What Leopold wrote in 1949 holds today. We do live in a world of wounds, and the cost of knowing of those wounds can be isolating, it can be anxiety-producing, it can be crisis inducing, it can be devastating, or inspire hopelessness. It can also stir resistance or denial. While the purpose and functions of ecological and climate education might be to transcend the alone-ness Leopold mentions, he wrote of the frustration he felt as an

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climate crisis, the Pope, Al Gore, the Guardian Newspaper, and a host of climate scientists concerned with the urgency and consequences involved with these climate changes. I only used the phrase "climate change" in this project when summarizing literature which uses that phrase or quoting from participants where they have employed this language, otherwise using the phrase climate crisis.

ecologist sounding alarm bells falling on ears taking no heed and the feelings of sadness and isolation it heightened. He wrote that this aloneness was analogous to "the doctor who sees the marks of death in a community that believes itself well and does not want to be told otherwise" (p. 166). While we are not, in fact, alone in the impending and unfolding crisis, many threads of Leopold's construction of aloneness are evident. The burden of knowing might also spur us to action, change our emotional investments, cause us to see and think differently about the world, and require us to act differently because we know differently.

In this study, I draw on teacher interviews, written reflections, and collected curricular materials, to explore these emotional and affective experiences, the pushes and pulls of wanting to know and to look away, of aspiration and ambivalence, of struggling to find some path of appropriate action, and the associated complex pedagogical and curricular implications of engaging climate crisis in the classroom. Employing the theoretical notion of difficult knowledge (Britzman, 1998; Pitt & Britzman, 2003), the analysis of data in this dissertation will attend to the multitude of challenges teachers face as they grapple with the content of climate crisis for themselves and as they plan for the pedagogical demands of engaging young adolescents in issues of the climate crisis. These challenges include their own desires to avoid facing the bleakest realities of climate change and to protect students from these anxiety producing realities. These are desires and defenses rooted in the emotional and affective experience of teaching and learning about climate change. I bring to this work a commitment to situating this project in the field of social studies because of the unique possibilities I believe it provides for this inquiry, particularly the richness it offers towards theorizing and supporting the

development of citizens ready to agentively intervene in injustice and participate in democratic life.

While the seriousness of climate crisis is coming into view, educational research, particularly in the field of social studies, has been slow to engage correspondingly urgent curricular and pedagogical questions. Henderson et al. (2017) argued that despite climate change being an educational issue, the "field of educational studies is, itself, in a form of organized denial" (p. 413) through the omission and marginalization of such a "foundational reality" that "will impact most domains of social life." (Henderson, et al., 2017, p. 413). Similarly, in the field of social studies issues of ecological harm have largely been excluded (Houser, 2009). This omission, paired with the urgent need for climate crisis pedagogies, and more robust understandings of the ways that teachers are engaging these topics in the classroom, builds the case for research that seeks to understand how teachers are making sense of climate crisis and the ways they are conceptualizing and enacting this as part of their work as social studies educators. Exploring the difficulty of facing these wounds and grasping at the implications for the work of teachers and teacher education is the aim of this dissertation. An exploration of these tensions, desires, hopes, denials, and deferrals as they manifest and their associated pedagogical manifestations sheds light on possibilities for classroom experiences that honor the complexity of climate crisis and other ecological harms.

In this introductory chapter, I will define the problem, overview the ways this inquiry engages existing literature, and situate this study within the field of social studies education research. In chapter two, I will more completely explore the theoretical notion of difficult knowledge which informs this dissertation, trace its psychoanalytic roots, as

well as define the associated concepts that will be employed in the data analysis and implications that has on the onto-epistemological assumptions of this dissertation. In the third chapter, I will turn to an explanation of the methodologies employed during the research design, data collection, and data analysis processes and the ways this has been informed by the theoretical underpinnings described in chapter two. The following two chapters analyze and interpret the data collected relating to themes of aspiration and ambivalence as they manifest in teacher articulations of their experiences of teaching and learning about climate crisis. In this data analysis, I argue that pedagogical encounters with climate crisis are more than rational, that there is a connection between feeling and meaning, and that failure to attend to them as such stands to impede students from making sense of the complexities of this issue. In chapter 4, I find that the psychic dynamics of teachers' ambivalence about the stories they desire to teach students about climate crisis are full of complex knots of contradiction and argue that it is this sort of ambivalence rather than apathy which supports maintenance of the status quo. Furthermore, I argue that affectionate attachments to optimism and pessimism and the certainty they offer function similarly to more outright climate denials. This matters for how teachers present this content to students. In chapter 5, I analyze the ways that aspirations for the future and the actions which provide possible pathways are impacted by psychic dynamics. I argue that weakened ability to imagine what else might be possible increases toleration for the tragedies of climate crisis and that this stands to shape possible responses to the circumstances at hand. Chapter six concludes the dissertation by suggesting possible applications for classroom practice and implications

for the field of social studies education as well as contouring some of the limits of difficult knowledge and alluding to directions for future inquiry.

Defining the Problem

In February of 2019, I attended a gathering of educators called by the Surrey Teachers Union who were interested in teaching about climate crisis.[2] The opening plenary included a panel of middle and high school students talking about their experiences in school regarding climate crisis instruction and their imaginings of what education in service to this tremendous challenge might look like. It was difficult to listen to these young people recount the ways their teachers had engaged this topic. In many ways, the comments shared by these young people crystallize and typify the problem this dissertation undertakes.

The students recalled that at best teachers taught in ways that reduced the urgency of the problem or were irrelevant in giving them the tools they needed to understand how to respond or make sense of the science. At worst, teachers taught in ways that denied the existence of any problem at all. During the entirety of the 90-minute panel, the students had requested that a climate countdown clock be projected on the screen behind the stage (Figure 3). One student described its pedagogical purpose for the attending teachers[3]:

> *We wanted to show you, all our teachers, how we feel when we are sitting in your classes. Um, like I love learning. I love sitting in my philosophy class and my biology class. But it's in my mind as the teacher is talking and as I am working, I*

[2] The program of the meeting can be found at http://crossborderconference.weebly.com/workshops.html

[3] These quotes have been transcribed from the publicly available recording of the event which can be found at https://www.youtube.com/watch?v=_lBW8c6b9PA&feature=youtu.be

always have this countdown in my head. It's like every second that I am sitting in this classroom is a second that we are getting closer to irreversible climate catastrophe. Um and that's really frustrating and really terrifying. So, the visual is important for adults.

As I watched the seconds tick down, and the temperature and pounds of carbon dioxide tick up, I was struck by their desire for teachers to sit in the panic and urgency they feel as young people welcomed to a world with already unfolding climate crisis. And I felt my anxiety rise, both watching the clock and listening to young people articulate concisely the ways their schooling and teachers had failed them. I imagined the ways those teachers had been failed by their schooling, their teacher educator programs, wider discourses, and how they were impacted by their emotional encounters with climate crisis; their attachments, fears, anxieties, hopes, all of these things manifesting in their classrooms. Another student went on to say:

Figure 3: Screenshot of Climate Clock

We are all already terrified about this and it is the responsibility of our education to do something about that. Whenever I talk to people about climate change there is a sense of dread.

This is the very problem this dissertation undertakes: it is the responsibility of education to prepare us for and welcome us to the world. It is the responsibility of education to provide tools that allow us to make sense of the world we are entering. Teachers must account for the emotional experiences of young people as they do this. For this student, this is articulated as dread and terror, and this impacts their processes of encountering and building relationships to knowledge. When asked about what they had learned from school that had been helpful to them one student said, “I don’t think I am learning anything helpful”, when pressed she continued “no we are not learning about climate crisis or climate justice at all in any way that is helpful”. Schools, their systems and structures, and the educators working within them have not, and likely do not know how, to engage young people in climate crisis in ways that honor the complexity of this issue and its burning relevance in their lived and future experiences of the world. As the students articulated, these failures of engagement have actively impeded their ability to make sense of and act in the face of the climate crisis and other related injustices. In these comments, emotion and affect take on central importance in students sense-making and conceptualizing how to address climate crisis. They, again and again, describe pedagogical encounters with climate crisis as emotionally troubling. That emotional response is worth studying because of the significance it has in shaping the way people are making sense of encounters with this information, it helps explain inaction, denial, optimism, ignoring, toleration of and distancing from the realities at hand. The circumstance described by these students is coupled with and inseparable from larger discourses around climate and ways we collectively shield ourselves from the discomfort of experiencing such knowledge.

The ways we move to protect ourselves from the discomfort of learning and teaching about climate change are exemplified in another anecdote that happened during the writing of this project. A neighbor came to the door to deliver a quilt after my son was born in July of 2020. After learning of the work I was doing around climate crisis education, she described that her 13-year-old son was recently alarmed in hearing about rising sea levels. This became particularly troubling to him as he realized their home sat on a Puget Sound beach. He was asking his mother, my friend, a myriad of questions about climate and about the timeline for the impending catastrophe, including intimately personal entanglements like when his backyard tire swing might be submerged. Not knowing how to respond to the anxiety and not knowing the answers, she encouraged him to ask their Amazon Alexa. The kid asked, "when will sea levels rise in Seattle?", the Alexa responded, "I don't know, but I do know it's 112 days till Christmas, you can start your shopping now!". For me, this story embodies the complexities of coming to terms with ecological disasters of all sorts. When we start to experience anxiety, when we try to learn more about the crisis, when we start to face the ways we might be personally impacted- erasing imaginary othering of consequences- it remains a vastly emotional and complex task to wade through the process of experiencing the circumstances of environmental harm. This is an example of the idea that

> Underlaying the discussions about what makes climate change so exceptionally difficult to respond to at an individual, social, political, or economic level is how the experience of climate change is often a brew of incredibly complicated feelings attachments, drives, and sentiments. (Lertzman, 2019, p. 29)

The inability of the mother in this antidote to respond in any sort of meaningful way to the anxieties of her teenager and the inability of our communities more largely to respond at a political and economic level are tangled with what Lertzman terms a "brew of incredibly complicated feelings" (2019, p. 25). Attention to this brew and the ways it enables and restricts the experiences of the climate crisis are of central importance in this project and more generally in conceptualizing climate pedagogies for classrooms which honors the complex nature of this teaching and learning.

The words of the young people and their fresh familiarity with the failures of schools and teachers to respond to the climate crisis with appropriate curriculum, instruction, and pedagogy are highlighted in the previous paragraphs. This dissertation aims to contribute to understanding the complex pedagogical and curricular implications of engaging climate crisis in response to the need articulated by these young people. In the following chapters I take up associated questions regarding how teachers are conceptualizing climate crisis for themselves and their students, the stories they are attached to, their desires in teaching this content, how they are making sense of designing instruction around this topic, and their own affective and emotional responses to the bleak news.

In this section, I have outlined the problem this dissertation takes up around the failures of schools to adequately engage climate crisis at great cost to student's ability to make sense of the world they are being welcomed into and the importance of studying this topic and its emotional entanglements. In the next section, I situate this study in the field of social studies by reviewing the existing literature and contending that social

studies is an exemplary location for this research because of its aims towards the development of agentive and active citizens prepared to meet complex challenges.

Situating in Social Studies Education

This study is situated in social studies because of the richness it offers towards supporting the development of citizens ready to agentively participate in democracy and intervene in injustice. Additionally, the causes and many of the consequences of climate crisis are social, rather than scientific, in nature. Failing to attend to them as a matter of social studies education leaves students ill-prepared to fully understand, engage, and contribute to solutions around this issue. In this section, I will argue that social studies education is an important place for research and classroom engagements with climate crisis and overview the ways that this and other environmental issues are already being taken up in social studies research.

The discipline of social studies is a place where students might engage the world through "constructive, conceptual, inquiry-driven, deliberative, and action-oriented" thinking (Boyle-Baise & Zevin, 2014, p. xv). The widely used College, Career, and Civic Life (C3) Framework for Social Studies Standards asserts that students need the "intellectual power to recognize societal problems" (C3, p. 4). The issues of the climate crisis and environmental injustice fall within these definitions of social studies and the profoundly powerful purpose of educating "thinking, knowledgeable and active citizens" (C3, p.3). Environmental and climate justice are issues of particular relevance in social studies education as both the causes and solutions to these catastrophic inequities are social in nature. From the poisoned pipes of Flint, the removed mountains of central Appalachia, the climate refugees of the North Slope of Alaska, the clear-cut forests of

Idaho, and the mono-cropped fields of Nebraska, environmental issues are pressing issues. In each of the prior examples, the issues raised directly connect to issues that are currently under exploration within the field of social studies research: structural racism (e.g., Brown & Au, 2014; King & Chandler, 2016; King, 2014; Woodson, 2016), studies of indigeneity (e.g., Chandler, 2010; Shear & Krutka, 2019, Stanton, 2016), migration (e.g., Dabach et al., 2018; McCorkle, 2020), and wealth distribution (e.g., Neumann, 2015; 2014). Climate crisis is an issue that has tangible manifestations in the lives and classroom experiences of children. The intersections of climate crisis with other social, economic, and environmental injustice make this conversation timely and vital in civic and social studies education. The very purpose of social studies education demands attention to the most urgent social, political, and environmental challenges of our time. Across the social studies disciplines, there is a compelling and purposeful rationale for the inclusion of environmental and climate justice issues (Kissling & Bell, 2019; Kumler & Vosburg-Bluem, 2014; Houser, 2009). Furthermore, among the academic disciplines, "social studies is uniquely well situated to provide an educational platform for developing a multifaceted and well-integrated approach to teaching about sustainability" (Crocco, Marri, & Chandler, 2013, p. 170). If social studies education is a place to prepare deliberative citizens for active participation in democracy, then it must include attention to issues of climate crisis.

While environmental issues and climate crisis are sometimes considered issues for the discipline of science (Kissling & Bell, 2020), these issues are closely tied to economics, governance, civics, geography, human-environment interactions, public policy, international relationships, trade, in addition to their scientific content

connections. The scientific knowledge is not complete and appropriately relevant without engagement with social studies. One secondary science teacher recounted an example of this

> I was at the chalkboard, explaining the psychical mechanism behind global warming, drawing the typical cross-section view of the planet and atmosphere to show the energy budget. I distinctly remember finishing the drawing, turning around to the students, and being disappointed in their (non)reaction. I wasn't expecting an uprising, but I realized at that moment that I had failed to make it relevant to my students on any level. (Busch in Busch, et al., 2019, p. 957)

In this anecdote the teacher recounts communicating vastly important scientific content knowledge and without explicit instruction in the ways this was entangled with social studies, the students remained unable to process or respond appropriately. Left only to science classrooms, we continue to fail students in the ways articulated by the students in the previous section. Students are left without the tools they need to make sense of climate crisis as it relates most immediately to their societies, economies, governments, and lives. Wallace-Wells (2019) states that the problem of climate crisis is centrally a political one. Of the causes of climate crisis, he called attention to the ways that privatization, deregulation, notions of free trade, and corporate-friendly tax policy has been adopted as a "total political philosophy, extending a single, simple ideological tarpaulin so far and wide that it enclosed the earth like a rubbery blanket of greenhouse gas" (p. 189). He describes that climate crisis will change the world's political order and that we will only be delivered from the direst consequences through policy. His

arguments give volume to the argument that many of the issues of climate crisis are fundamentally social in cause and consequence.

Important work is being done in a variety of fields, including science education, to intervene despite the roadblocks around sometimes reductionist, fragmented, and outdated curricular frameworks which do not adequately prepare students to understand and act on problems that face them as citizens in participatory democracy and simultaneously avoid the nexus between the climate crisis and democratic living (Sharma & Buxton, 2018). Beyond the limits surfacing in other fields, there are affirmative reasons to include issues of climate crisis within social studies education. The social and political causes and consequences of the climate crisis are central to a social studies education preparing students for civic lives in the 21st century. These issues are closely tied to economics, governance, civics, geography, human-environment interactions, public policy, international relationships, trade, and thus issues of importance in social studies. A majority of social studies teachers see these connections but fail to engage with environmental issues in their classrooms because of a range of significant barriers, among them not knowing how to engage the challenging nature of this topic (Kissling & Bell, 2020).

While there has been a move over the last decades for science education to include more connections to the societal impacts and interactions of the discipline, particularly through STEM efforts, and work around the inclusion of socio-scientific issues (SSI), the field of social studies education has been slower to widen its boundaries to include environmental issues and many social studies teachers still identify that this is an issue for science instruction. As the bounds of social studies expand and evolve

concerning the challenges our global community faces in these difficult and uncertain times, there is a need for socio-ecological issues to find places in social studies classrooms and conversations.

Issues of ecological harm have largely been excluded from research on social studies education (Chandler & Marri, 2012; Houser, 2009; Kissling, 2019; Seitz, 2020;). The field of social studies has largely built disciplinary boundaries that excluded environmental issues. Hepburn (1974) wrote that "social studies curriculum has not kept pace with the growing needs for environmental understanding. The response in the social studies has been spotty, often weak and unsystematic" (p.1). Although written in 1974, this sentiment remains relevant in contemporary social studies research. Chandler & Marri (2012) argued that "in social studies education, where issues of civic engagement remain paramount, climate change is rarely discussed" (p. 48). This gap in both scholarship and practice of social studies education to engage climate crisis has profoundly important implications on the way students are prepared for participation in civic life. For a variety of reasons including curriculum crowdedness, a belief that these topics are best suited for science classrooms, a lack of content knowledge, and uncertainty about how to approach inclusion given the complex and controversial nature of these topics, the vast majority of social studies teachers avoid teaching environmental issues (Kissling & Bell, 2019).

The omission of these topics from most corners of the field of social studies research and practice, paired with the urgent need for climate crisis pedagogies and more robust understandings of the ways that teachers are engaging these topics in the classroom, demonstrates the need for research which seeks to understand how teachers

are making sense of climate crisis and the ways they are conceptualizing and enacting this as part of their work as social studies educators. The remainder of this section outlines the existing literature in the field of social studies education research to situate this study among the identifiable though relatively small group of scholars who insist that there is a need for socio-ecological issues to find places in social studies classrooms and conversations (e.g. Crocco, Marri & Chandler 2013; Goodlad, 2001; Houser, 2009; Kissling, 2016; Kissling & Calabrese Barton, 2013; Seitz, 2020) as well as to delineate this dissertation's distinctions from the existing literature in the field.

Review of Literature

This literature review takes a narrow look at the ways social studies educational research is taking up environmental issues. The search included publications only in the field of social studies education. I have included articles that use climate change or environmental justice issues as an example for thinking about classroom controversy- a hot topic in social studies education research at the moment. The search terms included "environmental justice", "climate change", "global warming", or "environmental issues", in social studies education journals. Many other articles make important connections between social studies education and environmental issues that appear in journals outside of social studies education. The *Journal of Environmental Education* provides a rich trove of articles on the transdisciplinary demands of environmental education and the necessitated weaving together of science and social studies instruction (e.g., Kumler, 2010; Hepburn & Keach, 1974). The *Journal of Media Literacy Education*, an increasingly important and timely topic in the field of social studies education, has published work on the connections between media literacy and climate change education

(Damico, Baildon & Panos, 2018). While the most prominent journals in social studies education revealed limited search results on this topic, a more thorough search reveals the ways environmental issues have bubbled up in the field of social studies education and its disciplinary subsections including economics education, history education, and civics education.

In a similar literature review, Houser (2009) surveyed each issue of three major social studies journals (*TRSE, Social Education,* and *The Social Studies*) between 1996 and 2008. In this comprehensive and systemic review, Houser (2009) concluded that with a few exceptions social studies research has omitted meaningful inclusion of the entanglements of environmental issues and society. Additionally, this overview confirms Kissling & Bell's recent assertion that environmental issues have been historically and remain contemporarily marginalized in the field of social studies education in relation to many of the other pressing issues of our times (2020).

The findings of my own literature review are discussed before I turn to the implications of this literature for this project. These texts have been organized thematically to allow for analysis across subdiscipline and demonstrate the array of places environmental issues and climate crisis might find space in social studies. The themes include 1) general social studies and 2) climate change as an example in discussions of other phenomena and then explores disciplinary engagements of environmental issues including in the fields of 3) citizenship education, 4) geography education, 5) economics education, and 6) history education. Such a disciplinary approach demonstrates the multitude of connections between the content of climate change and the disciplines of social studies. This also demonstrates the divergent corners

of the field which have approached this topic and argued for this inclusion. The availability of literature affirmatively building the case for this inclusion across the many disciplinary corners of social studies further highlights the appropriateness of the inclusion of climate crisis in social studies classrooms, teacher education, and research. Following this review of the literature, I will explain its implications for this dissertation including critiques of the ways this topic has been taken up in social studies.

Social Studies & Social Studies Teacher Education

In this subsection I outline the inclusions of environmental issues and climate change in literature which addresses social studies teacher education and social studies without further declaring a more specific disciplinary categorization (i.e., history, political science, economics, geography). This literature works to build the case for the inclusion of these topics in social studies because of the unique qualities of the field which make it well suited for such classroom engagements.

In building the case for the inclusion of issues of sustainability in social studies classrooms, Crocco, Marri, & Chandler (2013), offer a conceptual framework for the intersections between the traditional social studies disciplines and issues of ecological sustainability concerning established "critical global education standards" (UNESCO, 1997; 2005). This argument is built upon a framework of global education competencies and employs a theoretical approach to defining space for sustainability in social studies. The authors define sustainability as "an arena of inquiry, discourse, and action aimed at considering issues at the intersection of the economy, society, and ecology" and employ the Brundtland Report's definition that "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (1987,

p. 170). The authors developed a central argument around the idea that "social studies is uniquely well situated to provide an educational platform for developing a multifaceted and well-integrated approach to teaching about sustainability" (p. 170) given the very nature of social studies education as a place to prepare deliberative citizens.

In 1978, Hepburn et al. used an experimental design research project to understand student attitude changes related to population growth after social studies and science interdisciplinary instruction. While attitude is a key factor in behavior change, the authors note that previous research shows that it is not enough to give students more information on environmental science and expect shifts in attitudes. Importantly, however, they find that instruction on environmental issues in science classrooms paired with instruction on the social elements in social studies classrooms produces the greatest "improvement" in attitude. They define this improvement as student indication that they care about the issue and would be willing to make choices influenced by the impacts. This finding builds towards an important argument for the integrated teaching of science and social studies content, particularly related to environmental issues. Christou and Bullock (2014) make a related argument in their study which identifies the ways in which the teaching and learning of science and social studies are similar in their need to be explored, rather than seen and taught as a set of content to be mastered. The similarities outlined further build the case for such transdisciplinary content integration.

Hepburn (1973) also wrote a powerful overview of how social studies education has served as the place of "environmental socialization". She built the case that social studies education must seriously engage with these topics given the important social dimensions of environmental issues that transcend the boundaries of science

classrooms. She reminded social studies teachers that we simply cannot ignore the ecological context of the societies we are teaching about. This article was not published in a social studies journal, but instead, the High School Journal, a publication of the University of North Carolina, engaging in issues related to secondary education.

In addition to this body of work aiming to widen the disciplinary bounds of social studies instruction to include environmental issues, the literature review also uncovered several articles addressing the need for social studies teacher education to include direct and explicit connections to issues of environmental importance. Kissling, Bell, Beltran & Myler (2017) built the case for "ending the silence about the earth in social studies teacher education" and outline a series of steps that might facilitate this move. The authors argued that "if students are going to learn to become effective citizens who are adept at caring for and sustaining the complex, entangled relationship of life on earth, social studies teacher educators play a pivotal role in assisting preservice and inservice teachers to teach for this essential purpose*"* (p. 193). The authors go on to examine empirical data that demonstrates the hesitancy of social studies preservice teachers to engage with climate crisis as a social studies topic. They theorize two explanations for this hesitancy: 1) a lack of content knowledge; and 2) a firmly set idea that environmental issues belong in the science classrooms. The authors then offer teacher educators a list of possibilities to challenge these preservice teacher notions, including expanding conceptions of citizenship and democracy.

In practitioner-focused publication outlets, there have been several examples of lessons designed for the intersections of social studies and environmental issues (Seitz, 2020). These instructional ideas include resources for teaching about solar power

(Morrison & Sebens, 2016); studying the life of Rachel Carson (Crocco et al., 2016), water issues (Crawford & Monsion, 2011; Fisher, 2014; Nagel & Earl, 2003; Pimental et al., 2004; Sheffield & Weiland, 2013), electricity production (Morrison & Sebens, 2016), and air pollution (Bustard & Potter, 2013; Ghorani-Azam et al., 2016; Vazquez et al., 2016). There are also examples of integrations into economic classrooms (Buchanan & Crawford, 2015; Kissling & Rogers, 2014; Seitz & Krutka, 2019). Regarding climate change instruction in social studies, Seitz (2021) identified seven examples of practitioner-focused articles published between 2010 and 2020. These examples included introductions to the intersections between the social and the scientific as it is urgently relevant in the social studies classroom. These articles drew across instructional designs but focused heavily on ideas of inquiry (Kumler & Vosburg-Bluem, 2014; Wohlumth, 2015). There is also some attention given to the controversial nature of teaching climate change (e.g., Harris et al., 2016) and analyzing the "moral imperative" of acting in the face of climate crisis (Shuttleworth & Wylie, 2019). The predominant orientation of these instructional plans is multi-disciplinary science content in which students learn new science content and then conclude with some sort of community-facing informed action. For example, in one lesson about solar power, students conduct an impressive project adding solar panels to power their classroom and then reflect on questions, which the article constructs as social studies in nature. The questions in the lesson included "How do we cooperate to realize our goals?" and "How can we raise money for a worthy cause?". These types of questions fail to invite students to consider things like the production processes of solar panels or the public policy possibilities around solar energy production. These lessons provide valuable support to teachers as they imagine how

environmental content might be brought into the social studies classroom, but they mostly fail to approach a real reckoning with the social or political causes and consequences of environmental harms.

This subsection has overviewed scholarship which intentionally argues for the expansion of the bounds of social studies education to include environmental issues. The reviewed literature includes both theoretical and empirical pieces as well as practitioner-oriented scholarship. Except for very few of these practitioner-oriented pieces, they do not address climate crisis directly instead using phrases like environmental issues or pollution. In the next section I will overview some examples of the places climate crisis or environmental issues show up as examples in social studies articles primarily addressing other topics.

Climate Change as an Example

This subsection describes some of the instances in which climate change has been included as an example in social studies research where another phenomenon is under study like the teaching of controversy of affective circulations. Research on teaching controversy in social studies classrooms is becoming increasingly available in the field of social studies education. This is perhaps related to the contemporary moment of division and strife in our democracy. Learning to be in the world with others is difficult, deliberative, and intentional work and belongs in social studies classrooms (Garrett, 2017). Additionally, an increased attention to the affective circulations of classrooms and the pedagogical tact required when teaching across difference or on issues of controversy has provided a new space for conversations about environmental issues in social studies research. This literature review explores several articles in which the main focus is

controversy or affect in classrooms, but which use environmental issues as a case example to explore. I argue that although the main focus in these articles is not pedagogies of climate crisis in social studies or case building for the integration of environmental issues in social studies spaces, these inclusions are important and represent a fundamental way that the field of social studies research is taking up environmental issues. It is also important to note that the inclusion of these examples and explorations of environmental issues in social studies publications do inherently contribute to the widening of disciplinary boundaries towards the inclusion of these issues.

Ho and Seow (2015), wrote that "social, historical, cultural, and political contexts greatly influence how teachers perceive controversy…as a result, teachers may prefer to avoid controversy by self-censoring what they teach" (p. 1). In this article, the authors explore issues of avoidance and deferral in controversial classroom conversations, with a particular emphasis on the ways that teacher beliefs, along with the historical, cultural, social, and political context of teaching influences inclusion or exclusion of particular classroom topics. With issues of teacher belief and teaching controversy at the core of the study, the issue serving as case study is that of climate change in geography classrooms in the highly regimented and nationalized Singaporean educational system. The authors draw on interviews with six practicing geography teachers to explore what they believe about teaching climate change and how they make sense of controversy around climate. One of the primary findings of the study is the wide differences in the ways participants describe teaching climate change, which is notable given the "prescriptive national context that explicitly advocated for human action in response to climate change" (p. 232). Despite such prescriptiveness and particular attention to climate changes issues, the

teachers describe a range of approaches including those that "strongly advocated for the development of pro-environment values, through to those who sought to present more balanced coverage of the issue, to those who strongly denied climate change" (p. 232). The authors argued that these approaches to teaching climate change in social studies can be broken into three distinct categories. These include

> (a) values-based advocacy (advocacy for the environment premised on the development of environmental values in students), (b) representative balance (presenting the evidence on both sides of the climate change debate according to the scientific consensus), and (c) misrepresentative balance (presenting the arguments on both sides of the climate change debate as equal, despite the scientific consensus). (p. 232)

Ho and Seow used these categories to argue that teachers' personal beliefs on the topic and their understandings of the purpose of education and climate change education influence the way they engage with this controversy, despite a national mandate to do so. Importantly they also find that teachers engage these topics differently based on their perception of student ability level. They conclude by noting that attention to the ways that teachers "negotiate the complexities of their own personal beliefs vis-à-vis the social and political forces that frame their practice" (p. 338) is additive to understanding how teachers engage controversy.

Garrett (2017) included reference to climate change in discussions on difficult knowledge and controversy in the social studies classroom. In describing future catastrophes as they relate to notions of trauma, Garrett argued that one category of "utterly predictable catastrophe" will be "fueled by climate change" (p. 38-39). In

mentioning “passionate attachments” from students, which may cause teachers to understand settled topics as controversial, Garrett mentioned climate change along with smoking and issues of economic mobility (p. 67). In each of these examples, climate is an example of another topic under study.

In the previous two sections I have described how climate change has been taken up in general social studies discourse and as an example when other phenomena are under study. In the following sections I will turn to more specific disciplinary engagements including those in history, economics, and citizenship.

Government & Citizenship Education

Although this literature review revealed a series of articles, both conceptual and empirical, advocating for the inclusion of environmental issues in civic education, as Chandler and Marri note in the quote opening this section, this engagement is still sporadic and rare in the field. Citizen education has long been the purpose and function of social studies education (Crocco, Marri, & Chandler, 2013). As environmental issues have become more evident and pressing as we encounter information about the seriousness of the threat of climate crisis, these issues have found their way into more theorizations of citizenship education. Crocco, Marri & Chandler (2013) argued that civics education provides a space for “applying disciplinary tools and pedagogical approaches to the economic, ecological, and social questions associated with sustainability” (p. 171). Similar spaces have been recognized by Houser & Kuzmic (2001), who advocated for connected, interdisciplinary recognitions of the ways anthropogenic harms are social and thus a necessary topic for ethical consideration in a postmodern world. They saw social studies education as a place which takes up the needs

of society instead of the individual. The authors argued that these virtues of social studies education demand we teach with both the common human good and the health of the planet in mind.

The notions of "ecological democracy" (Houser, 2009), "ecological citizenship" (Kissling, 2016; Kissling & Calabrese Barton, 2013), "earthen social studies" (Kissling & Bell, 2020), and "ecocentric civic education" (Goodlad, 2001) each provide conceptual frameworks for what might be possible in incorporating environmental issues in social studies teaching and learning. These scholars are all working under the umbrella of civics education to build theorizations of this inclusion. Houser's (2009) notion of ecological democracy suggests teaching civic education "within, rather than outside or beyond, the broader environmental context" (p. 190). This conceptualization requires the erasure of long-standing, heavily reified human/Earth, human/nature binaries. He wrote that "at the heart of the [environmental injustice] problem is a basic misunderstanding regarding the relationship that exists between humans and the environment" (p. 192). Houser notes that the seriousness of unfolding and impending ecological crisis demands nothing less than a redefined ideas about the very definition of democracy in ways that work to include the non-human world. Goodlad's (2001) "ecocentric civics education" also asks civics educators to decenter humans to allow for the inclusion of broadly defined ecological consciousness as a key part of democratic practice. Kissling's ecological citizenship (2013; 2016) adds to these ideas by drawing on theories of place and sustainability. Sustainability is defined as the interaction of environmental, social, and economic justice. Kissling wrote that teaching towards sustainability requires "recognizing that all learning is inherently placed while shaping a conception of citizenship that positions individual

and community action in ecological contexts, not just political, anthropocentric ones" (2016, p. 321). In more recent work on "earthen social studies", Kissling & Bell argued for the employment of Leopold's land ethic in building theoretical conceptions of citizenship which includes Earthen systems (2020).

Each of these terms shares a common commitment to bringing to the forefront the inherent ties between the earth, and what it means to live in community and democracy with others. The authors defining these terms each explicitly call for a reduction of the anthropocentric focus of the field of social studies education. To varying degrees, these notions call for the construction of democracy to include non-human and non-living ecological components. Such a widening of the definitions of who and what should be considered part of democracy may leave obscured the human experiences and vast inequities which are part of the climate crisis.

Chiodo (2000) provides a tangible model of government instruction that draws on environmental issues. This instruction is delivered as part of a unit teaching deliberation skills and government structures. Students learned about the scientific and social challenges related to urban transportation and worked to develop possible policy solutions. Chandler & Marri (2012) also provide empirical work in this area with the contribution of a case study focused on understanding how teachers employ ecojustice pedagogies to teach about climate change as an issue of civic engagement. These authors define ecojustice pedagogies as those which focus on the relationship between ecological harm and the unjust human implications, including disproportionately raced and classed exposure to these harms. This theoretical and pedagogical framework allows environmental education in the social studies classroom to become "a strategy for

addressing underlying power structures and worldviews, which permeate or ignore environmental problems and the social inequalities that are so often found in relation to them" (p. 48). These two pieces of empirical work provide important examples of the types of inclusion many of the conceptual articles above have advocated for.

In this subsection I have outlined literature which calls attention to the intersections between the environment and civics. Some of these scholars call for a construction of democracy which includes attention to the value and needs of non-human components of the environment. Such literature provides important contributions to the case for the inclusion of climate crisis in social studies education and represent dominant circulations in the literature around deconstruction anthropocentric notions of social studies. In the next section, I will attend to the ways that literature has specifically engaged the intersections of climate crisis and geography education. These are related to the topics explored in this section as the available geography literature advocates attention to the entanglements between humans and land.

Geography

Environmental issues are intrinsically related to geography (Kissling, 2016). These are issues of place, issues of human-environmental interaction, issues of environmental resource, and issues which transcend national boundaries. While issues of resource use and distribution, as well as the geographic theme of human-environment interaction, are both mentioned in the C3 social studies standards (C3, NCSS), social studies research has taken up exploration of these intersections in limited ways. The literature review uncovered four articles published in social studies journals with a focus on these explicit pedagogical connections between environmental issues and geography

education. Three of these articles are focused on a practitioner audience and provide activities that work to transcend disciplinary boundaries (Dircks, 2002; Bron & van Vliet, 2013; Nagel & Earl, 2003). These articles each included instructional examples drawing on the complexities of water quantity and quality as a focus of student investigation. They each worked toward building the case for the inclusion of ecological content in social studies classrooms under the umbrella of geography education. Nagel and Earl (2003) make explicit connections to ocean health and outline a case for the inclusion of cross-cutting oceanography to show how such an approach can help students understand that local problems are often a part of larger problems and demonstrate how an understanding of science content can help students better understand social science issues, which may be local or global in scale. Another of these articles used the teaching of climate crisis in geography classrooms to better understand how teachers and students were navigating controversial issues in relation to personal beliefs, and a web of socio-political issues (Ho & Seow, 2015).

Economics Instruction

Although jobs versus environment discourses circulate widely and the use of resources for economic gain are important social studies topics, instruction in social studies classrooms rarely links the concepts together in meaningful ways to help students understand the earthen implications of economic choices (Kissling & Rogers, 2014). This literature review found only one article in social studies journals on the topic of the explicit connections between environmental issues and economics. Kissling and Rogers argued that most often when these topics are linked, they are arranged in oppositional positions and that "such a relationship, we contend, is a direct challenge to students

learning to be effective citizens" (p. 25). This empirical study draws on classroom-based observations of students engaging in discussion on natural gas development concerning both ecological and economic instruction. The authors draw on current events and pollical speeches to contend that a healthy environment is central to a healthy economy. To facilitate student thinking about these connections, the teacher asked students to analyze and consider the implications of Gallop Poll data regarding participant values in relation to jobs and environment when arranged in opposition. This data provided a way for students to consider the historical dynamics at play in these conversations. The troubling disconnection evident in the student answers built the case for continued engagement in questions around the integration of these two topics. Kissling and Rogers noted that this is just one of the many ways that social studies educators might engage students in thinking about environmental issues in social studies and repeatedly note the importance of its inclusion.

Given that so much of the harm of climate crisis is caused by extractive capitalism underpinned by the axiological assumption that maximizing wealth is a priority worth the risks and costs (Field, 1997), economic education is an invaluable space for the inclusion of climate crisis. The work of Kissling and Rogers provides an example of possibility for challenging widely circulating dominant discourse around jobs and environment. This oppositional arrangement between economic prosperity and care for the earth has been and continues to be a considerable consideration in policy conversations about climate and other environmental issues. The significance of teaching at the junction between climate and economics education provides one way to challenges such discourse. Such

marginalization of this intersection in the literature is noteworthy, given the pronounced weight of this argument in contemporary democracy in the United States.

In this subsection I have summarized Kissling and Roger's (2014) work on teaching environmental issues in economics education. I argue that such attention is one-way teachers might challenge dominant discourse around jobs and the environment, and thus an important contribution to the place for environmental issues and climate crisis in social studies. In the subsequent section I will attend to another marginalized disciplinary connection by analyzing literature in which history and environmental issues have been connected.

History Education

A single article identified in this review analyzed the relevance of the environment in teaching history. The article comes from the National Council for the Social Studies annual publication of 1974, which is designed for practitioners and includes an overview and lesson resources. In this text, Lawrence (1974), builds the case for the inclusion of environmental education as a central tenant of making historical education relevant to the lives of students. Lawrence wrote passionately, drawing the contemporary relevance of both student-centered learning and the need for the popular environmental movements of the era. He argued that "to live real lives in a real-world, change and interaction cannot be rejected- we must accept them. We must develop a new framework for seeing, knowing, and doing which lets us live lives of process in a world of process" (p. 190). Interestingly, given the historical nature of this text written more than 45 years ago, is the author's call to resist technological solutions to environmental harms, instead asking for social studies generally, and history education specifically, to

support solutions. The author asserted that "perhaps because of the extent we live surrounded by the products of technology: we expect science to rescue us from possible eco-disaster" (p. 201). He explained that "expecting this is much like looking to solve a host of other problems that are as much social as scientific: for example, the arms race, drug addiction, and unemployment" (p. 202). This quote stunningly captures the necessity of considering climate change as part of social studies education. Since Lawrence's writing in 1974, the assessment of the ways it is easy to expect technological salvation have become even more pronounced, and thus making the need for a reckoning with the myth that science will save us from "eco-crisis" also all the more necessitated. In addition to this passionate cry for contextualizing inclusion of environmental issues in teaching history, the article also includes more than twenty pages of student materials, many of which position students as activists with the power to organize towards political change, connecting their agency to history. Although this article builds an argument for the inclusion of environmental issues in history education, the unavailability of more contemporary publications is noteworthy and demonstrates the need for ongoing work in this area. The absence demonstrates the ways in which the field of social studies education and educational research have failed to engage over the past several decades with environmental issues.

Implications of the Reviewed Literature

The existing literature articulated in the sections above lays the groundwork for the inclusion of climate crisis in social studies classrooms and demonstrates the variety of ways that climate crisis might fit within the established disciplinary bounds. This dissertation is built upon the assumption that this inclusion is not only appropriate but

necessitated; an assumption surveyed and investigated in this literature. In the following section, I identify three important themes from the reviewed literature which distinguish this dissertation from the existing body of work in social studies despite this important shared mission. The themes analyzed here include assumptions of the boundaries of social studies education as within social studies classrooms; the centering of human experience; and the prevalence of optimism and oversimplification in much of the literature.

The Location of Social Studies Education: Naming and Characterizing the Field

The reviewed empirical social studies literature drew largely on data collected from social studies contexts. This includes examples of large-scale survey data collected from Pennsylvania's public secondary social studies teachers (Kissling & Bell, 2020) as well as interviews from geography teachers in Singapore (Ho & Seow, 2015). In contrast to this strategy of data collection in explicitly social studies spaces, this dissertation follows the example of the scholars who are situating their work in social studies and collecting data beyond social studies classrooms. In one example of this, Kissling and Barton (2013) utilized a case study drawing on student work samples and curricular design from an afterschool science program at a Boys & Girls Club. Although the program is designed as a science instructional space, the authors argued that "any compelling social issue is fundamentally interdisciplinary" (p. 134) and thus the data collected and analyzed is appropriate for publication and consideration in designated social studies spaces. This is an important acknowledgment and worthy of consideration by the field more broadly, as the bounds of social studies expand to include more robust conversations of environmental issues. In this dissertation, I understand the location of

social studies education to transcend beyond social studies classrooms, textbooks, or teachers with social studies certifications. This conceptualization of social studies education includes any place where people are learning to be active participants in our society and democracy. Social studies education is "a complex, dynamic, challenging field with competing perspectives about appropriate goals, and on-going conflict over the content of the curriculum." (Levstik & Tyson, 2010, p. 1). This widened understanding of the location of social studies education is based on the National Council for the Social Studies (NCSS) definition of social studies as

> the integrated study of the social sciences and humanities to promote civic competence. The primary purpose of social studies is to help young people develop the ability to make informed and reasoned decisions for the public good as citizens of a culturally diverse, democratic society in an interdependent world. (n.d., para. 2)

This definition defines purpose rather than location. Such a purpose transcends the label of a social studies classroom. This definition does not focus on disciplinary content (i.e., mastery of historical content, understanding of economic definitions) or on particular skills (i.e., historical thinking, document analysis) but instead the purpose of preparing students to "make informed and reasoned decisions for the public good". The inclusion of the word "integrated" acknowledges the inter and trans disciplinary nature of social studies education. While debates about what the public good is, or what should be included as students are prepared for civic life continue (e.g., Nelson, 2001; Cherryholmes, 2013), such a definition provides space for the conceptualization of social studies beyond classrooms and teachers designated by certification as "social studies". A

recognition of this wider boundary of social studies is a well-documented tradition in the field (e.g., Stanley & Nelson, 1994; Johnson, 2021).

To this end, this dissertation includes data collected from teachers identifying their own content areas as science, social studies, general pre-school, math, and art, but each of them articulated that their work was connected to civics or social studies education. I believe this wider boundary of social studies is helpful both for this project and in imagining more creative and effective climate pedagogies more generally.

Centering Human Experience

In this subsection, I show how human-centered theoretical frameworks are underrepresented in the field of social studies as it engages climate crisis and claim that they are an additive contribution. Centering the human experience in this project allows for attention to the ways that emotional and affective responses are part of teaching and learning about climate change and is in line with the employment of difficult knowledge and psychosocial qualitative inquiry.

Much of the existing literature in social studies education on topics of environmental issues works to decenter the human experience in favor of more ecologist ontologies. Ecologist frameworks assume consideration of flora and fauna for their intrinsic value and irrelevant to their use in human communities and economies (e.g., eco-justice, eco-democracy) and seek to decenter the human. Human-centered frameworks (e.g., environmental justice) consider the human impacts and experiences of climate change or other environmental harms. Centering the human experience in this project does not seek to minimize very important and valuable contributions which seek to decenter the human and move away from anthropocentrism. Human and non-human

centered orientations to this work need not be mutually exclusive or ontologically, axiologically, or epistemologically in opposition (Low & Gleeson, 1998).

The predominance of ecologist frameworks in the field of social studies education as they engage environmental issues is evidenced by Houser's (2009) conclusion that social studies research has omitted meaningful engagements with the Earth, except in passing mention of land as a commodity or the impact of physical environments on economic development. The employment of an ecologist theoretical framework here risks failing to bring explicit attention to the ways that our social/political/economic/historical situations are directly tied up in facilitating climate crisis. Kissling (2016) described that social studies teacher education requires "recognizing that all learning is inherently placed while shaping a conception of citizenship that positions individual and community action in ecological contexts, not just political, anthropocentric one" (2016, p. 321). These ecologist frameworks acknowledge that the human ecological community is separated from the non-human ecological community only through the reification of harmful and imagined discursive construction. The same binaries have led to disciplinary separations between science and social sciences in relation to environmental issues. The result is curriculum and instruction which function to "hyper-separate" (Lowenstein, et al., 2010) the human world from the ecological. These scholars aided by ecologist frameworks decentering human experience have contributed profoundly to the expansion of the bounds of social studies education and challenge extraordinarily damaging human/nature binaries.

The many different, theoretically divergent, and intersectional efforts of more human-centered understandings for approaching climate crisis were born in resistance to

the failings of the early mainstream environmentalist movements which focused largely on the preservation of untrammeled wilderness. Despite important victories related to environmental protection, these early wilderness preservation movements adopted more ecologist frameworks in their attention towards intrinsic value of the non-human and often failed to challenge the bleak realities of environmental harm as raced and classed. These early wilderness movements remained largely for and by privileged activists of the white upper classes (Harvey, 2009; Pezzullo, 2007). Many of the texts which sounded early alarm bells and provided momentum to early environmentalist movements, including Rachel Carson's *Silent Spring* (1962) and Aldo Leopold's *Sand County Almanac* (1949), focused on the impacts of humans on flora and fauna.

The human injustices of poisoned air and water, along with inequitably distributed resources were left largely untouched until engaged by a resurgent environmental justice movement of the 1970s (Cole & Foster, 2001; Bullard, 1993). While this movement had important victories, particularly related to hazardous dumping sites, there is much work still to be done. Climate activist Julian Brave NoiseCat (2019) argued that the same environmental elitism continues today when politicians attempt to engage climate crisis solutions without broader social reforms. He contended that "climate action can't be separated from social justice" (NoiseCat, 2019, para. 1) as is often suggested by policymakers and by some enduring veins of environmentalist thought.

To be clear, I find great value in ecologist frameworks that decenter the human, expand the definition of community, and challenge human/nature binaries. They have been imperative to both early and contemporary environmental movements and scholarship. These early scholars have been imperative in bringing attention to these

issues, they have inspired generations of activists and scientists. The importance of their work in consciousness-raising cannot be overstated. My own son is named after Aldo Leopold. I understand scholars decentering the human and working to push past anthropocentrism in social studies education to be making vastly important and thought-provoking contributions. However, in this project, I have elected to center human experience because of the importance I see theorizing the experiences of emotion as part of this teaching and learning. I also think that more human-centered approaches may provide paths of less resistance in integrating environmental issues into social studies research, classrooms, and teacher education. It supports attention to the ways that these issues are distributed, raced, classed, and gendered. This attention makes it appropriate and worthy of careful consideration in understanding and teaching about the implications of environmental harms in the field of social studies education and it is underrepresented in the existing literature. I believe this is an important distinction between my work and much of the existing literature in social studies.

Preponderance of Optimism and Oversimplification

I was recently presenting some of the initial findings of this dissertation at a national social studies conference and a senior scholar, included in this literature review, noted that my paper was "dark" and even recommended that I have my students engage "lighter texts" around climate crisis for the purpose of leaving them with hope and inspiration to act. Despite any desire to leave students with rosy feelings of hope, this dissertation's findings are not rosy. The enduring complexity of climate crisis and our failures in schools and society more generally, are difficult and emotionally entangled.

Such tendencies towards optimism and simple solution represent a gap in the existing research in the field of social studies education with which this dissertation engages.

In much of the literature reviewed above, particularly in the pieces oriented towards a practitioner audience, there is a preponderance towards optimism and a failure to recognize the enormous complexity of these problems and their associated solutions. If we jump too quickly to the solutions, we risk failing to honor the emotional, political, social, existential, and ethical complexities of this teaching and learning, and worse, students are left with inadequate preparation to engage these complexities. One such example of an oversimplification and rush towards optimism can be found in a Social Education article which includes a case study of a 4th-grade class implementing a solar energy installation (Morrison, & Sebens, 2016). Their project got a shout out from the White House in a tweet: "If these fourth graders can do something about climate change, there's no reason why we all can't" (para. 1). The article makes big claims about the value of the victory and the ways the students have become inspired to act. This text fails to contend with the complex nature of these problems which evade simple solution and the complicated nature of employing solar power as a solution to the climate crisis (Haukkala, 2019). This dissertation diverges from optimism as I seek to honor the complexity and affective nature of participant encounters with representations of climate crisis. Furthermore, in chapter 4, I theorize that optimism is a defense against facing the brutal impending and already unfolding climate crisis and that rather than supporting climate action, it makes comfortable inaction. Attending to the ways that denial, deferral, worry, and ambivalence are circulating in this teaching and learning requires acknowledging its emotional complexities and the impact that has on meaning making

processes. These affective components muddy the water of teaching and learning in ways that illude simplicity and are uninterested in optimism.

Conclusion

The urgency of the problem taken up by this dissertation is that social studies education and schools more generally have failed to engage young people in climate crisis in ways that honor the complexity of this issue and its burning relevance in their lived and future experiences of the world. This dissertation seeks to inquire into this problem through an exploration of the question *what are the implications of engaging climate crisis in social studies education?* In this chapter I have introduced the problem and situated this study in social studies education by reviewing existing literature and delineating key differences where this study diverges from the existing bodies of scholarship.

CHAPTER 2

THEORETICAL FRAMEWORK

The present tense is most appropriate for discussing the impacts of climate crisis in many cases (Wallace-Wells, 2019). More than nine million people a year are killed by air and water pollution (McKibben, 2019). One million species are at risk of extinction as a result of unmitigated climate disaster and the "planet's life-support systems are approaching a danger zone for humanity" (Watts, 2019). Fourteen of the world's largest twenty cities are currently facing water shortages (Wallace-Wells, 2019). Climate crisis caused food shortages could result in half a million deaths by 2050 (Springmann, et al., 2016). Changes in global climate are already responsible for a measurable reduction in worldwide crop yields over the past decades (Wiebe et al., 2015). Climate crisis will likely cause increases in war and violence as resources become scarcer (Hsiang, et al., 2013). Ocean levels are predicted to rise (IPCC, 2018), droughts are predicted to lengthen in many parts of the world (IPCC, 2018), and flooding is predicted to change food production systems (Gray, 2019). Much of the central United States experienced catastrophic flooding in 2019 not seen in more than 50 years that washed away crops and topsoil (Garrison, 2019). During the summer of 2019, hundreds of people died in Europe's extreme and sustained heatwave (Specia, 2019), and the arctic experienced unprecedented wildfires (CAMS, 2019). The American Medical Association, American Academy of Pediatrics, and American Heart Association issued a dire and urgent call to

recognize climate crisis as a health emergency- one that has already arrived (Berbenger, 2019).

These changes in climate have calamitous consequences, both human and non-human. In addition, our planet is experiencing a slew of other environmental harms, beyond the scope of climate. Lead leaching pipes are poisoning the children and the ecological community of Flint, Michigan (Butler, et al., 2016), a situation not unique to Flint. Issues of waste and toxic spills including the infamous Exxon-Valdez and BP Oil Spills have tremendously impacted vulnerable and economically depressed communities. Resource extraction processes cause water and air pollution which have resulted in devastating cancer clusters (Hitt & Hendryx, 2010).

The headlines delivering both the news and political response are difficult to bear: "Amazon Deforestation Accelerating Towards Unrecoverable Tipping Point" (Watts, The Guardian, July 25th, 2019); "Biodiversity Crisis is About to Put Humanity at Risk, UN Scientist Warn" (Watts, The Guardian, May 3, 2019); "Melt Ponds Open in Artic as Permafrost Melts at Levels Not Expected Until 2090" (Perrone, The Independent, June 14, 2019). NBC News declared "Without Swift Action on Climate Change, Heatwaves Could Kill Thousands in US" (Jeffrey-Wilensky, NBC, June 16th, 2019).

We are so frequently and necessarily reminded of the distance we have to travel: "The Pentagon Emits More Greenhouse Gasses than Portugal" (Reuters, The Guardian, June 12, 2019); "Environmental Journalists get Killed for Their Work" (Schapiro, The Guardian, June 22, 2019); "Climate Inaction Catastrophic" (McGrath, BBC News, 2014). The consequences of climate crisis are not abstract, they are not for other people in poorer places, or for other species, as we have so comfortably deferred for so long.

To add to the devastation of this news, headlines are reminding us of the ways that this is a human-caused emergency and that our collective political will seems to be lacking: “White House Tried to Stop Climate Science Testimony” (Friedman, New York Times, June 8, 2019); “Trump Campaign Selling Plastic Straws Because Liberal Paper Straws Don’t Work” (Rosenberg, Washington Post, July 19, 2019); “83 Environmental Regulations Rolled Back Under Trump” (Popovich, et al., New York Times, June 02, 2019). In an opinion piece in the Washington Post (May 7, 2019), Kathleen Parker declared “nothing in today’s headlines compares to the coming catastrophe” and reminded us bleakly that “one day you have a thousand problems, the next day you have one” (Parker, 2019). In the New Yorker, Jonathan Franzen articulated that the planet “resembles a patient whose terminal cancer we can choose to treat either with disfiguring aggression or with palliation and sympathy” (2015) and that we must face the inevitable impending collapse.

The problems of addressing climate crisis seem to go beyond just knowing about it. This information circulates widely, and yet we are not doing enough about it. This invites questions about the persistence of such inaction and explorations of what role education might play in teaching about climate crisis if just knowing the information does not seem to help. I am drawn to the theoretical notion of *difficult knowledge* (Britzman, 1998, 2000; Pitt & Britzman, 2003) because of its ability to illuminate possible theorizations of our collective anxiety, inaction, and ambivalence regarding the existential challenge of climate crisis and the ways these manifest in both big and small ways in classroom encounters. The theory of difficult knowledge frames and foregrounds psychical experience “versus opinion, attitude, belief, position, view, or even concern- to

open our capacities as researchers and practitioners to get at this complex mixture of anxieties, ambivalence, contradictions and yes, aspirations and desires" (Lertzman, 2019, p. 29). Such entanglements require foregrounding "the ways that the encounter between the reality of the world and the students learning about that world is brimming with the potential to animate our emotional lives" (Garrett & Alvey, 2020, p. 3). I have employed difficult knowledge in this dissertation towards this endeavor.

In this chapter, I introduce the theoretical concept of difficult knowledge and explore how this concept has been employed by other scholars before explaining its usefulness in this project. I will describe how difficult knowledge operates in relation to the pedagogical circumstances of climate crisis education and explain where I felt the theoretical notion of difficult knowledge reached the edges of its helpfulness.

Defining Difficult Knowledge

Difficult knowledge "induces a breakdown in experience forcing us to confront the possibility that the conditions of our lives and the boundaries of our collective selves may be quite different from how we normally reassuringly think of them" (Lehrer et al., 2011. p. 8). Such an encounter with knowledge can be destabilizing, it can induce anxiety, anger, frustration, silliness, it can cause us to ignore the knowledge, to actively resist its existence, or to reorient ourselves in the world. It can cause us to think or act differently or not think or act differently. In the ecological trauma of the Anthropocene, Britzman's (1998, 2000) notion of difficult knowledge provides a framework for theorizing pedagogical encounters with such information and imagining the demands of such teaching and learning. It is important to note that difficult knowledge is not a stable or identifiable set of facts, rather a "psychical engagement between a person and

information that has to do with the suffering, pain, and trauma of others" (Garrett, 2011, p. 330). Its usefulness here is that it can help us focus attention on the processes and challenges of learning from the trauma of others, facing our own implications in that trauma, and in making sense of how we might be moved through uncertainty toward some sort of agentive action in the residual wake of that trauma. Given that difficult knowledge is always a contextualized and individual experience, Pitt and Britzman (2003) have defined it as "the representation of social trauma and the individuals encounter with them in pedagogy" (p. 755). As a concept, difficult knowledge recognizes the affective and emotive experience of encountering "painful and traumatic curriculum that represents history as the woeful disregard for the fragility of human life while seeking to create new meanings from the ravages of humanly induced suffering" (Britzman, 2013, p.100).

The news of climate crisis and environmental disaster might function to disrupt our previous pictures of the world, it can be emotionally upsetting, and it can demand radically different understandings of ourselves in relation to the world. In this dissertation, I will illustrate these processes as they manifest in teachers' stories about teaching climate crises. Accounting for these processes, I needed a theory that would allow me to theorize contradictions, ambivalences, desires, and aspirations as they surfaced in the data. For instance, teachers will identify an ideal way to teach about climate crisis but readily admit to teaching in nearly opposite ways- difficult knowledge helps make sense of such a knot of desire, action, contradiction. In the following subsections I briefly outline the theoretical roots, define key terms and ideas of difficult

knowledge, and finally, explain how I conceptualize an expansion of difficult knowledge to still unfolding climate crisis.

Theoretical Roots of Difficult Knowledge

Difficult knowledge finds its theoretical roots in psychoanalytic theory. The purpose of which is "to provide space for individuals to expand their capacities to understand, tolerate, and potentially refashion their orientation to the dramas of their lives" (Garrett & Alvey, 2020, p. 5). While a complete explanation of these roots is beyond the scope of this dissertation, psychoanalytic theory as employed through difficult knowledge offers helpful tools to theorize the defenses against knowing about the climate crisis that seems so prevalent.

Inside and outside classrooms these defenses often manifest as avoidance of these topics altogether. They allow us to make comfortable our understandings which draw on the fairy tales about the slowness of climate crisis, engage in moves of distancing, excuse-making, or outright denial. In psychoanalytic theory, emotions are an indicator of the ways in which people are making sense of and connecting to the world beyond themselves. The language and construct of an unconscious assumes that the ego has both conscious and unconscious ways to process and disengage from uncomfortable psychological responses. Anna Freud (1967) termed these unconscious responses as "ego defense mechanisms", and among them are denial, displacement, repression, and rationalization. These are unconscious mechanisms which occur in order to reduce anxiety. These psychological strategies are employed by the unconscious mind in order to manipulate, deny, defend, or distort anxiety and the impulses it may induce which are socially or consciously unacceptable. These unconscious defenses may manifest in ways

that are healthy or unhealthy but always function to remove us from the most painful and anxiety producing part of encountering harmful circumstances.

Unconscious ego-defense is perhaps a more generous theorization of what Wallace-Wells called “willful delusion”. Turning away from the difficult knowledge of complex ecological problems is perhaps both willful and unconsciously defensive, and it is impacted by larger discursive affordances and constraints. On the basis of these psychodynamic dynamics, Gross and Terra critiqued difficult knowledge, writing that “the fact is, not all difficult histories induce melancholia or trauma, even if they make some people angry or resistant” (2018). However, psychoanalytic theory here helps make sense of the ease with which we contribute to our own and collective destruction, and possible extinction. Britzman argued that difficult knowledge demands “working through of the defense and the resistance to reorganizing one’s ego boundaries in such a way that the original defense against encountering the other is not reenacted” (Britzman, 2000, p. 42). It is both unconsciously and consciously uncomfortable to face the consequences of a changing climate. Facing this and working towards the other side of the despair that is born at this moment is the pedagogical challenge of engaging difficult knowledge in the classroom.

The Discursive and Defended Subject

At the heart of the psychical dynamics underpinning the theoretical notion of difficult knowledge sits a discursive and defended subject. The defended subject may not know why they experience or feel things in the ways that they do- this makes the role of the interpretive analysis key and requires a refrain from wholesale acceptance of articulations about why particular experiences feel particular ways. This theorization of a

subject requires attention to inconsistencies, contradictions, and conflicts (Hollway & Jefferson, 2012, p. 65). Because of the unconscious dynamics at play and the impossibility of research participants to articulate such undercurrents, researchers are dealing with "ambiguous representations" (Riessman, 1993) of the thing under study. In both difficult knowledge and the psychosocial research methodologies informing this project (chapter 3), these ambiguous representations are produced by the defended subject (Hollway & Jefferson, 2012, p. 22). The participants in the study are invested in particular positions in discourse to protect vulnerable aspects of themselves and defend against discomfort in a variety of ways; they are inherently full of ambiguity and contradictory desires. Participants are unlikely to be able to articulate these discomforts or their defenses against them and so interpretive methodology is necessitated. While defended subjects are motivated, largely unconsciously, to disguise the meaning of at least some of their feelings and actions, in the case of a student-teacher relationship they may also have a conscious investment in shielding against vulnerability.

In contrast to poststructural turns and understandings of discourse, psychosocial methodology argues that discourse is "insufficiently cognizant of the psychological processes whereby the recursive formation of selves within their life settings is not only mediated by complex material, discursive and relational influences but also by dynamic, intersubjective, unconscious processes" (Hollway, 2006, p 466). This makes it possible to consider dominant discourses and their language, influences, functions, and manifestations while continuing to assume the importance of something that is distinctly inner. This inner experience is not unimpacted by available discourse. Distinct from some psychoanalytic understandings, psychosocial methodologies understand inner

experiences as more than just psychological or individual, instead arguing that "anxiety and the defenses which it precipitates are complex responses to events and people in the social world, both present and past" (Hollway & Jefferson, 2012, p. 21) and that defenses against anxiety affect the discourses through which people perceive the world. Producing data with defended subjects requires refraining from the assumption that subject and researcher have the same frames of meaning. Defended subjects may not know why they feel or experience things in the ways they do, and their articulations of experience cannot be assumed to be complete or accurate. Defended subjects are interested in particular positions and discourses which protect the vulnerable aspects of themselves and may be motivated to disguise the meanings of some of their feelings or actions. For these reasons, the interpretive role of the research becomes paramount in making meaning of the residue of these psychical dynamics within both difficult knowledge and psychosocial qualitative inquiry methodologies (further explored in chapter 3).

While encounters with such difficult knowledge are deeply and profoundly personal, they are also connected to larger discursive availabilities. Discourse here refers to the language and the ideas they shape and allow which "encodes values that shape thought in giving voice, even silently, to their speakers" (Goldberg, 1993, p. 9). In this way discourse is both implicit and explicit. Discourse defines not just what is meaningful or speakable, but also what is thinkable. Discourse operationalizes society, it provides the "most basic categories of understanding and thought" (Bové, 1995, p. 54). It is all the "ways of representing, believing, valuing, and participating with all of the sign systems that people have at their disposal" (Rogers, 2004, p. 7).

Discourse produces possibility and assumes language functions to be separate from the intention of the speaker (MacLure, 2003). Discourse makes possible our construction of the world, as a precondition of all thinking, knowing, and being. A study of this language seeks to reveal the ways that discourse manifests and uncovers relationships to power and knowledge, while recognizing that these relationships are collectively constructed and not inseparable from our inner emotive and psychical worlds, both conscious and unconscious. The discourses available now are not inevitable nor are they unchangeable, but they are disseminated and reified again and again through mechanisms and expressions of power. For a defended subject, this definition of discourse might mean that anxiety resulting from learning about climate crisis is immediately rerouted unconsciously to the idea that the problems will be solved by capitalist markets, or even more seriously, to responses of climate denial.

The defended and discursive subject is assumed by both the theoretical notion of difficult knowledge and the psychosocial qualitative inquiry methodologies employed in this study and described in chapter 3. The inner play between inner and outer worlds acknowledged by a defended and discursive subject is key for "inquiries into how individuals are fashioning significance out of their encounters with curriculum about current issues" (Garrett & Alvey, 2020, p. 5). This recognition is key for these inquiries because the inner world constituted of emotion and the associated psychical maneuvers are not extra to the outer world of classroom engagement and discussion but are instead an inseparable and inescapable part of the whole.

In this subsection I have defined key assumptions about the discursive and defended subject which are shared by the theoretical notion of difficult knowledge and

the psychosocial qualitative inquiry methodologies applied in this dissertation project. In the next section I will define the related concept of emotion as it is employed in this project. The concept of emotion described shares assumptions of interaction, often unknowable, unpredictable, and inarticulable, between the inner psychic dynamics and outer discursive conditions.

Defining Emotion

Attending to the emotional complexities and considering "how humans manage psychological conflicts such as guilt, ambivalence, shame, anxiety and uncertainty has yet to fully enter into our work on engaging with people effectively about climate change" (Lertzman, 2020, p. 64). Difficult knowledge provides possibility for such inquiries. This study can best be situated in an interactionist understanding of emotion (Zembylas, 2007). While authors in the field of social studies may assume a common understanding of what makes up emotional experiences, there are a range of discourses and understandings as the field of social studies engages these topics (Sheppard, et al., 2015). Crystallizing the ways that method and theory define emotion is important because "there is no single, generalizable theory of affect: not yet, and (thankfully) there never will be. If anything, it is more tempting to imagine that there can only ever be infinitely multiple iterations of affect and theories of affect" (Gregg & Seigworth, 2010, p. 3). Zembylas' (2007) framework on the conceptions of emotions describes that emotions might be conceptualized in one of three categories: as individual experience, as sociocultural construct, or as interactive performance. Within this framework, "each category is shaped by epistemological assumptions and theories that focus attention on different possibilities for how emotions can or should function in educational settings"

(Sheppard, et al., 2015, p. 152). Individual theorizations of emotion assume that these experiences are private, personal, and come from within. For example, research which assumes this orientation "tends to focus on the feelings and behaviors of individuals, analyzing the cause and effect of emotions, and does not take into account the sociocultural and historical contexts or power relations surrounding the individual's response" (Sheppard, et al., p. 153). A Sociocultural understanding assumes a situated nature of emotions as cultural objects imbued with sociocultural elements. The third category is interactionist and performative; here emotions are "neither rooted in the individual's psyche nor shared by all within a group, but they are dynamic, influenced by the individual and the social context" (Sheppard, et al. 2015, p. 161). As discussions of climate crisis and other environmental issues unfold in the classroom, emotions are unpredictably, unevenly experienced, and evade easy articulation. The recognition of such a fabric of classroom life makes it impossible to locate emotion as solely individual or as only shared and shaped by social environment. This category advocates the breakdown of the binary between emotions as personal or as social, recognizing they are both. Undertaking these assumptions about the meaning of emotion requires "attention to the *embodied* experience of meaning, by attending to the connections between feeling and meaning that are most often *performed* in the classroom" (Sheppard, et al., 2015, p. 153).

This project and those following psychosocial research inquiry methodologies might be best situated in the category Zembylas (2007) terms "interactionist". These are understandings of emotion and affect which follow the work of Ahmed (2004) who argued that emotions cannot be located outside or inside individuals but rather produced

among and between subjects and the objects they encounter and that "emotions shape the surfaces and boundaries that allow for the delineation of objects and others" (Sheppard, et al., 2015, p. 152). In other words, emotions are both interior and exterior and the residue of interactions with the world. These understandings work to diminish the binary between sociocultural and individual conceptualizations of emotion and attend to the ways emotions are performed. In this study, this means attending to connections between feeling and meaning and the performance of these experiences in classrooms. For example, I argue that the ways teachers feel about climate crisis impacts their ability to make sense of the content and also shapes their classroom enactments. This also requires an acknowledgment of the range of emotional responses and experiences that may occur even within a shared context. Importantly for this project's use of a theory of difficult knowledge,

> It is also in this interactionist and performative conception that emotions are critically theorized as sites of control and resistance. There are bodily and linguistic expressions, or performances, of emotions that need to be attended to in order to understand how emotions enact or resist relations of power roles in schools and classrooms (Sheppard, et al., 2015, p. 153).

This understanding of interactionist emotional conceptualizations utilized with difficult knowledge opens important avenues for exploring how teachers are making sense of climate crisis, how they are defending against that knowledge, and how it may produce a relation to knowledge which includes anxiety, worry, and grief. Notions of control and power as part of this understanding of emotion also help make sense of articulations of

action and inaction through the theory of difficult knowledge and by employing psychosocial qualitative inquiry.

While emotion is under-included and under-theorized in social studies education, most research in the field which does attend to emotion draws on these sorts of sociocultural understandings of emotion (Sheppard, et al., 2015). However, there are notable exceptions which demonstrate the possibilities of an interactionist understanding of emotion theorized in the social studies classroom. Among these exceptions are Garrett's (2011) psychoanalytic inquiry into the ways that preservice teachers route and reroute around discomfort in discussing their relations to knowledge and experience of Spike Lee's film *When the Levees Broke*. In this analysis, emotions are conceptualized as clues which provide insight to the ways that people make connections to the world around them. Emotions are psychically inner and also in relation to teaching and learning, they move and route and interact. Reidel and Salinas' (2011) empirical study centers emotion to theorize classroom discussions. The attention given to power and culture, the recognition that emotions are performed, along with a resistance to emotion as individualized demonstrate the interactionist theorization of emotion employed in their work. They used the study to argue that while much of social studies literature calls for rationalized discussions "[w]e cannot outlaw emotions in our classrooms". Instead, they argued that teachers should "choose to engage in inquiry with their students about the ways in which attending to emotion can deepen our understanding of diverse perspectives" and to see "emotion as a resource rather than as a problem" (Reidel & Salinas, 2011, p. 18). Another example of interactionist understandings of emotion in the field of social studies education can be found in the work of Garrett and Alvey (2020). In

this empirical study drawing on a brief segment of a classroom discussion on gay marriage, we theorize the vitality of considering emotional processes as inherent parts of political discussion and accommodate the emotional realities that ensnare learning. This argument is made through a close study of the ways that three particular emotional responses are circulating, including aggression, withholding, and reversals. We recognize an entanglement of the inner and deeply personal experience of these emotions and the inseparable entanglement with the ways it is performed, cultural, and influenced by commonly available discourses around gay marriage. Each of these examples of interactionist theorizations of emotion further build the case "to consider the emotional aspects of political issues and further lend significance to the dynamic nature of affective experience as exhibited through embodied and articulated symbolizations that occur" (Garrett & Alvey, 2020, p. 20) in classrooms.

Overview of Social Studies Literature Employing Theories of Difficult Knowledge

The concept of difficult knowledge has been employed in several fields and further developed by scholars seeking to understand pedagogical encounters with trauma. This scholarship has been particularly robust in museum studies (e.g., Blumer, 2015; Lehrer, et al., 2011; Sharma, 2015; Simon, 2011). Scholars in art education (e.g., Cohen-Evron, 2005; Gil-Glazer, 2015), history education (e.g., Levy & Sheppard, 2018; Farley 2009), language arts (e.g., Becker, 2014; Tarc, 2011), and social justice education (Sliwinski, 2005; Taylor, 2011) have also been considering the renderings of such pedagogical encounters in their fields and developed this idea in productive and helpful ways.

In social studies education, difficult knowledge has been used recently to explore psychoanalytic understandings of trauma in encounters with topics including Canadian Indian residential schools (e.g., Miles, 2019); the Holocaust and Palestinian Refugee crisis (e.g., Goldberg, 2017); death (e.g., Stylinou & Zembylas, 2020); gay marriage (Garrett & Alvey, 2020); and the aftermath of Hurricane Katrina (Garrett, 2011).

In order to understand how this theoretical notion has been employed in empirical work in the following paragraphs I will outline examples from scholars who have employed it in their work. These examples demonstrate the methodological diversity which can be used in conjunction with difficult knowledge. These examples are each built on the foundational assumption that the emotive experience of learning is inseparable from the more rational components, "this line of inquiry reminds us about how emotions and knowing are inextricably linked" (Troankeno, 2011, p. 485). In each of the examples situated in social studies elaborated below (Farley, 2009; Miles, 2019; Goldberg, 2017) ideas important in this dissertation, including uncertainty and aspiration and ambivalence, have surfaced.

Wrestling with attachments to certainty, like those explored in chapter 4, Farley (2009) employed difficult knowledge to theorize questions about curriculum, teaching, and learning which puts at stake cultural devastation. She argues that an embrace of uncertainty and recognition of the vastly unsettling potential of classroom engagements push back against pervasive narratives around "protecting the child" and developmental models of instruction. Difficult knowledge, she argued, provides not a set of prescriptive skills for classroom teachers, but instead a way to think about the "ethical obligations, ontological crisis, and anxieties at play at work in efforts to teach and learn" (p. 538)

about history which is difficult to encounter. Ultimately, in the wake of such uncertainty, unknowability, crisis, and anxiety, Farley called for a "radical hope", a term used to honor the complexities of enduring the "disillusion of the promise of certainty" (p. 538) and simultaneously holding onto the capacity to imagine hopefully towards the future. Difficult knowledge (Britzman, 1998) was enacted in Farley's work as it allows a theorization of the ways that teaching and learning about historical knowledge in ways that seek to transmit to students that focusing only on the facts is inseparable from the very anxieties such a factual emphasis hopes to avoid and calm. Farley described that this theoretical notion, "raises questions… about the limits of reason in thinking about the breakdown of meaning in history and our efforts to make sense of it, and… poses questions about the disillusionment of certainty as the grounds for both learning and hope" (p. 539).

The unpredictability of student response as well as the existential implications explored in Miles (2019) are common themes with this study. Miles used difficult knowledge in an empirical study to analyze student encounters with images of historical trauma, specifically Canadian Indian Residential Schools. He finds that students respond to these images in unpredictable ways, and this raises questions about ethical considerations of the classroom inclusions of images of the suffering of others. Miles argued that the unpredictability of student responses to objects of knowledge, in this case the photographs, illustrate that the difficulty of knowledge is "not just because of its potentially troubling content, but also because of its power to disrupt, unsettle, and implicate the identities and self-images of learners" (p. 475).

Pointing to the limits of idealization as well as exploring tensions in what is included in official curricular offerings, issues explored in chapter 5, Goldberg (2017) explored the ways a psychoanalytic trauma-centered perspective offers in considering the teaching of difficult histories in Israel with particular attention to the Holocaust and the Palestinian refugee crisis. Goldberg points to the differences in the two difficult histories, one codified by curriculum and institutions and the other hampered by inconsistent curricular policy and student resistance to classroom inclusion. Difficult knowledge offers a way to focus on trauma and testimony as well as explore and theorize the idea that "idealization does not allow for working through loss and trauma, which entails being touched by the loss and engaging in mourning" (p. 351). Goldberg also makes use of Britzmans's (2013) call for "authentic engagement with uncertainty and unfinished stories" (p. 351) to argue for pedagogies of remembrance and demonstrate the risks and possibilities of difficult histories.

These examples demonstrate some of the ways that difficult knowledge has been employed as a theoretical concept to inquire into pressing issues of teaching and learning which can be painful, unsettling, anxiety producing, and cause us to make new relations to knowledge. Similarly to this project, these scholars have recognized the inseparability of emotion and anxiety from teaching and learning and have employed Britzman's understandings of the complex and challenging nature of such pedagogical encounters. These articles provide examples of the possibilities of the employment of Britzman's difficult knowledge for theorizing encounters with both historical and contemporary topics in the field of social studies education.

Difficult Knowledge and Climate Crisis

"Teaching climate change makes me extremely nervous. Honestly, I just don't feel educated enough in order to teach it…people say 'when you have mastered something, that you can teach it'…I have certainly not mastered climate change. I think the seriousness is also a daunting thing…it is easy to teach about past events (even horrible ones, like the Holocaust) but something about teaching about a current crisis is scary and I certainly don't want to get anything wrong." -Brett

My employment of the theoretical framework of difficult knowledge rests on the assumption that it can, in fact, be a deeply affecting, emotional, destabilizing and anxiety producing experience for both teachers and students to grapple with information about the realities of the climate crisis. The emotional and affective nature of encountering the truth of climate crisis has been well documented in accounts of climate grief and anxiety. As evidenced by the participant quote opening this section, engaging issues of climate crisis as a matter of pedagogy can be an emotional and anxiety producing process for both the teacher and the learner. The following section builds the case for the consideration of the pedagogical and curricular implications of engaging climate crisis with the consideration of emotional and psychical dynamics front of mind.

There are a wide range of emotional responses to climate (Leiserowitz, et al., 2020). While these feelings and their manifestations may be further muddied and complicated through the filters of school, two-thirds of Americans declare that they are at least "somewhat worried" about global warming, an increase of nearly 15 points over an identical survey conducted just five years ago in March of 2015 (Leiserowitz, et al., 2020). This same study asked people to reflect on how strongly they feel particular

emotions when thinking about climate change (Figure 4). Nearly 20 percent identify feeling panicked, and only 39 percent report feeling not at all anxious. Such emotional investments in climate transcend the classroom and the emotional investments in climate can be seen in a myriad of manifestations. The online dating site OKCupid started allowing its users to choose who they date based on whether the potential partner is concerned about climate change. This feature has been wildly successful, as more than 80% of date seekers will not go on dates with climate deniers (Atkins, 2020). These represent strong emotional investments in the circumstances of climate crisis along with evidence of entanglement with behavior change, in this example, a change in dating patterns. This is evidence of the intimate connection between what we understand about climate change and our practices of living and being with others. The emotional implications of climate change across a range of feelings are clear. People are engaging with this content in ways that are more than rational.

In the following sections, I will attend to the connections between climate crisis and difficult knowledge. I will begin by exploring the disruption of "lovely knowledge" that is central to how I understand the synergies

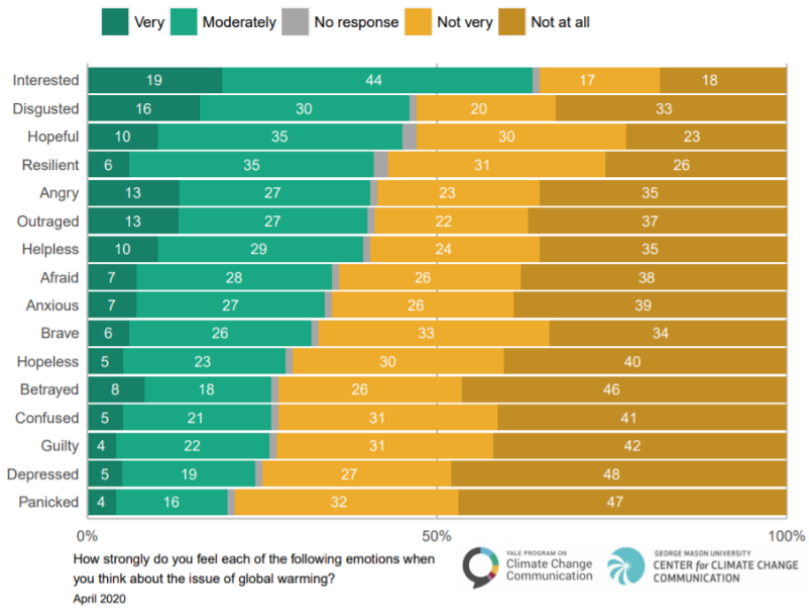

Figure 4: Emotions in Response to Climate Crisis

between this theory and topic. I will then explain my extension of difficult knowledge to consider encounters with still unfolding harms, as is necessary to use this theory in conjunction with issues of climate crisis. Then I will argue that the surfacing of climate grief and eco-anxiety are manifestations of the ways that climate crisis is being experienced as difficult knowledge beyond this dissertation. I will then spend significant time explaining how I understand this to be a pedagogical problem.

Disruption of Lovely Knowledge

Lovely knowledge (Pitt & Britzman, 2003) is the knowledge we love, want, and take comfort in. There is often great disparity between what we want to learn and the realities of what we learn. There is tension between the knowledge we desire, that we must let go of, and the knowledge we encounter as we learn about the often bleak, anxiety inducing, heartbreaking, frustrating realities of the world. Examples of this can be found as we desire examples of benevolent assimilation and instead find the horrors of colonialism, or when want to see that civil rights progress marches linearly forward and instead we find atrocities ongoing and out of sequences with such a narrative. In the case of climate crisis, we might love and take comfort in the idea that there will be a technocratic solution which makes possible the continuation of our lives unchanged. One such lovely imagining I read in preparing this dissertation was an account of giant space umbrellas, reflecting the sun's energy back out into the galaxy (Gorvett, 2016). We might love and find comfort in the notion that climate crisis will happen a long time in the future, or only to people in other parts of the world. As we learn about the realities of climate crisis, these previous understandings are forced to fall away- we are left in the aftermath of loss. The loss of this lovely knowledge is what is so anxiety producing, it is

what invokes defense and ambivalence, and it is what makes up the relations of difficult knowledge.

Of the unfolding climate crisis, David Wallace-Wells (2019) wrote that "it's worse, much worse than you think. The slowness of climate change is a fairy tale" (p. 3). In addition to this slowness, we tell ourselves other "lovely" fairy tales: that this will happen to other people, that it will be in other parts of the world, that it will not be as bad as they say, that we will rise to the occasion before the consequences are dire, that the next generation will solve it, or that this simply cannot be true on a human time scale (McKibben, 2019). We have been buying escapism with our Netflix subscriptions (Wallace-Wells, 2019) and collectively turning away. The knowledge of environmental devastation is often knowledge we would rather not know. Uncovering a more accurate picture and deconstructing these fairy tales- both those told to us and those we construct- requires that we face the bad news. The *really* bad news. Such teaching requires tact and attentiveness to the experience of learners as previously held "lovely knowledge" (Pitt & Britzman, 2003, p. 766) crumbles.

Extending Difficult Knowledge to Impending Harm

While difficult knowledge has most often been used to interpret pedagogical encounters with historical traumas like genocide, war, slavery, or lynching, I extend that climate crisis might also be defined through the theoretical framework of "difficult knowledge" (Britzman, 1998, 2000; Pitt & Britzman, 2003). The anticipation of future human-induced suffering becomes an important addition to existing theorizations of difficult knowledge in considering climate crisis. These pedagogical encounters are not only reckoning with the past, but a brace into the already and impending, accelerating,

and unknowable future storm. Difficult knowledge requires "having to tolerate the loss of certainty in the very effort to know" (Farley, 2009, p. 543), and this loss of certainty is heightened by the still impending and unfolding nature of climate crisis. Certainty and its loss are important here because it allows us to continue on without knowing what will happen next. At stake if we cannot tolerate the loss of certainty are the possibilities of fear, anxiety, defense, distancing, trauma, or melancholia.

Our own implications and personal experiences cannot be disentangled from this in the same ways that we might be able to distance ourselves from the horrors of historical trauma even as they disrupt our existing "lovely knowledge". This is an important distinction from previous bodies of work on difficult knowledge because the inability to intervene is a central tenant of what makes difficult knowledge traumatic. Britzman (2000) wrote: "[w]hat makes trauma traumatic is the incapacity to respond adequately, accompanied by feelings of profound helplessness and loss, and a sense that no other person or group will intervene." (p. 202). If catastrophe is still to come, as, in the case of climate crisis, there remain important and significant agitative options towards action and intervention.

In addition to considering suffering into the future, environmental issues might require us to consider not just "engagement between a person and information that has to do with the suffering, pain, and trauma of others" (Garrett, 2011, p. 330), but also of ourselves. This might include both currently tangible and future imagined impacts of climate crisis. In a chilling account, Bendell (2018) reminded us that the impacts of climate crisis will be closer than we might currently be able to imagine: "when I say starvation, destruction, migration, disease, and war, I mean in your own life" (p.13). He

goes on to paint the bleak picture, “with the power down, soon you wouldn't have water coming out of your tap… You will become malnourished. You won’t know whether to stay or go. You will fear being violently killed before starving to death” (p. 13). This might be experienced as difficult knowledge, for us and our students. It might also be experienced as alarmism, distanced, as a fraud, conspiracy, or dismissed outright as fake news. Despite the variety of ways this information may be processed, the unsettling nature of learning about climate crisis stands to be an interaction with information which might make us wish we did not know, we did not listen, or we did not come to school today. It might churn our stomachs literally and challenge our constructed understanding of what it means to be a human in the world. Sitting with this knowledge reminds us that we very well might be a “fragile civilization briefly erected on a slippery surface” (Wallace-Wells, 2019, p. 198).

In this subsection, I have argued that while difficult knowledge has most prominently been used to theorize historical events, it also provides important possibilities for making sense of how teachers experience encounters with already and still unfolding issues of climate crisis. In the next section, I attend more explicitly to the ways that knowledge of climate change is being experienced as more than rational and perhaps as difficult knowledge beyond the scope of this dissertation project.

Climate Grief & Eco-Anxiety

The difficulty of encountering knowledge of ecological crisis has started to emerge in research regarding mental health. The psychoanalytic and affective difficulty of encountering knowledge of complex ecological problems has started to emerge in research regarding mental health. “Eco-Anxiety”, “Climate Grief”, “Climate Burnout”

and “Climate Depression” have appeared as terms to describe the phenomena (Dickenson, 2008; Cunsolo & Ellis, 2018; Berry, Bowen & Kjellstrom, 2010). Van Susteren and Al-Delaimy theorized that the yet to unfold nature of many of the impacts of climate collapse warranted the term “pre-traumatic stress disorder” (Van Susteren & Al-Delaimy, 2020). The broadest term to describe distress produced by environmental crisis and the associated impacts is “Solastalgia”, which finds its linguistic and theoretical roots in the idea of melancholic nostalgia (Albrecht, 2010). These terms have surfaced fairly recently, but as early as the 1970s the field of eco-psychology was beginning to theorize the challenges of encountering grave environmental harm (Rosenfeld, 2016). In March of 2017, the American Psychological Association published a report which recognized the multitude of mental health impacts of climate crisis and includes a long list of symptoms that may result from learning about the climate crisis. A professional organization of mental health professionals concerned about climate, The Climate Psychiatric Alliance, argued that “climate instability is one of the most urgent public health threats of the 21st century. Mental health is profoundly impacted by the disruptions associated with climate change” (CPA, 2020).

The mental health impacts of the climate crisis will include both increasing trauma from the direct impacts of catastrophe like flooding, analogous to post-traumatic stress disorders, and the increased fear and anxiety people experience in anticipation and worry about the problems to come (Marks, 2019). Worry about climate change is increasing. 70 percent of Americans are “worried” about climate change and 51 percent reported feeling helpless; the number of people feeling very worried was reported at nearly 30 percent, up eight points from a poll just six months prior (Lwiserowitz, et al.

2019). One challenge the field of psychotherapy is facing at the moment is the notion that this worry is legitimate: “most of the time when we’re treating anxiety, we’re treating people who have unrealistic levels of anxiety”, and here that is not the case (Lewis, 2019, para. 7). This anxiety is heightened by our collective denials and deferrals: “while it may seem intuitive that those contemplating the end of the world find themselves despairing, especially when their calls of alarm have gone almost entirely unheeded, it is also a harrowing forecast” (Wallace-Wells, p. 136).

While researchers first noticed these sorts of eco-anxieties in the scientists who studied ecological catastrophe (Taylor & Murry, 2020), the field soon began to see this evidence of deeply emotional and affective experience in all sorts of people encountering the news of climate crisis and psychologists warn of anticipated increasing debilitating impacts for a growing number of people as the scientific reality of ecological collapse becomes all the more crystalized (Taylor & Murry, 2020). Many climate scientists trace an onset of more melancholia back to the failure of the Copenhagen COP 15 Climate Summit in 2007 (Richardson, 2018), and manifestations of these grief and anxiety-filled encounters with knowledge are plentiful. These experiences are particularly present for young people as they arrive in a world already marred by climate crisis. There are an increasing number of parents reaching out for psychologists for support in talking to their children about environmental destruction, and the field is seeing children as young as six display serious eco-anxiety and worry (Taylor & Murry, 2020). University students generally articulate that they feel both a great deal of anxiety, worry, or fear about environmental harm and that their education has poorly prepared them for the psychological impacts of confronting climate crisis (Kelly, 2017).

This seems to be part of the fabric of experiencing climate crisis well beyond the classroom. There is research that investigates the ways that climatologists are on the front lines of such dire mental health consequences (Van Susteren & Al-Delaimy, 2020). Guy McPherson, a professor of biology who became so disheartened by the situation he quit his job to move to an off-grid homestead in preparation for climate collapse said "civilization is a heat engine. There's no escaping the trap we've landed ourselves into" (McPherson in Richardson, 2018). This exemplified experience is part of the mounting body of evidence that lead Van Susteren to identify and term "pre-traumatic stress disorder". She noted that "so many of us are exhibiting all the signs and symptoms of posttraumatic disorder—the anger, the panic, the obsessive intrusive thoughts." The phenomena of eco-anxiety, climate grief, and pre-traumatic stress disorders, along with the associated impacts on young people are particularly relevant to this project as they demonstrate the need for teachers and students to recognize this as part of the way they are teaching and learning about climate crisis. These issues as a matter for consideration in teaching and learning are explored further in the following section on teaching in crisis.

Teaching in Crisis

While the predominant affective and emotional experience of students in classrooms often appears flat as children engage in playing school, the trends, and challenges in the field of mental health and the articulations of young people regarding how they are feeling about climate crisis described below demonstrate the emotional plume of engaging climate in the classroom. Difficult knowledge provides the theoretical space to attend to the responses which appear as apathy, disinterest, or detachment, but

are actually “representing more than a lack of interest. While it is clear that difficult histories impact individuals differently, we must continue to ask why it is that some learners are emotionally disturbed or resistant and others demonstrate little or no reaction” (Miles, 2019, p. 447). Teaching in crisis requires more careful attention to these responses. Van Kessel (2020) argued the existential threat of climate crisis requires attention to the psychical structures caused by facing the idea of death, “recognizing the interplay of fears of death and how people relate to each other is helpful as humans seek more harmonious ways of being together on this planet” (p. 134). Teaching from within the existential threat of climate crisis, a crisis on many levels, requires a recognition of this teaching as particularly laten with these fears and their impacts on our lives.

The nature of this as knowledge fraught with emotional complexity speaks to the urgency of pedagogies which work to appropriately engage Britzman’s call to go beyond just exposure to difficult knowledge but teaching and learning which is “willing to risk approaching the internal conflicts which the learner brings to the learning” (Britzman, 1998, p. 117). In the case of climate crisis, this internal conflict is born from the challenge of coping with personal culpability; every member of western society has a huge carbon footprint. Just in living “normal lives” we are making the emergency worse.

When young people are asked about their experiences of climate crisis, they articulate the emotional impacts of this circumstance. In a Guardian article from February of 2020, a young Australian describes what is happening as “overwhelming and terrifying”. In looking at images of catastrophic climate accelerated bush fires in her home province, she went on to say she felt her “heart cleave into two pieces” and was “absolutely distraught” (Taylor & Murray, 2020). In a study asking children from 6-12 to

paint images of what they expect the world to look like 50 years in the future, most children drew some apocalyptic images highlighting environmental degradation and run-away climate change (Banos Ruiz, 2017). During the Camp Fire in California in 2018, more than 4,500 school-aged children were displaced, making them part of a generation that will be "disproportionately traumatized" by the impacts of climate crisis (Worth, 2018). In response, educators in impacted school districts worked to employ trauma-informed practices. "For years now climate scientists have been saying that all these extreme weather events were in store. And now we are in an era of consequences. So, the trauma on children is just unimaginable" (Van Susteren, as quoted in Worth, 2018).

After watching her university students struggle with the realities of climate crisis over a decade of teaching, Jennifer Atkinson created a seminar titled "Environmental Grief and Climate Anxiety" at the University of Washington. When local news covered the new offering, she received some community push back in the form of phone calls, emails, and internet comments. Her students were ridiculed as "coddled", "wimpy", and called "snowflakes". Of the challenges faced by young people in this moment, she argued that "facing the hard truths of our climate crisis takes steady courage and a certain amount of grit. Today's students are reaching maturity at a moment when the scale of environmental disruption boggles the mind" (Atkinson, 2018, par 5). She contends that teachers must see the distress their students face and use it to frame their thinking about students: "direct engagement with today's biggest challenges is, nevertheless, the path many of today's students are choosing to follow. That doesn't make them snowflakes. It makes them bad asses" (Atkinson, 2018, par 12).

The emotional encounter with knowledge is part of the fabric of classroom life even when it is not visible, even when it does not present as anger or sadness or grief or hope or distress. Not every classroom conversation about climate or environmental harm can be expected to make visible its ruptures, but we can be sure that young people are encountering this knowledge and are affected by its realities. Pedagogical engagements with climate crisis are experienced by teachers and students as affective, emotional, and difficult events, regardless of attention to them as such. We are all on a sinking ship, the alarm bells seem broken, the difficulty of this knowledge is a heavy burden to bear. The ways in which we teach, our curriculum, praxis, and pedagogies regarding climate crisis are key, they matter, and they will have serious implications. The notion of difficult knowledge provides one possible way to theorize such emotional encounters and relations with knowledge.

There is also a loss of certainty that accompanies teaching and learning from within ecological crisis. Difficult knowledge is a relation, it is an encounter which impacts each learner and teacher differently. It is impossible to predict how emotion might materialize and circulate, or the ways in which students may engage defensive mechanisms to route and reroute, to distance or deny difficult knowledge the encounter in the classroom. In addition to the uncertainty of response, there is also uncertainty in content. All the people making lives in schools and classroom spaces bring with them conscious and unconscious ideas and language formed by the discursive availabilities of our society. How these may interact with one another is another matter of uncertainty in the fabric of an unfolding pedagogical encounter. Jansen (2009) importantly noted, “it is not simply the master narratives of the official curriculum or the controlling ideologies of

state examinations or the capitalist interests of the textbook industry that are at stake in the critical classroom" (p. 257). He went on to explain that "it is also the people there, the bodies in the classroom, who carry knowledge within themselves that must be engaged, interrupted, and transformed" (p. 258).

Both teachers and students will respond to this engagement and interruption in ways that are insufficient and unknowable. There are uncertainties as a pedagogical question as teachers try to anticipate what questions students may ask. There is discomfort in the crumbling of some previously held notion of what it means to be a human being living in a community with others. Pedagogies of difficult knowledge must leave room for the toleration of such inadequacies and uncertainties. The illusiveness of clear and straightforward solutions to the climate crisis and other ecological harms compounds the difficulty of knowing, of learning, and teaching about these issues. The unknown about what will come next, including how the global community may respond, how policy frameworks might unfold, and when, where, and how severely the consequences of climate crisis will manifest. These unknowns require a toleration of complexity and uncertainty.

Comfort with this uncertainty is key to these pedagogical engagements. Simon (2013) argues that pedagogies which forgo attachments to certainty for the purpose of offering engagements with difficult knowledge allow affect to be understood as "mobilizing thought about the substance and limitations of any given historical narrative and its significance, without attempting to guarantee in advance what this thought might be" (p. 200). The same argument regarding historical narratives holds in thinking about the role of uncertainty in pedagogical encounters around difficult environmental

problems. Imagining that classroom spaces and pedagogical encounters may provide room for such unknowability requires teachers and students to think in new ways about the nature of their work. As we encounter the force of difficult knowledge, new possibilities emerge. From this uncertainty, unknowability, and insufficiency, sometimes hope comes into view to meet the demands produced by encounters with difficult knowledge.

Climate Crisis as Pedagogical Conundrum

To simply know of climate crisis is not enough to cause people to act, to change their thinking, or their behavior. To know more does not always mean we do better. This is what makes climate crisis such a pedagogical conundrum. While the current crisis burdens teachers with the obligation to invite students to consider "collapse as inevitable, catastrophe as probable and extinction as possible" (Bendell, 2018, p. 17), to share this news with students may not have the intended impact. Again and again in this dissertation, teachers articulated pedagogical moves that were full of indication that climate pedagogies were not functioning as they hoped or articulated. In addition to the complexities of encountering the brutality, trauma, and pain of human inflicted suffering, are the complex challenges of curriculum and instruction which engage such urgent social, economic, and political issues which might be experienced by teacher or students as difficult knowledge. As Garrett wrote, "if learning about the most terrible parts of human history were not difficult already, then the difficulty is reordered and made more complex by the demand to make it the stuff of a lesson plan" (Garrett, 2011, p. 334). There is also the challenge of which Bigelow reminds us, "if we are not careful, we can easily paint such a bleak picture of the world's problems that all appears hopeless" (2002,

p. 25). In addition to this possibility of hopelessness, Simon (2013) wrote of the need for pedagogies which move students towards a bridge, "there is ample evidence that an awareness and moral assessment of previous unjust violence and brutality does not automatically constitute a bridge for linking the past and present so as to diminish the recurrence of injustice" (p. 207). This leaves teachers to grapple for ways to engage students in ways that might open them to ethical obligations (Todd, 2001).

There is also the startling and consequential assertion from Crocco et. al (2018) that following deliberative and evidence-based discussions in social studies classrooms, "few students changed their minds…even fewer students drew significantly on the evidence we provided them. Instead, students mostly used this opportunity to voice their already held beliefs" (p. 7). This sentiment is echoed by McAvoy & Hess (2013), "the solution to this partisan divide is not likely to be more or better information, because the divide appears to be grounded in ideology rather than a lack of information" (p. 16). These arguments asserting that facts do not always actually make us think differently explain why climate crisis is such a pedagogical conundrum. Schools are "a primary location of adolescent political socialization" (Crocco et al., 2018) and somehow simultaneously that it is "unrealistic to think that schools can be the remedy for what is a deep and multifaceted social problem" (McAvoy & Hess, 2013). The capacity of any pedagogical encounter to make any sort of difference is complicated, unknown, inarticulable, and necessarily limited. This adds to the infinite complexity of desire to teach in the direction of climate justice.

The tensions which entangle pedagogy and climate crisis include the limits of school and the complexities of teaching which aims to build salient lesson plans of

existentially challenging material. These complexities are entangled with the theoretical assumptions of difficult knowledge around ideas of defense, a disruption of lovely knowledge, interactionist understandings of emotion, anxiety, worry, and grief. While helpful in many ways in this project, difficult knowledge is not the only way I can imagine making sense of the challenges engaged and data collected in this dissertation. In the next section I will highlight some of the limits of difficult knowledge as I encountered them in my work on this project.

Usefulness and Limitations

I have employed difficult knowledge in this dissertation because of its usefulness in making sense of why facts don't move people to action and its importance in grappling with the complexities of "learning to face what is most undesirable about feeling and being human in a world teeming with unspoken atrocity" (Tarc, 2011, p. 369). Difficult knowledge informs the primary arguments of this dissertation: that it is ambivalence that prevents action, not a lack of care, and that lack of robust imaginings for a world post climate crisis increases the toleration for the tragedies of climate crisis. I was also drawn to difficult knowledge because of my own experiences of climate crisis education being deeply affective, difficult to process, unsettling, and demand that I reconsider what it means to be in the world with others. It acknowledges my own experience of learning and teaching about climate crisis as emotionally imbued and fraught. Difficult knowledge helps me theorize the data in a way that acknowledges those experiences as a legitimate and important part of the work of teaching this content in social studies or anywhere else.

In an example of encounters with climate crisis as emotionally entangled, I think of a conversation I had with a community organizer, in which I experienced climate crisis

as difficult knowledge. He had been doing climate justice work for decades in all sorts of interesting and community-based ways. I was a freshman in college and actively engaged in thinking about climate and environmental justice, particularly around issues of mountain top removal coal mining in my home state of Kentucky. I met him at a coffee shop to pick up some red wiggler worms for an indoor compost system I was building in my apartment. With great calm and certainty, he spoke about the extinction of our species. He told me, "we just have to become okay with the idea that humans will become extinct. Our work is to make that extinction as equitable and justice filled as possible". It was jarring, I remember the chair I was sitting in and the coffee I was sipping. It was the first time I ever heard anyone talk about extinction as a possible outcome of climate crisis. I often think about how difficult it was to rectify the thought of extinction with how I understood the world and the purpose of my work. After feeling jarred, I was sad, then angry, and then full of disbelief, and then resigned, and then angry again. I still don't know how to make sense of extinction as a possible outcome of climate crisis- it's too big, too scary, too sad, too impossible, but also a legitimate possibility. My affective experiences of encountering this idea for the first time are inseparable from my attempts to make sense of it. There is a relationship between feeling and meaning. Difficult knowledge helps me understand why the feelings I experienced are so integral to this meaning making and the ways that learning can be so unsettling, destabilizing, and disruptive, and furthermore how that might impact the way I teach about climate crisis to others. I am drawn to this theory as a way to make sense of these experiences of learning.

In this dissertation, difficult knowledge has helped me theorize why people do not act differently with new information of climate crisis. It has allowed me to theorize why new information often does not change minds, it helps me understand moves of denial, deferral, and distancing from the urgent crisis we are already amid as well as some of the reasons beyond neoliberalism that this has become such a hot button. It has helped me theorize contradictions that emerged as teachers fundamentally opposed their previous articulations in immediately subsequent sentences. This theory has been fruitful in its recognition that classroom encounters, of all varieties, are more than rational.

Despite these rich and fruitful offerings to this project, I have also experienced it as limiting during some of the data analysis. While thinking with difficult knowledge helped me do some things, there are urgent questions about climate crisis education in social studies classrooms left unaddressed. I am not convinced that this is the only theory that would have been productive in conversation with this data or that it delivers a complete picture of what is happening in this data. During certain points in this process, I wished it would help me think in a different way. In the following few paragraphs, I will describe some of the questions that difficult knowledge left on the table for me as I theorized the data produced in this dissertation.

Difficult knowledge was troublesome each time the notion of action surfaced in this dissertation. I am not sure that knowing about the psychodynamic functions of the encounters with climate crisis in pedagogical situations yields any insights that can help us better activate people toward action. Difficult knowledge does require the learner to respond, but only if we consider resistance, inaction, denial, ignoring, or contradicting to be responses. Zembylas (2011), identified this problem noting that Britzman's difficult

knowledge is, "wrapped up in the dilemmas of representation; where other scholars leave us…does not always offer a political and activist orientation for difficult knowledge" (p. 391). He argued that more action-oriented understandings of difficult knowledge are possible when considered in conjunction with other theories, he suggests fruitful synergies with affective theory and the work of Judith Butler. In this dissertation, drawing on difficult knowledge absent of these other synergies, I was often left wanting more from the theory in regard to what to do next and how to get people to do it.

When I wanted to understand how teachers were making sense of the possible actions in response to climate crisis, a contradiction emerged between the deeply implicated nature of learning and teaching about climate and the necessarily collective nature of acting in the face of climate crisis. I explored this tension particularly in chapter 5. In relation to action and teaching, this theoretical situating helped me think about the limits of any pedagogy and the importance of considering teaching as more than method. It helped me see in profound ways that knowledge is a relationship to information, it is more than the sum of curriculum and instructional methods. Pedagogical encounters with difficult knowledge can disrupt our previously held understandings of the world and provoke us to think and be in the world differently; they can also induce fear, anxiety, anger, or deferral. Pedagogies of difficult knowledge might serve to provoke an unsettling, they may lead through uncertainty to hope, reparation, and new possibility, but they may not. These encounters may leave us denying truths, or turning away from realities. Minimizing, defending, denying, and avoiding are also possible outcomes. Sometimes I found that unsatisfying both as a teacher and as a researcher, I wished for

more certain paths towards meaningful and supportive interventions towards agenative action.

While difficult knowledge and its interactionist assumptions of emotion and discursive subject recognize the entanglements between the psychic inner world and the world beyond the self, there are sections of this dissertation where I found the discursive conditions playing heavily. In some of this analysis I wished to attend entirely to the ways that neoliberal discourses were showing up or theorize the ways that capitalism's entanglement with school had squashed the capacity for students to imagine beautiful and sustainable futures. In some instances, as participants described experiences of hope, my instinct was to attend more to these outer circumstances and forgo attention to these inner psychical dynamics altogether. It seemed the outer condition rather than inner experience, or even some combination of these, would have been more helpful in understanding what was happening for these participants. In this project, I attempted to remain focused on theorizing these through difficult knowledge despite the limitations I sometimes felt. I look forward to future inquires in divergent directions, recognizing the value a variety of theoretical frameworks and methodologies may illuminate important findings regarding the same problems under study in this project.

Conclusion

Wallace-Wells reminded us that "our best-case outcome is death and suffering at the scale of 25 Holocausts and the worst-case outcome puts us on the brink of extinction" (2019, p. 29). Activist Matthew Sleeth asserted that "if we get this wrong, there will be no history to judge us" (2019, para. 15). An interpretation of teachers' pedagogical and curricular thinking within the frame of difficult knowledge, facilitating investigations of

the emotional and affective domains of pedagogy, is absolutely necessitated by the urgency of the impending, accelerating, and unfolding climate crisis. This inquiry employs the theory of difficult knowledge to theorize these experiences of teaching and learning and their associated complex curricular and pedagogical implications.

CHAPTER 3

METHODOLOGY & METHOD

> We don't have direct access to another person's experience so instead, we have to deal with ambiguous representations of it- talk, text, interaction, and interpretation. If we wish to do justice to the complexity of our subjects an interpretative approach is unavoidable. (Hollway & Jefferson, 2012, p. 3)

In this study I have inquired into the ways that teachers are understanding, experiencing, and accounting for the difficult nature of teaching and learning about climate crisis by drawing on the research tradition of psychosocial methodologies (i.e., Hollway & Jefferson, 2012, 2008; Roseneil, 2006; Hoggett, 2019; Lertzman, 2019, 2015; Gillespie, 2019; Hickman, 2019; Frosh, 2003, 2010, 2014, 2019; Taylor, 2017; Walkerdine, et al., 2001). I have undertaken this endeavor by collecting and analyzing data originating from interviews, written reflections, course assignments, and instructional planning documents produced by seven educators engaged in the work of sustainability education. Informed by the theoretical notion of difficult knowledge and psychosocial research methodologies, this dissertation has been driven by the following research question: *what are the implications of engaging climate crisis in social studies education?* This question will be approached through two supporting questions: *1) How*

do teachers experience and make sense of encounters with climate crisis? 2) What are the associated pedagogical and curricular implications?

My arrival at the topic and research questions under study in this dissertation are born from my urgent preoccupation with our maddening collective inaction on the rapidly changing climate. These commitments to researching climate crises are born from my experiences growing up in a resource extraction zone in Kentucky and have been solidified through my teaching experiences in some of the most climate-vulnerable and resource-exploited communities in the United States, including rural Idaho and Alaska. The challenges, implications, and intersectionality of the impacts extractive processes and a changing climate have on communities, their water supplies, their health, and their children have been tangibly present in my classrooms. I aim my work toward the continued challenge of the exclusion of climate crisis and environmental justice from civics and social studies education, particularly as this exclusion impacts the lives and pedagogical encounters of children in vulnerable and marginalized communities. The more I spoke to teachers about these issues, taught classes to preservice and inservice teachers planning instruction around climate crisis, and engaged in the pilot study for this dissertation (Alvey, 2020), the more it became clear to me that teachers were relating to the knowledge of a changing climate in ways that were profoundly personal, emotional, and existential. They were articulating anxieties, worries, hopes, desires, deferrals. They were articulating feelings that I understand to be deeply interactive- both internal and entangled with discourse and context. These realizations are what bring me to seek methodologies that honor the complexity of both inner response and outer circumstance,

resist simple binaries, and rest on theory-informed interpretive work to make sense of the vastly complex phenomena at hand.

This chapter describes the methods and methodologies which have been used to investigate these questions. This work attempts to make meaning from the experiences of teachers, both inservice and preservice, and understand the ways they are making sense of an immensely complex, emotionally, and existentially entangled phenomena. The inquiry must attempt to do justice to the complexity and messiness of these experiences. This requires an interpretive approach as suggested by Hollway and Jefferson (2012) in the quote opening this chapter. Given that defended subjects are unable to articulate every component of their experience completely or accurately, in psychosocial qualitative inquiry methodologies a researcher must provide interpretation to uncover and analyze these emotional experiences in a way that may not be accessible to the participants themselves. The interviews and written data collected from the participants of this study are not actual experience, but what Hollway and Jefferson identify as "ambiguous representations" of it. Such representations require interpretation.

In addition to drawing on interview data, as is often employed in psychosocial qualitative inquiry (see Hollway & Jefferson, 2012; Hoggett, 2019), I extend that the collected written reflections, curriculum planning, and course assignments also provide important and valuable examples of the manifestations of the ways in which teachers are making sense of climate crisis and the entanglements between emotion, meaning-making, and participant articulations of the curricular and pedagogical implications. These other sources of data enliven these experiences beyond interview articulation and allow for additional interpretation of the meaning of the interview utterances for classroom spaces.

In this chapter, I begin by attending to matters of methodology, including introducing psychosocial methodologies and explaining their appropriateness for this project. The second part of this chapter attends to the methods, explaining what was collected and interpreted, the procedures followed, and makes explicit the ways the methodology has influenced this research design.

Methodology: Psychosocial Qualitative Inquiry

Psychosocial qualitative inquiry (Hollway & Jefferson, 2013; Hoggett, 2019; Roseneil, 2006) seeks to access and interpret lived experience in a way that "conveys inner life as well as outer circumstance" (Hollway & Jefferson, 2013, p. xi). Investigations that draw on psychosocial qualitative inquiry require

> the theorization of the complex intertwining of the social and the psychic. Such an analysis seeks to transcend the dualism of the individual and the social and takes seriously the realm of the intra-psychic, the power of feelings (Chodorow, 1999), and the dynamic unconscious but does so without engaging in ether psychological or sociological reductionism. (Roseneil, 2006, p. 847)

Psychosocial scholarship dives deeply beneath the surface of what people say and understands subjects as situated among and shaped by historical, biographic, and psychic paths. Frosh (2003) noted that this psychosocial tradition includes a commitment to "methodological pluralism, including an active assertion of the value of qualitative and theoretical research as well as more traditional quantitative research" (p.1551). These methodologies have been used in conjunction with a variety of theoretical frameworks including poststructural Deleuzian (Brown & Tucker, 2010); feminism (Walkerdine, 2001); critical (Frosh, 2003); psychoanalytic (Frosh & Baraitser, 2008; Parker, 2014;

Hollway & Jefferson, 2013); Buddhist theological frameworks (Stanley, et al., 2014); and a variety of traditions interested in discourse (Frosh, 2003). Taylor (2017) defines the methodological tradition by saying that

> The most notable feature of psychosocial research is its exploration of problems in terms of the interconnections between subjectivities and societies, in contrast to more conventional research approaches that might separate 'personal' and 'social' or 'micro' and 'macro' as distinct categories and levels of analysis. (p. 240)

This definition identifies a set of assumptions around subjects and societies that transcend a particular prescriptive understanding of research method. Despite the absence of prescription, there are important commonalities in design. These include employment of the following principles: 1) is qualitative and conversational 2) draws on a small number of cases endeavoring for detail and depth rather than larger numbers of participants 3) has a reflexive researcher 4) empowers participants to think in new ways 5) and conversations with participants are built on trust (Hoggett, 2019). In addition to these design commonalities, studies situating in the psychosocial tradition use interpretive methods and acknowledge a common set of assumptions including

> A psychoanalytic ontology of non-unitary defended subject; the psychoanalytical insistence on the importance of the dynamic unconscious; the idea that subjects are constituted relational and engage continuously in process of identification, projection, and introjection; attends to the unconscious dynamics which contest the rational mind (Roseneil, 2006, p. 849).

The assumption of a defended subject and a dynamic unconscious are shared by the theoretical notion of difficult knowledge. Attention to the unconscious dynamics is well

suited to this project and its attempt to understand the experience of teachers as they encounter climate crisis and then engage the difficult work of delivering this content to students. The defenses against the discomfort of knowing about climate crisis are evidenced throughout this dissertation and there is a rich tradition of scholars employing psychosocial qualitative inquiry to investigate issues of climate change (e.g., Hoggett, 2019; Lertzman, 2015; Gillespie, 2019; Hickman, 2019). Hoggett built the argument that psychosocial methodologies are appropriate for projects inquiring into experiences of climate crisis, articulating that

> Considering our present collective paralysis in the face of climate breakdown we need to focus much more on what is less conscious and less easily put into words. We also need to get a better grasp of the complex interplay between what goes on inside individuals, the organizational, and social environments that they participate in every day, and their experiences with the non-human (p.14-15).

He then argued that methodologies that inquire into climate breakdown in this way seek to gain access to what is less conscious, that make use of imagery, metaphor, stories, and dreams, and that psychosocial methodologies are uniquely situated to do this work. In the following paragraphs, I outline two examples of empirical research studies that have employed these design principles and common assumptions to pursue psychosocial qualitative inquiry in the area of environmental issues.

In one example of the employment of this methodology guided by these five research design principles, the assumption of a defended subject, and the interplay between inner and outer worlds, Caroline Hickman investigated the ways that very young children in the United Kingdom and the Maldives feel about climate using free

association narrative interviews [FANI] (2019). Free Association Narrative Interviews are those marked by questions that seek to elicit narrative accounts and are guided by the psychoanalytic principle of free association (Hollway & Jefferson, 2008; 2013). The employment of FANI and psychosocial methodology allowed for consideration of the ways that children may "mirror a general defendedness" around topics of climate crisis. Such defendedness is the result of a defended subject, even as children are less inculcated in dominant discourse. Hickman asserted that "climate change is a subject people defend against" even young children. The interviews with 28 children aged 5-17, each open with the question "[c]an you tell me about your thoughts and feelings about climate change?". She then asked children about the animals they like as well as asking them to make a metaphor for climate change with the question, "[i]f climate change were an animal, what would it be?". She concluded the interviews by asking children if they have any messages for adults about climate change. These questions are designed to elicit data regarding personification, metaphor, and active imagination. The data has been analyzed line by line and in conjunction with Hickman's interpretation, it is presented in a format that has one line of data, then one paragraph of her in the moment interpretation, and several paragraphs of her interpretation. In one example of a line of data, a participant reflects on climate change "personified as a mosquito". When the researcher asked what it is that the mosquito would say about climate change, the child responds with words of revenge and destruction. Her field note reflections are a long list of her questions in the moment. In her analysis, Hickman argued that these are emotions that people "often avoid, deny, or edit from their narratives as they are frightening, shameful, raw, antisocial, wild, and untamed…" (p.55). Such data analysis allowed this author to make predictions about

entanglements between the inner and outer worlds, given a defended subject. This inquiry is undertaken for the purpose of giving space and deep listening to the valuable feelings of children, given the ways they will be disproportionately impacted by climate crisis. The employment of psychosocial methodologies offers something in "helping children talk about how they feel about climate change" and furthermore, supports them in "voicing unbearable truths for adults about the destructive human impulses that may have led us to be in this position of human-induced climate change and remind us to listen…to the children" (p. 56). In listening to the participants, little attention is given to the biography of these children. This is a departure from some psychosocial studies which provide a rich narrative of participants' backgrounds and subject positions (e.g., Hollway & Jefferson, 2013).

In researching the unconscious, Hickman asserted that it is important to remember the always symbolic nature of this research and its constant uncertainty. This means themes from the data analysis appear in unexpected ways and "never when we are looking directly at it, even less so if looking for it" (p. 45). This research study is most helpful in its demonstration of the operationalization of a defended subject, the example for the development of interview questions, and its contribution to the case that psychosocial qualitative inquiry is particularly relevant in inquiry into climate crisis.

In another example of the operationalizing of psychosocial methodologies, Lertzman (2012), used FANI and biographic narrative interviews (Wengraf & Chamberlayne, 2007) to investigate experiences of environmental harm in industrial areas of the upper midwestern United States. She interviewed 10 people who self-identified as being unengaged in environmental activism. She analyzed data using a

mapping technique to surface tensions, affect, and anxiety that creates the fabric of the experience of living and loving ecologically endangered places, these included narratives of celebration, defeat, and loss running alongside one another. This data analysis procedure is designed to surface unconscious and defended connections and ideas expressed by participants. Such mapping resists the possibility of a "coherent, linear narrative plotline or analysis". One example of the sorts of contradictions and nonlinearity she surfaced through the mapping analysis can be seen through a woman who articulated that

> her children developed sinus infections and she had questioned the decision to buy a home in an agricultural area facing water threats (due to the concentrated animal farming operations). Yet she was clearly proud of her home and her ability to raise a family with strong "family values" (p. 97)

This is an example of how associations with environmental issues are complicated by the confluence of past and present, context, associations with specific objects, and immediacy of the risk. These webs are not always accessible to the participants and require analysis to surface. By analyzing these tensions, anxieties, and ambivalences, the researchers concluded that the "experience of environmental degradation may, in fact, be constituted in part by loss and mourning, which may manifest as a form of environmental melancholia" (p. 92). Lertzman argued that these insights are vitally important in how "we conceptualize and imagine theories of agency, engagement, and participation" (p. 92). Lertzman's work has been influential in my thinking about how to analyze data in ways that surface themes relevant to the psychic dynamics at play, particularly as they

manifest as contradictions and in bringing psychosocial methodologies to conversation with issues of environmental harm.

These examples each employ free association interviews, however, there are many other models of design used by scholars using psychosocial methodologies. These include focus groups, dream sharing, and action research (Gillespie, 2019); social dreaming (Manley & Hollway, 2019); and case studies (Zegers, 2019). A variety of interview structures have also been employed. These include semi-structured interviews (Westcott, 2019), free association narrative interviews (Hollway & Jefferson, 2008; 2013), and focus group interviews (Gillespie, 2019). There is a range of data analysis techniques employed and these scholars give varying amounts of attention to the subject positions and context of each participant- the most relevant of these for this dissertation project are discussed in more detail in the methods sections below.

Methods of Inquiry

In this section, I will outline the methods, as they have been influenced by the aforementioned theory (chapter 2) and methodologies. This will include attention to research design, participants, data sources and collection, the data analysis process, and the ways these have been influenced by the psychosocial qualitative inquiry tradition. The coronavirus pandemic took hold in mid-March of 2020 during the very week I had scheduled to have initial interviews with 10 inservice teachers around the country. The ways in which teachers, and all of us, suddenly and rightfully became totally preoccupied with the most pressing issues of their lived realities changed this dissertation. Rounds of interviews with teachers became impossible, and one teacher after another withdrew from the study citing the overwhelming task of transitioning their instruction online in the

middle of such uncertain and rapidly changing circumstances. Classroom observations and school visits also became unimaginable and then impossible. This moment predicated a move towards data collection that was closer and less of an additional burden on the teachers who generously agreed to continue their participation in this inquiry. Given these constraints, all the data collected as part of this study was collected from participants who were students in a course I taught, titled "Sustainability Education". The course was online and asynchronous in design, so the institution-wide move to online instruction in the middle of the spring semester did not change the format. The design described below, including the collection of data and analysis procedures, drew on interviews with each of the participants as well as their work on three different course assignments. Many of these choices were shaped by the reasonable possibilities given the challenges of the moment. Despite these limitations and shifts in the design, the data yielded prolific opportunities to analyze the questions under study. The methods used in this dissertation study are detailed in the following section.

Development of Research Questions

This research question driving this dissertation is *what are the implications of engaging climate crisis in social studies education?* In this dissertation project, attention is given to the outer circumstances of ecological disaster, impending and already unfolding climate crisis, rampant environmental injustice, all nestled within capitalism and neoliberalism, and particularly to the circumstance of teaching from within this crisis and the associated entanglements with inner lives. The inquiry here involves making sense of the inner experiences of hope, anxiety, grief, deferral, and a whole gamut of emotions as they manifest as articulations, lesson plans, utterances, imaginings, wishes

for the future, and classroom assignments around these particular circumstances. The supporting questions have been developed with the theory and methodologies in mind. Inherent in these questions and my inquiry into them are the assumptions that 1) there is a relationship between how teachers feel and how they act in the classroom, 2) there is a relationship between learning and emotion, 3) these are not stable responses, 4) there is no guarantee of shared meaning, 5) there is a relationship between what participants articulate/produce and their affective experience, 6) and while there is an interplay between inner and outer worlds, they remain distinct in some way. As a result of this project's interpretive nature, I have produced just one possible read of the data, informed by these articulated assumptions. These questions are further described and mapped to their methods in the following paragraphs.

1)How do teachers experience and make sense of encounters with climate crisis?

This question is formed around the notion of experience as the theory of difficult knowledge frames and foregrounds psychical experience "versus opinion attitude, belief, position, view, or even concern- to open our capacities as researchers and practitioners to get at this complex mixture of anxieties, ambivalence, contradictions and yes, aspirations and desires" (Lertzman, 2019, p. 29). Data supporting inquiry into this question is collected through interviews as well as through written reflections on the topic of the climate crisis. The ways that teachers are making sense of and experiencing climate crisis is a predominant concern of this dissertation and is woven into each of the data chapters. The interview process as well as the written reflections described in detail below have been designed to collect data about how these teachers were making sense of climate change and how they experience such relationships to this information. The emotional

and affective experiences of teachers represent important components of the implications of engaging in climate crisis as a matter of pedagogy.

2)What are the associated pedagogical and curricular implications?

To understand the implications of engagements with the climate crisis in the classroom, the pedagogical and curricular manifestations might be explored. Data around this question was collected through interviews as well as curriculum designed by the participants and written reflections related to imagining teaching about these topics. The analysis of these artifacts offers insight into how manifestations of teacher experience might surface in the classroom having important implications for the overall research question.

Participants

Teachers (preservice and inservice) have been selected as the unit of analysis because of their important role in classroom decision making (Thornton, 2005), providing them with the position to plan and deliver classroom instruction that engages with the complexity of climate crisis. Climate communication research indicates that how climate crises are communicated, both in and outside of classrooms, has profound impacts on how we understand climate (Zhang et al., 2018). What we are taught matters and how we are taught matters in how we think about, understand, make relation to, and act, in the face of the climate crisis. Because of the entanglement of teacher emotion, commitment, and the ramifications of climate communication, teachers (their words, lessons, thoughts, and associations) have been chosen as the unit of analysis in this study. Teachers are central to determining the inclusion of climate education. One of the most important indicators of whether a teacher includes climate crisis in the formalized instructional

curriculum is not their standards, content area, school, or district leadership, but their interest in and commitment to doing so (Wise, 2010; McNeil, et al., 2017). This means that if we are to understand climate crisis education, scholarship must theorize nuanced understandings of the ways teachers are understanding, experiencing, resisting, and making relation to the difficult knowledge of climate crisis and the classroom teacher as defended subject has influenced the analysis of this data.

The participants recruited for this study included 4 preservice teachers and 3 inservice teachers enrolled in a course titled "Sustainability Education" housed in the Middle Grades Education Program in a large land grant university in the southeastern United States. Each of them was a graduate student. They were at various stages of their programs and were working with or interested in working with students across the K-12 spectrum. They also had a variety of content area specialties and certifications including math, science, social studies, art, and general elementary. Their enrollment in an elective course about sustainability education indicates their expressed interest in including environmental issues in their classrooms. Each of the 19 students in the course was invited to be a part of the study via individual email invitations. The seven participants outlined in Table 1 are those who agreed to participate in the study.

Table 1: Study Participants

Participant Pseudonym	**Notes on current position, age group, and program of study**	**Location**
Addison	● Preservice ● Middle school social studies ● Currently working as a full-time substitute in a religiously affiliated school	Urban, North East

	• Final semester of post-certificate master's degree program	
Kevin	• Preservice • Secondary social studies • Currently a full-time student • Final semester of a post-certificate master's degree	Suburbs of Mid-sized city Southeastern United States
Diane	• Inservice • 6th grade social studies • 12th year teaching • 2nd semester of post-certificate master's degree	Mid-sized city Southeastern United States
Eleanor	• Preservice • secondary art • Currently student teaching in public school • Final semester of initial certification master's degree	Mid-sized city Southeastern United States
Brett	• Inservice • 7th-grade social studies • Public school • 9th year teaching • 6th semester of educational specialist degree	Mid-sized city Southeastern United States
Jacob	• Inservice • Middle grades math and social studies • 3rd year teaching, rural public school	Rural Southeastern United States

	● 2nd semester of post-certificate master's degree	
Emma	● Preservice, elementary ● 7th year teacher in private pre-school ● First semester of initial certification master's degree	Mid-sized city Southeastern United States

Data Sources

This dissertation draws on two primary data sources including 1) interviews with each participant in which elicitation texts served to prompt a conversation about the difficult nature of climate crisis both generally and more specifically in their work as educators, and 2) several assignments from the coursework which these participants completed drawing across the themes of difficult knowledge, curriculum design, and circulating and constructed stories about the climate crisis. There were not differences between the coursework and the data collection prompts, these written tasks were the same for research participants and non-participant students in the course. The analysis and collection of data in this dissertation study have drawn on the work of scholars using interview data (e.g. Hollway & Jefferson, 2012; Hoggett, 2019; Hickman, 2019) as well as a variety of other texts, artifacts, and data sources including participant written reflections (Stanley, et al., 2014; Andrews, 2019); oral recordings (Lertzman, 2019); teacher inquiry and lesson design (Douglas, et al. 2020); as well as participant notes and prompting tasks (Robinson, 2019; Stanley, et al., 2014). These studies, described in more detail below, provide fruitful examples of analyzing artifacts in addition to interviews

within the psychosocial qualitative inquiry tradition. These data sources and the literature informing their design are outlined in the following section.

Interviews

Interviews are a central component in most psychosocial qualitative inquiries. Drawing on the theoretical roots in psychoanalysis, the FANI psychosocial interview as articled by Jefferson and Hollway (2012), draws on ideas from free association, used in conjunction with narrative interview traditions. Free association interviews often use some sort of elicitation device to ask participants to tell stories. In this study, I used a text passage and a video clip to elicit participant responses and have followed the principles in FANI in asking teachers to tell stories about their engagements with climate crisis, both in and outside the classroom. Psychosocial interviews should include open-ended questions that focus on the elicitation of stories; avoid questions probing why and instead focusing on how questions; and follow-up questions should be asked using the participants' order and phrasing. Free association questions are also employed (Holloway & Jefferson, 2012). This interview technique was developed in response to dissatisfaction with the "thin versions of experience and mental life captured" by more traditional interviews and the need for techniques that allows for the "complexities of unique lives in all of their confusions, ambivalences, and contradictions, [and] social constructionism" (Hollway & Jefferson, 2012, p. xvi).

The elicitation of stories is particularly central in FANI. The story told is recognized as constructed rather than a neutral account of an event or reality; such narrative construction is what makes this a rich site for analysis of unconscious and psychical dynamics. Holloway and Jefferson (2008) argued that "while stories are

obviously not providing a transparent account through which we learn truths, storytelling stays closer to actual life events than methods that elicit explanations" (p.303). Given a defended subject, these stories move closer to the experience than a defend, rehearsed, or cohesive explanation of experience or sense-making process. Free association stories are even more valuable as they make space for the defiance of some of the storytelling conventions and allow the illumination of incoherence. The contradictions and avoidances are given significance.

Following narrative approaches to interviews becomes important and illuminating as Hollway & Jefferson (2008) argued that narrative is the "the primary form by which human experience is made meaningful . . . it organises human experiences into temporally meaningful episodes" and furthermore that "thinking, perception, imagination, and moral decision-making are based on narrative structure". Attending to such narrative stories allows for research to study meaning in context.

Psychosocial interviews also attempt to reduce the ways in which the interviewer is imposing on the interviewee. This imposition happens in a variety of ways including through the interviewers' ordering of the topics, and the selection and wording of questions (Bauer, 1996). Attention was given to these sorts of impositions in the data analysis as well as the interview design and implementation.

Participating teachers participated in one FANI (Hollway & Jefferson, 2008; 2012), lasting between 45 to 60 minutes following the interview protocol included in Table 2. Before the interview, teachers read a selected excerpt from *The Uninhabitable Earth* (Wallace-Wells, 2019), regarding unfolding and impending climate crisis and took notes regarding noteworthy moments in their own experience of encountering the text.

The Wallace-Wells (2019) text (Appendix A) is a particularly visceral and straightforward account of the seriousness of the current climate situation. It uses current science to build the argument that this is "worse, much worse than you think" (p. 1). To engage questions about how teachers are making sense of and experiencing encounters with climate crisis, there must be such an encounter. I have chosen this passage because of its possibilities for bringing to mind the direness of the current circumstances of climate crisis. The teachers used a note-taking device (Table 4) while reading and completed an opening survey (Table 3) and submitted these before the interview. A note-taking device was included in the procedure to support participants in referencing specific parts of the text as useful to them during the interview, to get a brief baseline of how they felt on a normal day before engaging with this content, and to accommodate the time between the reading and the interview. This last factor ended up being significant given the need for several teachers to delay the interview because of COVID related circumstances.

Table 2: Teacher Interview Protocol

Dissertation Research Question: *What are the implications of engaging climate crisis in social studies education?*	
Supporting Research Questions	**Interview Questions Mapped to Research Questions**
1)How do teachers experience and make sense of encounters with climate crisis?	What comes to mind when you think about climate crisis? Tell me about when you read the text. Tell me about a time when you felt hopeful or hopeless about climate crisis.
2)What are the associated pedagogical and	Tell a story about a time when you were teaching climate crisis.

curricular implications?	Can you think of a time when you had any experiences with students where they had strong feelings about climate crisis? Can you think of a time when you would hold back or avoid telling students about some environmental issue? How do you prepare students for thinking about this topic? How do you make choices about what resources to use when teaching about environmental issues?

Table 3: Opening Survey for Participants

1. What subject area(s) do you teach or plan to teach?
2. Please briefly describe your teaching experience or experience working with adolescents.
3. What program are you in? Where are you in your program of study?
4. In less than 100 words describe the greatest challenge/struggle/area for growth/stuck place you see in your professional practice as an educator right now.
5. Describe why you have chosen to take this course. (What is your interest in this topic? What do you want to know?)
6. What are the challenges you face (or imagine facing) in teaching about climate crisis?
7. How do you feel about teaching climate crisis?
8. Do you see your teaching as connected to civics and social studies education? Why or why not?

Table 4: Note Taking Device

As you read the excerpt from David Wallace-Well's text, *The Uninhabitable Earth* (2019), please record your notes and reflection using the tool below.

Before you start reading:

- How do you feel about the climate crisis on a normal day?

As you are reading:

- Jot down any quotes that you find particularly interesting, jarring, surprising, or helpful:
- Jot down any quotes that you might share with students:
- As you are reading, what do you notice how you are feeling about the climate crisis?

At least 24 hours after you have finished reading:
What is sticking with you?

Classwork and Written Reflections

This study also drew on classwork from a graduate-level course titled Sustainability Education, in which each of the participants was enrolled. The course was driven by the questions: What is sustainability? Why does it matter to children? What does that mean for our teaching? The syllabus included units of instruction on the following themes within sustainability education: defining sustainability, the curricular challenges and barriers, difficult knowledge and sustainability, place-based practices, interdisciplinary practices, practices emphasizing complexity and systems, outdoor education practices, practices centering imagination, practices towards action, citizen science, the foundations of sustainability, and practices centering environmental justice. The course was delivered in an asynchronous online format during the spring semester of 2020. Students were invited to participate in this study during the first week of class and 7 of 19 students agreed. The students completed a variety of types of assignments during the course including discussion posts to a digital learning platform, instructional planning, critiquing existing units of instruction, photo scavenger hunts, and a wide variety of reflection tasks. Across the course the tasks were designed to meet several purposes including 1) helping students develop skills around selecting and designing

strong curricular materials for use in their classrooms, 2) developing commitments to the inclusion of important sustainability topics in their classrooms despite the barriers teachers have articulated (Kissling & Bell, 2019), and 3) deepening the theoretical understanding of the concept of sustainability. While students produced work across the course that was interesting and reflective of themes related to the research questions of this dissertation, I have focused analysis on data generated in three sets of assignments which are further detailed below and included in their entirety in Appendices B and C.

While interviews are the most commonly employed data collection method strategy used in psychosocial research qualitative inquiries, I extend that the collection of these additional data sources represent manifestations of inner worlds and their interactions with outer circumstance and discourse and thus are worthy of inclusion and analysis. Many psychosocial inquiries rely entirely on interviews, particularly those following the FANI method. However, several scholars include in their analysis other artifacts produced by participants. These include studies drawing upon participant written reflections (Stanley, et al., 2014; Andrews, 2019); oral recordings (Lertzman, 2019); teacher inquiry and lesson design (Douglas, et al. 2020); as well as participant notes and prompting tasks (Robinson, 2019; Stanley, et al., 2014) while continuing to situate in psychosocial traditions. Articulation is a signal of psychic investment, and in this project, I understand articulation broadly to include materials beyond the interview. In addition to the collection of interview data, this dissertation draws from several other data sources including written reflections.

Examples of empirical psychosocial inquiry reaching beyond the bounds of the interview can be found in the work of Stanley, et al. (2014) and Andrews (2019). This

work has given citational authority to the possibilities of extending data collection beyond interviews within this research tradition. In each of these examples, as in this study, these additional documents serve as a supplement to interview data.

In one such example, Stanley, et al. (2014) use participant written reflections to analyze participant experiences and argue those texts are an important tool to explore and theorize participant affective and emotional responses using psychosocial frames. In this study, researchers seek to investigate the experience of students who "swim against the stream" in "breaching" social norms by standing in a busy place and doing nothing. Each of the university students participating wrote a "retrospective field note of the experience". They were instructed to avoid theorizing or explaining and instead produce a rich narrative of the moment-to-moment experience. The authors analyze these reflective texts to "investigate the psychosocial orientation of mindfulness by integrating Wetherell's concept of affective-discursive practice with James' stream of consciousness. Mindfulness offers a specific, embodied reorientation toward psychosocial flows" (p. 303). Despite the absence of interviews in this study, this is psychosocial because of the authors' employment of psychosocial conceptions of ideas including the unconscious, flow of consciousness, and psychosocial consciousness (Stanley 2012). There is also shared a focus on experiencing and underlying assumptions about the interactions between inner and outer worlds.

In another example, Andrews (2019) drew upon semi-structured interviews, participant written reflections, researcher written reflections, participant observations, and participant produced documents (online publications, meeting minutes, and briefing documents) to investigate the lived experiences and psychosocial factors influencing

environmental cognition and behavior. This study undertook questions about why it is that people with strong pro-environmental values fail to enact them with consistency. The author analyzed the data in relation to themes regarding the "embodied and situated experience, unconscious processes, [and] language as a window into conceptual systems" (p. 63). The author used both interviews and other textual documents to give attention to the ways participants articulate their emotions, explore themes of emotional regulation, and discuss themes of containment. Andrews analyzed the data for metaphors, articulated values, defense/coping methods, emotional language, expressions of motivation, as well as conflict and ambivalence. The documents in this study add both context to the case study and examples and evidence of the themes of under study. Such additions bolstered the case studies she built to examine the entanglements of action in the face of climate crisis and the internal psychical experience of such circumstances.

In light of these examples, I contend that the data collected as part of these assignments adds richly to understanding the ways that participants are experiencing and making sense of climate crisis and particularly the ways that this may translate to their classroom practice. In the following section, I will provide an overview of the classwork and written reflections collected and analyzed as part of this project.

Assignments Regarding Stories about Climate

This assignment was part of an instructional unit regarding action and agency in the face of the climate crisis. Students engaged in reading texts regarding possibilities for introducing climate action to their students including the Rethinking Schools Climate Activist Mixer (Bigelow & Swinehart, 2014) and an article about a second-grade teacher who taught a lesson about agency in the face of the Keystone XL pipeline (Haynes,

2020). They were then asked to reflect on what they believed about the action possibilities and solutions regarding climate crisis using the prompts "The story I tell myself about climate crisis…." and "The story I want to tell my students about climate crisis…" (full assignment included in Appendix B). Students were then invited to explore any tensions or contradictions they saw in their answers. This assignment was inspired by the work of Gillian Judson & Laura Piersol (2020) as they engage in teacher education practices working to unearth the emotional needs of teachers in times of ecological crisis. They point to the importance of becoming aware of these instances of distancing, tension, and intentionally considering the ways the stories we tell (ourselves and our students) can be cathartic and serve to guide our work as educators. This reflective activity also acknowledges a defended subject, one who might wiggle in the discomfort of the climate crisis, attempt to avoid looking at its fullness, or shield students from the possible distress of realizing such an existential threat. Just as psychosocial methodologies attempt to make room for incongruences, partiality, uncertainty, emotional experience, and capture in some way the complexities of anxiety, ambivalence, and aspiration, this assignment sought to unearth such contradictions. In asking participants to attempt to rectify any disparities, defenses might rise to the surface and interpretations regarding the manifestations of these tensions concerning knowledge and pedagogical encounter become possible.

In a related assignment in the same week, students posted to a digital learning platform a short response in which they were to find a person or community acting in response to a sustainability issue. This component of the assignment was designed to respond to the idea that most preservice teachers do not have very robust ideas about

what sorts of actions may be done in the face of the climate crisis or environmental injustice (Alvey, 2020). The possible actions people most often describe beyond classrooms are individual and consumer-based (i.e., metal straws) (Leiserowitz, 2018). This component of the assignment was designed to encourage students to reach beyond individual actions and identify collective possibilities for ways of conceptualizing action and agency. The complete prompt presented to students is included in Appendix B. The data collected as part of this assignment is analyzed primarily as part of chapter 5 as it explores themes of aspiration in relation to the pedagogical and curricular demands of climate crisis education.

Assignments Regarding Possibility & Aspiration

This assignment was inspired by the work of Rob Hopkins (2020), other scholars' writings on the role of imagination in realizing the possibilities for climate action (e.g., Bigelow, 2019; Kline, 2015; Yusoff & Gabrys, 2011; Milkoreit, 2016: Salleh et al., 2016), as well as work in the area of social dreaming (Manley & Hallway, 2019). In this assignment, analyzed in chapter 5, students read Rob Hopkins' imagining of what his town, Totness in the South of England, could look like beyond fossil fuels. He poetically describes a sunny afternoon of eating locally grown foods, drinking locally brewed beer, visiting with neighbors in a walkable neighborhood on an afternoon freed by a reduced workweek. Totness has already become known as a place where wild imaginings about life beyond fossil fuels sometimes come true. The town developed its own currency to help keep the economy more localized (Longhurst, 2012; Gui & Nardi, 2015; Hopkins, 2010) and have filled local parks with public horticulture gardens to feed the community. Students read a passage from Rob Hopkins' book, *From What is to What If* (2019), where

he describes a day in the life beyond fossil fuels, and largely beyond extractive capitalism more generally. They were then invited to write their imagining of the possibilities beyond the climate crisis and in a sustainable future. The complete assignment and instructions have been included in Appendix C.

Data Analysis

The data analysis in this dissertation was undertaken using a multi-round reading process (Walkerdine, 2001), including mapping as part of the initial read (Gillespie, 2019; Lertzman, 2012) and a coding process as part of the later reads (Snipe & Ghiso, 2004; Hollway & Jefferson, 2012). The analysis of the data and coding was driven by "a psychoanalytically informed reading that is sensitive to the conflictual and dilemmatic nature of the psychodynamics involved" (Taylor, p. 304). This sensitivity included carefully attending to expressions of emotion, as well as residual evidence of defense, avoidance, ambivalence, aspiration, and contradiction.

My plan initial plan to analyze the data was informed by Walkerdine's (2001) argument that psychosocial methodologies should look at data once for the face value, a second time for the words, and a third time for the evidence of unconscious processes, including those of both participant and researcher. While this study has undertaken a multi-round reading of the data, the reads became more iterative and heavily influenced by the work of Lertzman (2019) and notions of mapping as data analysis (Gillespie, 2019; Lertzman, 2012). This section will overview the procedures followed as the data was organized, transcribed, and analyzed, as well as attend to the ways this data analysis procedure has been influenced by psychosocial qualitative inquiry methodologies.

Organization of the Data

Following the collection of this data in the spring semester of 2020, the interviews were transcribed, and identifiers were removed and replaced with pseudonyms (Mason, 2018). The data generated by each participant was gathered together in a single Word document. This included the transcription of the interviews as well as the work from each of the class assignments described in the sections above. The opening survey (Table 3) was also included in each document. The first reads of the data and coding processes took place in these documents where the data for each participant was gathered. As the chapters took form, some sections of these documents were lifted out and organized thematically to allow for more cross-participant analysis.

Emergent Themes & Mapping

The initial themes emergent in the data were influenced by Renee Lertzman's (2019) work on the development of psychosocial methodologies necessitated by the arrival of the "new danger" of the climate crisis. She details data analysis that attends to the themes of *Anxiety, Ambivalence, and Aspiration*. These "represent coexisting affective and experiential dimension when it comes to climate crisis and ecological threats… they often relate to tensions found in competing attachments, affiliations, identities and desires" (p. 31). Lertzman argued that analysis with these themes in mind can help researchers move from "preoccupation with opinion and surface-level cognitive processes" to focus on "what's less conscious, yet exerting tremendous influence- what we may be feeling or sensing on cognitive, affective, and somatic levels in our concentration of ecological crisis" (p. 32). With these themes in mind, I engaged an

initial read of the data making note of impressions, questions, big moments, and important themes.

The second read of the data was informed by the work of Lertzman (2012) and Gillespie (2019) who used mapping as a way to analyze data in psychosocial qualitative inquiry to surface themes and organize data. Mapping as part of the data analysis allows researchers to surface non-linear themes, identify connections across the data set, and identify tensions and object relations in the data. As an example, in a study regarding the ways that long time activists are engaging with climate crisis, Gillespie uses focus group interviews and discussion about dreams to analyze the inner lives of people who can sustain activism over decades. The author uses a world map and superimposes her organization of the data (p. 116), including the major topics of conversation on continents and geographic features are labeled with direct quotes from participants relating to those topics. She argued that this organization allowed her to see not only relationships across data but also provided a way to surface what lay beneath. Furthermore, the symbols of the map evoked feelings for the researcher which can be "numinous and transformative" (p. 116).

In another example of mapping as data analysis, Lertzman (2012) argued that mapping data is particularly important for psychosocial studies that engage environmental and non-human objects as this method is uniquely situated to illuminate the ways these object relations may be at work in conscious and unconscious processes. This process is undertaken by mapping "objects appearing in the data, both environmental and human, and associations and relational contexts." These maps are then placed alongside the affective themes emerging. She described that

> For example, for each participant, I generated a map of specific environmental "objects" as they arose in the narrative data – boats, dunes, a specific park, family member, book, and so on. I marked specific phrases and associations with these objects, to detect lines of connection or meaning. For one participant, a resort area (mentioned earlier) might be associated strongly with her partner and a special romantic holiday, nostalgia for the past (how it reminded her of her younger self); but, emerging in the third interview, was also a strong fear of large bodies of water, going back to a memory of her mother's terror of the children drowning at a family picnic on some cliffs.

Here the map allows Lertzman to see across the data in a way that reveals residue of the unconscious defenses, conflicts, and anxieties at work in the data collected from FANI methods. The maps I produced as part of this initial coding are partial and cover only key moments from the data and they were heavily informed by my first, less formal read of the data (Figure 5). Despite this partiality, these maps helped develop the codes shaping the remainder of this dissertation. They also brought attention to object relations and the complexities of the entanglements between the inner and outer worlds.

Figure 5 Mapping as Data Analysis

In one example of my employment of this strategy, I mapped a moment in which one of the participants was telling a story about a gift they recently gave to their teenage son and the anxiety, stress, and conflict caused by this gift as the mom felt suddenly worried about how this made her feel "like a horrible person contributing to the downfall of society through this purchase." Absent the mapping, I would have failed to see the way physical objects, places, the weather, a recent reading, the ongoing relationship with the son over a large number of references in the data set, all played into the ways this anxiety unfolded. Later in the data collection process, the participant articulates that climate crisis makes them feel bored. These places, things, and ideas were brought forefront. The graphic I used to organize these ideas is included in Figure 5. This method was particularly helpful in relation to the analysis of participant responses to the video clip of the death of a walrus further explored as part of chapter 4.

The mapping processes in conjunction with Lertzman's themes and my notes from the initial read lead to the development of the codebook outlined in Table 5. The process of moving from map to theme involved looking across maps and noticing where a multitude of compelling connections were happening. I included direct quotes from

participants, things like “I worry about driving” and “everyone already knows about this”. I connected those words to the objects that emerged in the stories around them, things like birthdays, time, tulips blooming in January, an argument, a child. From these webs of objects, articulated feelings, and my own interpretation of those relationships, I was better able to see themes across the data which informed my own determination of the themes which have been analyzed more deeply in this dissertation project. This process was helpful in analyzing the data as I was able to see more nuanced trends among and within participant responses. For example, I was able to see that participants with children frequently referenced their experiences with their own children, more than they referenced their classroom teaching. I was able to see the way images from nature crept into some people’s articulations, like mentioning a tulip blooming. Organizing the data in this way was not the totality of the process for determining the major themes or for analyzing the data more closely, but it was a fruitful and helpful part of both organizing and analyzing the collected data.

Table 5: Code Book

- **Anxiety**
    - Engagements with uncertainty, indicators of toleration of uncertainty
    - Instances of avoidance
    - Instances of distancing
    - Instances of denial
- **Ambivalence & Contradiction**
    - Contradictions- explicit
    - Contradictions- emotional

- Contradictions- pedagogical

- **Aspiration**
  - Engagements with action/inaction
    - Expressions for themselves
    - Expressions for students
  - Engagements with hope/hopelessness
    - Expressions for themselves
    - Expressions for students
  - Engagements with imagination
- **Pedagogical Implications**
  - Teacher expression of connections between climate crisis and civics content
  - Explanations of barriers to including the climate crisis
    - Content barriers
    - Fears/worries
    - Technical barriers
  - Explanation of pedagogical rationale
  - Explanation of curricular choices

Reading the Whole: Coding in Context

Much meaning is obfuscated when data is segmented and isolated through the coding process (Coffey & Atkinson, 1996). Hollway & Jefferson (2008) suggest that psychosocial qualitative inquiry should attend to the whole of the story in its context as much as possible. They argued that the defended subject can best be interpreted "holistically". This is because of the difficulty of surfacing contradictions, competing attachments, in isolation of context. Holloway and Jefferson note that because of these concerns and simultaneously the need to organize data into categories for analysis, coding should be undertaken with care to not isolate the data from its context (2016). One way to do this is to code the data in place rather than in extracted isolation from the words, ideas, and context surrounding any given participant utterance (Figure 6).

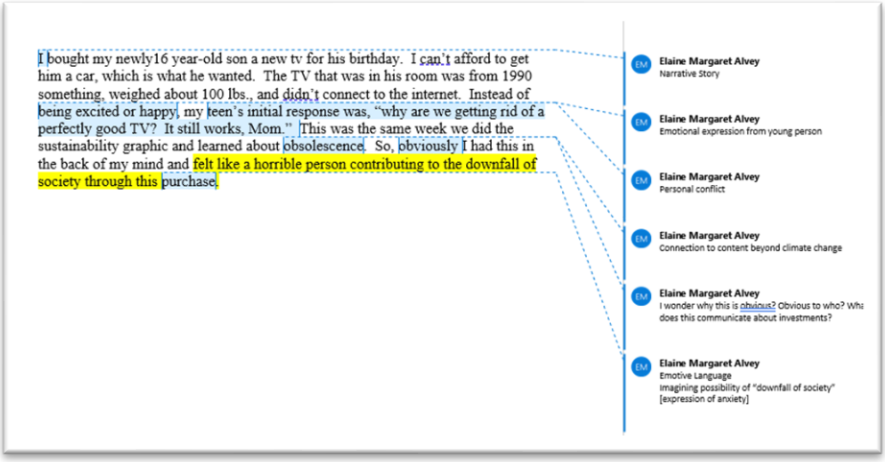

Figure 6: Example of data coded in place

In the example of Lertzman's (2012) work described in the previous section, in isolated analysis, she would not have been able to see the ways that the participant's response to the location of the lake was articulated differently over time, ultimately illuminating a defense against deep anxiety and phobia of water. Additionally, many psychosocial scholars draw on biographical narrative interview methods (Hollway &

Jefferson, 2008) because of the possibilities this context and subject position may illuminate the whole more clearly, recognizing the whole is more than the sum of the parts as people tell stories about their lives and experiences. This type of coding also allows for the possibility that much of what is valuable in a data set may not fit appropriately into the codes developed by a researcher and that what is interesting, but "off-task", should also be included as a central part of data analysis (Sipe & Ghiso, 2004, p. 480). To this end, the coding process undertaken as part of the analysis was conducted the case study document for each participant, rather than extracted.

Reflexivity

My own relationships with this data, these participants, and the analysis process cannot be disentangled from this data collection and analysis process. It is also important to note that I was the instructor of this course and thus designed the course content around the concepts in sustainability and climate crisis education that I find most compelling. The course assignments for all students, including those participating in the study, were invitations that I designed around topics and practices that I find important and worthy of investigation. As the instructor, I was invested in the ways that students engaged these invitations and was responsive to their articulated needs and desires around the direction of the course. In addition to these considerations around the design of the course content and assignments, I was evaluating these participants as students. As much as I may articulate the course as an invitation rather than a demand, and as much as I may avoid numerical scores in favor of narrative feedback, this relationship of authority between student and teacher subject positions certainly occupies the work that was produced in the course and analyzed as part of this dissertation. As Davies (2003) wrote,

“any attempt the researcher makes to tell what it is that s/he sees/hears/smells/feels/ believes/desires, is understood to produce no more than one possible reading” (p. 144) There is no attempt to translate the analysis into more generalizable, “T”ruths, instead working to understand the ways in which discourse is functioning and imagine possibilities for resistance, alternatives, and integration into an evolving construct.

Methodological Limits

In every research project, the researcher notices certain things and not others. They may not be able to articulate why or how these things raise to the top, by its very nature, all research is partial and situated within theories and assumptions. Research is always woven with ethical considerations and design choices. In this project, I make no effort to assert Truth(s), but rather to offer one way to understand the vast complexities of climate crisis education and the ways that teachers are thinking about these topics. Beyond this, there are additional limitations to this project. there are ethical complexities in listening to another person's experience and attempting to turn that into academic knowledge. There are considerations to be made around the fragmenting of qualitative data through the process of analysis and the process of writing up analysis.

In this project, it is also worth considering the way my teacher relationship with the participants may have impacted the data collected. My standing relationship with these participants, some of them across multiple courses, may have helped to build a “safe, trusting atmosphere that can support connection and rapport” (Lertzman, 2019, p. 30). While it was communicated to all participants that there was no relationship between their participation in the study and their grade in the course, or in my thinking about them as students, my role as the assessor of their work of course is tangled through this data

collection process. My relationship with them as students, my eagerness for them to succeed, their desire through coursework to "get it right", and their attachments to getting an "A" are tangled in this work in identifiable and unidentifiable ways, and worthy of acknowledgment. Regardless of these entanglements, this project and its associated data collection is not only on or about other people, other educators, but is work in which I am embedded and invested.

Conclusion

> Those who are engaged with climate disruption are at the forefront of a shift from old myths to new ones. Within this process, they commonly encounter primal emotions and concerns about existence, security, identity, and place…along with survival anxiety comes potentially transformative opportunities for finding and telling new stories about self, society, and world.
>
> (Gillespie, 2019, p. 112)

The shifting from old myths to new, entanglements with primal emotion and interplay between self, society, and world is complex. It requires attention to the articulations of defended subjects in ways that move beyond the surface value and attend to the inseparably personal and discursive nature of the experience of the climate crisis. Psychosocial qualitative inquiry provides one avenue of methodology to inquire into these complexities. The methods and methodologies explained in this chapter inform the theorizations included in the following data chapters focusing on themes of ambivalence (chapter 4) and aspiration (chapter 5).

CHAPTER 4

AMBIVALENCE

> Since all of us are in some way the beneficiaries of cheap fossil fuel, tackling climate change has been like trying to build a movement against yourself – it's as if the gay-rights movement had to be constructed entirely from evangelical preachers, or the abolition movement from slaveholders. (McKibben, 2012, para. 23)

The stories we tell ourselves around the urgent topic of climate crisis are profoundly important. As I demonstrate in this chapter, they have significant impacts on how teachers present the content of climate crisis in classrooms and reveal knots of ambivalent contradiction. They shape the way we see and experience the world and they are often fraught with the complexities of holding attachments that conflict with one another. These stories are the residue of investments we hold dear and contain plumes of emotion. There is often a disparity between the stories we believe and the stories we teach; the ways we act, the ways we want others to act; and between conflicting notions within ourselves. As educators reflect on these stories about climate crisis, their investments in these stories and instances of ambivalence come to view. In this chapter, I analyze these stories and illustrate ambivalence between how teachers feel about climate and how they teach, as well as how these ambivalent contradictions demonstrate how difficult knowledge shapes classroom practice and offerings. These are contradictions of

tone, contradictions between articulation and action, and sometimes contain oppositional stances altogether.

In this chapter, I use the idea of ambivalence to theorize the ways that conflicting attachments are evidence of a defended subject who desires and acts to avoid discomfort, which subsequently shapes the teaching of climate crisis. I begin by defining ambivalence and describing the data analyzed in this chapter, before moving to explore examples of ambivalence. These examples are used to theorize tensions around deciding what to share and what to withhold from students as well as complexities in attachments to optimistic and pessimistic narratives. Finally, I theorize the ways these ambivalent contradictions manifest in pedagogical choices as teachers articulate tensions between withholding and delivering information to students. In illustrating ambivalence embedded within stories about beliefs about climate crises and about teaching climate crises, I show the contours of ambivalence, not apathy, as the primary position that allows continued attachments to the status quo.

Defining Ambivalence

Ambivalence is the ability to experience and hold simultaneous investments and attachments which are in competition and contradiction with one another. It's an impossible in-between space of wanting to have it both ways at the same time. As the McKibben quote opening this chapter suggests, it is possible to hold both an attachment to the idea of life unchanged and simultaneously to a solved climate crisis. We might be attached to certain comforts in our lives while also knowing that these comforts actively contribute to the destruction of the planet and be simultaneously attached to the idea of protecting the planet. But the reality is that both of these things cannot occur

simultaneously. In speaking of the tremendous difficulty of this ambivalence, longtime climate activist, Paul Kingsnorth, describes that "[w]e all love the fruits of what we're given—the cars and computers and iPhones. What politician is going to try to sell people a future where they can't update their iPhones *ever*?" (Kingsnorth in Richardson, 2018, para. 27). This has important implications for action because ambivalence can lead to melancholia which profoundly impacts political engagement (Lertzman, 2015, p. 106). Lertzman (2015) argued that ambivalence leads us to be "literally pulled into tensions, like a tangle of yarn." It is the texture and tangle that is worthy of close examination in a psychosocial inquiry.

Psychoanalytic theory and a defended subject support the theorization that it is not apathy to blame for our collective inaction in the face of the climate crisis, but instead ambivalence. Lertzman (2015) argued that

> Ambivalence concerning environmental degradation may constitute a form of melancholic subjectivity, impeding what might otherwise be seen as viable and active engagement with the issues. It is not that people lack concern or awareness about these specific issues but rather a psychic 'dance' is taking place, suggesting a form of ambivalence. (Lertzman, 2015, p. 108)

In other words, a lack of care is not to blame for our collective inaction regarding climate crisis, but instead a psychic dance to move away from the discomforts and anxieties of facing the issues which allow the status quo to continue. The processes and manifestations of ambivalence are manifold in the data analyzed below. The educators described tensions that help them defend against the discomfort and anxiety of knowing about climate and the ways their desires are entangled with inaction caused by the sort of

"psychic dance". People avoid thinking about climate crisis not because they are apathetic or because they don't know but because doing so "raise[s] fears of ontological security, emotions of helplessness and guilt, and [is] a threat to individual and collective senses of identity" (Norgaard, 2006, p. 372). Holding the information of our complicities and responsibilities to act in the face of climate crisis is, "an active strategy performed" to suppress and manage uncomfortableness, fear, and anxiety (Norgaard, 2006, p. 372). This is the same dance that defines encounters with difficult knowledge more generally.

In this study, even the teachers most committed to including climate change in their classrooms held tightly to ambivalent attachments distancing them from the most serious harms. Climate scientist Nora Gallagher wrote of this contradiction:

> Climate believers, climate deniers, deep in our hearts we think it will happen somewhere else. In some other place—we don't actually say this but we may think it—in a poorer one, say, Puerto Rico or New Orleans or Cape Town or one of those islands where the sea level is rising. Or it will happen in some other time, in 2025 or 2040 or next year. But we are here to tell you, in this postcard from the former paradise, that it won't happen next year, or somewhere else. It will happen right where you live and it could happen today. No one will be spared. (Gallagher, 2019, as cited in McKibben, 2019, para. 42)

Ambivalence is what allows us to read this jarring truth and to simultaneously continue to proceed with lives unchanged. All of this has important ramifications for pedagogical practices of climate education. The Climate Psychological Alliance North America argues that "rather than constraining climate education, we need to train educators how to deal with the psychological implications of what they are teaching" (Morris, 2020, Par

37). Such recognition of these implications may begin by reckoning with how ambivalence manifests for the defended subject. Lertzman (2015) argued that "ambivalence can fracture or divert psychic energies in terms of adequately processing a loss. Recognizing the existence of ambivalence, its source, naming it, and coming to terms with it is part of the eventual work of mourning" (p. 107). These sorts of desires, defenses, and contradictions are explored in the following sections as teachers describe the stories they tell themselves about teaching and then the subsequent pedagogical tensions.

Collecting Stories

The data analyzed in this chapter were generated from three distinct tasks. First, participants were asked to reflect on the stories they believe about climate crisis. In this assignment, reflections were elicited using the prompts: "The story I tell myself about climate crisis….", and "The story I want to tell my students about climate crisis…". Students were then invited to explore any tensions or contradictions they saw in their answers by responding to the questions: "How do you make sense of any differences in these stories?" and "What does this mean for your teaching?". This assignment was inspired by the work of Gillian Judson & Laura Piersol (2020)[4] as they engage in teacher education practices working to unearth the emotional needs of teachers in times of ecological crisis. They point to the importance of becoming aware of these instances of distancing and tension, and of intentionally considering the ways the stories we tell both

[4] As of this writing, they are continuing to collect data for this ongoing research project. It is not possible yet to know how these results differ or corroborate the findings of their work. I encountered these prompts as part of a conference presentation early in the research project.

to ourselves and our students can be cathartic and guide our work as educators. In the following analysis, I explore participant responses to these questions and show how they reveal directly contradictory, rather than nuanced, differences in these stories.

In the second section of this chapter, I draw on interview data to understand the ways that ambivalent attachments to optimistic and pessimistic narratives support inaction on climate crisis.[5] In general, the purpose of the interviews was to get a sense of how teachers make sense of and think about teaching climate crisis. I asked them to tell stories about their teaching of climate crisis and their own experiences with a pedagogical encounter of climate crisis (methods further detailed in chapter 3). As I analyzed these interviews, I became interested in the ways that they would shift their talk about climate crises in ways that provided assurance and certainty.

In the third section of this chapter, I turn attention to the ways ambivalence manifests in teachers' articulations of choices about sharing or withholding information about climate change. The data analyzed in this section comes from participant reflections in response to the viewing of a nature documentary in which a walrus dies after falling from a cliff following changes to arctic ice patterns caused by climate change. Although this clip is jarring, both in my own experience and in the articulated experiences of the participants analyzed below, I selected it for inclusion in the course materials not because of its potential to elicit emotional responses to climate crisis, but because of the controversy and conversation about the clip that was widespread at the

[5] When I planned for these interviews, I had anticipated being with the participants in person and observing their classrooms. However, COVID demanded phone calls during the second week of March 2020, just as lockdowns began. The interview process as shaped by COVID is more completely outlined in chapter 3.

time I was designing the course. It was covered widely in the *New York Times*, *The Atlantic*, *The Guardian*, *NBC News*, and a myriad of other mainstream news sources. *The Atlantic* called the scene "shocking" and "disturbing" (Yong, 2019). *Fox News* called the images "gut-wrenching" and even included a trigger warning, "WARNING GRAPHIC IMAGES" (Whigham, 2019). There was also widespread controversy over the inclusion of these images. A zoologist in the United Kingdom said, "this powerful story is fiction and emotional manipulation at its worst" (Crockford 2019, as cited in Whigham, 2019). *Infowars* had a series of shows claiming the whole thing was fabricated and *Breitbart* similarly claimed it was fake news that was part of the conspiracy of climate change which they call “the great reset” (Delingpole, 2021). The scene was widely discussed on social media. These social media engagements represented a wide range of emotions including sadness, grief, anger, dismissal, denial, and disbelief. The clip seemed to prompt a kind of cascade of responses that I find compelling as an object of learning, both in larger society and in these participants. It seemed to provide a way into the conversation for people not otherwise engaging in discourses around environmental protection. This is evidenced by the trigger warning provided by *Fox News*, normally not a beacon of compassion for human or non-human creatures. The clip was a representation of trauma and elicited responses consistent with other relations of difficult knowledge. Because of the robustness of this wider conversation, I assumed that most or all of the students would have seen the clip already. I included it because I thought it might elicit conversation about how to represent the difficulty of climate crisis in classrooms given the controversy over how it was represented in this film. I focus closely on instances

when utterances of ambivalence surface as teachers talk about how, when, and if they might include this or similar images in their teaching.

Findings & Discussion

In the following sections, I find that it is ambivalence, not a lack of care or interest, that prevents action in the face of climate crisis. I theorize contradictions between student and self, tensions between optimism and pessimism, and finally contradictions surfacing as teachers articulate what to share with students. I argue that ambivalent attachments to certainty, like that offered by narratives of optimism and pessimism, can function much the same as more outright climate denials, and finally, I argue that these instances of ambivalence have a significant bearing on classroom practice as evidenced by teacher articulations of tensions around what to share in classrooms.

Between Self and Student: Telling Stories of Contradiction

When I asked participants questions about the stories they tell themselves and students, I imagined it might surface some of the typical teacher moves I think of happening around complexities in classrooms. These include things like oversimplifying complexities to help students understand something or failing to make personal or political disclosures to students about the topic. Instead, what surfaced were instances of teachers' desires to share stories with students that are completely at odds with what they believed themselves. This is laden with all of the ways that teachers seek to protect their students from the discomfort and anxiety in pedagogical encounters with climate crisis. As teachers described the stories they tell themselves and the stories they want to convey to their students, important instances of ambivalence, and incongruence surfaced.

In one instance, Eleanor, a pre-service art teacher interested in civics education said, “the story I tell myself is that sometimes it’s okay not to care” and the “story I want to teach my students is they should always care”. These tensions and instances of ambivalence illuminate not only the ways it is easier to, as Addison argued “talk the talk then walk the walk”, but also allow insight into moments of dissonance, deferral, and defense against the discomfort of facing and teaching climate crisis. In another instance of this sort of uncomfortable contradiction, Jacob articulated:

> *The story I tell myself is that issues with sustainability are bad, but nothing* <u>*terrible*</u> *will happen in my lifetime, or even in my students’ lifetimes. The story I want to teach my students is that if the issues of sustainability are not fixed soon, within the next few years, we will encounter even more issues than what we have already experienced (wildfires, torrential rain, extremely warm winters, etc.).*

This participant notes the ways he has defended against reckoning with such difficult knowledge in saying he tells himself that “nothing *terrible* will happen” (emphasis original).

In each of the above examples, we see completely different stories. Here, they are different in terms of their overall claims. In my analysis, these contradictions serve the function of distancing the participant from the impending and already unfolding harms of the climate crisis, as they move to route around the information that terrible things might happen.

What is significant for Jacob in his utterance, above, is that it is not the students he seeks to protect, but himself. He is telling himself that nothing “*terrible* will happen” but wants his students to understand the severity of the situation. He describes that he

wants his students to see that "if issues of sustainability are not fixed soon" things will get much worse. He articulates a desire for students to understand the severity of the issue but is unable to look at the severity himself. In seeing this contradiction, Jacob goes on to describe what these surfaced contradictions meant for his practice in the classroom

> *I know that what I tell myself is not true, and what I tell my students is, but I do not like to acknowledge it to myself. I don't want my students to feel worried or upset about the situation, especially because I don't want to feel it myself, but it is my job to educate them and prepare them for the future. I cannot do that if I sugarcoat information that I give them. They need to understand the consequences of human actions, as well as how they can help. This means for my teaching that we have to have difficult conversations, even if I don't like them. As a history teacher, I have to teach difficult topics a lot, and this is another one.*

In articulating that "what I tell myself is not true", Jacob is exposing part of the plume of affect, investment, and distancing which is circulating through this defense. He says, "I do not like to acknowledge it", which is a recognition of the psychic difficulty of encountering this knowledge. There is discomfort in the acknowledgment of the severity of climate crisis. It is a recognition of the internal work this participant is doing to avoid looking directly at the problem.

Knowledge in this paragraph is situated in a variety of, sometimes contradicting, ways. In the opening sentence, there are truths and non-truths. He says that "I know that what I tell myself is not true, and what I tell my students is, but I do not like to acknowledge it to myself." In this utterance, it is impossible to know what the "it" references, it could be the circumstance of climate crisis or the contradiction itself. He

declares knowing a certain set of facts about climate crisis, and then explicitly says that the story he tells himself about the seriousness of circumstance is not true. Here, what the participant calls “the truth” is pointed outwardly towards his students and, thus, seemingly pointed away from his own need to acknowledge that truth.

In the next sentence, knowledge is recognized as having the power to induce anxiety. Jacob says, “I don’t want my students to feel worried or upset about the situation, especially because I don’t want to feel it myself”. This statement articulates entanglement between Jacob’s emotional experience of teaching and the emotional experiences of students. He doesn’t want to feel worried or upset and he wants the same for his students. He imagines that because he is upset, his students will also experience this as upsetting. This statement also recognizes that this teaching and learning is emotionally and affectively imbued. Knowledge in this statement has the capacity to elicit far more than exclusively rational responses.

Jacob describes that he does not want students to feel “worried and upset”. He articulates “that we have to have difficult conversations, even if I don't like them”. This commitment to forging onward despite such discomfort is not universally shared and such unknowability and difficulty may function to prevent teachers from engaging in issues of climate justice. I also found interesting Jacob’s notion that this is just another in a long list of difficult topics that must be taught. This sentiment cruises past the important distinctions that might be delineated between climate crisis and other difficult topics. Important among these are that this crisis is still unfolding, unlike many of the other topics considered difficult in history classrooms like war and genocide. The difficulty Jacob articulates experiencing, the worry he has for his students, the complexities he

names around what to teach are all evidence of the ways that the experiences of difficult knowledge are shaping classroom encounters with climate crisis.

In an example of these contradictory notions of action and agency, Addison articulated that her actions had no impact, while simultaneously encouraging agency in students. She wrote

> *The story I tell myself is… that my actions alone can't solve the climate crisis. How can what I do day in and day out save those poor walrus' from falling down that cliff (still scarred by that by the way)? Surely my actions, in my small community, cannot make a difference on the larger scale of what is happening. The story I want to teach my students… every choice you make and everything you do has an impact on our world positively or negatively. Which do you want your choices to be? Big changes only happen by smaller changes coming first. Use your voice and influence to make a difference in our community that can lead to bigger impacts on our Earth.*

Addison articulates that she does not believe that her actions can impact the climate crisis. In making this assertion, she harkens back to an internal emotional, and affective response of seeing a nature video of a walrus fall to its death following a change in sea ice patterns. She stated that she "still scarred by that". This speaks again to the internal emotional responses entangled in these conflicting attachments and how these are present in classroom practice in the world beyond the self. A scar is the residual impact of a significant injury and it functions to support the body's healing process. In using the phrase "I am still scarred", she is indicating that viewing the clip was significantly harmful and that it has residual impacts. Traces of the harm have been left behind

although the initial pain has passed. I was also struck by the possible conceptualization of scars as the product of necessary intervention, like those from surgery or stitches. While colloquially it gets used to refer to trauma or injury, scarring also sometimes is the product of important and necessary healing.

Addison articulates feeling small, too small to act, and too small to make any meaningful difference. This is of considerable importance, as people who believe they do not have agency do not use their agency to intervene in meaningful ways. This also functions as a move that distances Addison from the discomfort of acting in transformative ways. If we are too small to make a difference, then it is easy to settle into the notion that we have no responsibility or even reason to intervene with our action or agency. It may also serve as a way to distance ourselves from our implications in such a catastrophe. When people articulate that they can do nothing to change the outcome and that any action is too small, they also imply that the actions they undertake also do not negatively impact the climate. If our actions do not matter, then perhaps we are relegated from all responsibility and implication. In this way, these stories of ambivalence stand to have vastly important implications on classroom practice. These tensions are further explored in the next section as they manifest as attachments to optimism and pessimism.

Ambivalent Tensions in Optimism and Pessimism

None of the participants in this study were identifiable as outright "climate deniers", defined as people who believe either climate changes are not caused by humans or that the scientific consensus is somehow incorrect. However, affectionate attachments to more certain narratives allowed teachers to distance themselves from the need for action in ways that promote inaction and have some of the same functions of more

outright climate denial. While still believing in the underlying climate science, in the case of optimistic narratives, believers think everything will turn out okay regardless of their actions. There is certainty, offered by the comfort of imagined guarantee of technocratic solution, green governmentality, big government intervention, or social revolution. Similarly, these interviews also uncovered more pessimistic and fatalistic narratives. While not disputing the existence, causes, or consequences of climate crisis, these narratives offer the certainty of the belief that our actions are inconsequential or that nothing we do matters. "Optimists think it will all be fine without our involvement; pessimists adopt the opposite position; both excuse themselves from acting" (Solnit, 2016, p. 4). In these cases, there are competing ambivalent affectionate attachments to believing the climate science and the uncertainty of its models and spaces for intervention and simultaneously the certainty of these optimistic or pessimistic narratives. Here I argue that these ambivalences function much the same as more outright climate denials, though they are more nuanced. I use this analysis to argue that these ambivalences stemming from attachments to pessimism and optimistic narratives function to prevent intervention, prevent understanding, and shape classroom enactments articulated by teachers.

Pessimistic Ambivalence

When educators become attached to the certainty of pessimism, intervention becomes unnecessary. Attachments to ideas of pessimism impede the ability of these teachers to appropriately make sense of what to do in the face of climate crisis. In this way, these more strategic and nuanced denials function much the same as outright climate denial in both the comfort that might be derived from certainty and in the

processing of knowledge in ways which require no change in behavior or belief, something which is often the goal of climate education (Busch et al., 2019).

Discourses of pessimism course through these interviews, in one instance a participant said, “nothing I do matters”, while another articulated, “things are going to get really band and there is nothing I can do- it’s on the government of China and India”. Most participants articulated feeling like there was nothing that could be done, that they were too small, or that their actions could not be enough. These articulations of resignation were often paired with feelings of frustration or sadness even as they juxtapose their desires for students and their teaching. Adoption of the idea that there is nothing that can be done both relegates and denies a responsibility to act or even know about the circumstances and simultaneously provides comfort through its certainty.

I see these as moments of denial and distancing, two significant components of pessimistic narratives. In one significant moment of pessimistic narrative which signals the ways that these sorts of ambivalent defenses have vastly important classroom ramifications, Emma turned factual information presented in the course into a dismissible fiction. Just a few sentences before writing that she wants her students to know “there is always hope. You and your actions make a difference”, Emma articulated that

> *There is really nothing we can do that is going to make any difference in what’s happening to our climate. Everything in the United States is always pulled around to “the financial impact”. Until we can move past financial impact and implement systematic change for example fossil fuels are taxed like crazy or made illegal… the climate is doomed. Systematic change would equal severe financial impact, and I don't think we'll ever be ready to accept this as a nation. It would mean*

major lifestyle changes. Politicians are the only ones who can do anything significant, and I don't believe they ever will. The decisions they would have to make would require a significant shift in lifestyle and be detrimental to a lot of the people who have the money. It will never happen. In the reading for this week, they write 'Trading the promise of wealth and jobs today for the health and well-being of our future generations is a fool's trade' (Climate Activist Mixer, p.6). I agree with this. But that's what we are doing. In this story, they may have blocked a coal export port, but I guarantee you that big companies just found some other way to export the coal. I know these stories are fictional. In real life, I think the coal company would have tied this up in court until the port was built and operational.

Important to note here, the stories that Emma references as being "fictional", were not fictional, but a recounting of a flotilla which did in fact contribute to the halting of a coal port terminal construction used as a reading for the class. What can be read as a psychical defense here takes a factual account of activism and turns it into fiction. This is not an outright denial of the problem, but a more nuanced denial that offers certainty through pessimism.

In the above excerpt, Emma explicitly recognizes a need for systemic change and shares several examples of what that might look like. For example, she suggests "fossil fuels are taxed like crazy or made illegal". She states that until we are collectively able to make “significant lifestyle changes” and overcome the desires of “a lot of the people who have the money” the climate will be “doomed”. The use of the word “doom” illuminates the severe threat interpreted by Emma. It also serves as a manifestation of the emotional

nature of the eventuality Emma imagines. In using the phrases "it will never happen" and "I don't believe they ever will", Emma restricts the possibilities for agitative intervention, and evidence to the contrary provided by the flotilla was metabolized as fiction. In other words, she takes the idea, internalizes it, but when she articulates it back out into the discursive scene it's as fiction. These ideas have been formed by dominant discourses and by internal emotional responses. In this case, the discourses are so powerful that the stories we learn of intervention and resistance cannot be accommodated by Emma's imaginative structures. This factual account of successful intervention gets rejected here and moves into the realm of fiction.

Multiple ambivalent attachments are surfacing in Emma's comments. There is a contradiction between the articulated belief" she wants to convey to her students that "there is always hope and simultaneously her personal belief that “I don't think we'll ever be ready to accept this as a nation” and that “[p]oliticians are the only ones who can do anything significant”. Despite this articulated pessimism and resignation to having no power, she articulates that

> *I still try to “walk the walk”. I still recycle. I don’t eat meat. I try to save electricity and water. I don’t use pesticides on my lawn. I try to make smart, long-lasting purchases. But I also use cat litter, Ziploc bags, throw batteries away because I can’t figure out what else to do with them, raised two children with disposable diapers. I feel guilty about buying glade plugins or taking my son to Sonic because they use Styrofoam cups. I’m not perfect, but in the big picture, it doesn’t matter.*

This maneuver of contradiction serves to distance Emma from her discomfort. The actions she takes allow her to think she has done something, while she ultimately sees her actions as contributing nothing meaningful. Such a move functions to defend against the anxiety and discomfort of facing the difficulty of these processes of knowing.

Emma continues, "There is really nothing we can do that is going to make any difference in what's happening to our climate. Everything in the United States is always pulled around to the financial impact". What Emma implies is that capitalism is simply too powerful and too entrenched to be overcome. There is a pessimistic resignation that this is the system that will stand unquestioned even as climatic catastrophe ensues. Similarly, Brett articulated

> *I can't help but think about this in terms of the show "Shark Tank". Innovators come in with fresh ideas and the sharks crush them with realism. The most disappointing moments are when these new businesses want to do something right, like manufacturing in the United States and paying people a decent wage, and the sharks explain that it's impossible. Then they'll only offer a "deal" (money) if the innovator agrees to sacrifice their ideals and manufacture overseas. It's just a very tangible way of viewing how people with the money have all the power. You can watch people trying to make a difference, to do something right, and it is crushed in the name of profits.*

In this passage, Brett gives explicit attention to the ways that money and realism "crush" potential innovation and solution building around the climate crisis. Brett notes that "you can watch people trying to make a difference… and then it is crushed in the name of profits". He is naming the systems which make change hard. These are not just the forces

of defense by a defended subject, but also discursive and material circumstances in the wider world. In this passage, there is significance in the imagery of the "shark tank" metaphor used by the show and subsequently picked up by Brett in thinking about climate change solutions. A shark is a symbol of danger and being inside of a shark tank stands to be a hair-raising, life-risking activity. Brett indicates the risks of anything other than what he terms "realism". There is a risk of being "crushed" in the attempt to work against some of the dominant discourses and it may function to prevent teachers or students from attempting to take on these issues.

Optimistic Ambivalence

Believing that everything will work out positively can also serve to route away from the most uncomfortable parts of facing the catastrophic impending and already unfolding consequences of climate crisis. In this data, ambivalent attachments to optimism functioned to distance participants from a responsibility to act and drew on widely circulating and dominant discourses around the faraway places impacted by climate crisis and the future consequences even as they reference ideas of hope for the future. Optimistic fantasies also surfaced and represent ways that teachers denied the complexities of climate crisis in their understandings of climate crisis.

One example of an attachment to optimism that impedes sense-making and stands to impact classrooms can be seen in excerpted song lyrics provided by Eleanor which she articulated encapsulate the message she wants to convey to her students. In describing the story she wants to teach students, she included a YouTube link to a song from the children's television series Lazy Town. The lyrics of the song read

If things don't work out like you want this time around

You can try to turn the problem upside down

There's no use in crying

You gotta keep trying

Because in the end, you will discover

There is always a way

Before sharing the YouTube link, Eleanor articulates that it is not her job to take optimism from children and their goal in the classroom would be to help students see that there is always hope. The song's lyric that, "there is no use in crying", emphasizes suppression of the affective nature of grief around climate loss and points towards the teacher's desire to point rosily towards the rational possibilities. It is easy to imagine that future generations will solve the problem with their ingenuity, more difficult is to face that things may not turn out okay, that there may not in fact "always be a way", or a way that can avoid mass suffering. Focusing on such a narrative, particularly using such a rosy children's tune, may signal a desire to avoid the already unfolding nature of this catastrophe and highlights an attachment to optimism narratives in a way that strategically denies the most dire realities of climate crisis.

Instances in which educators avoided the realities of climate change by believing that everything would work out well for them personally were plentiful in participant articulations and might be understood as attachments to optimistic narratives. For example, Jacob's articulation that "I tell myself nothing terrible will happen in my lifetime or even my student's life times". Discourses of otherness, through distance, time, space, race, or class, can function as a way to deny the realities of the circumstance despite overwhelming evidence to the contrary. In the data, this idea has manifested

through the many moments during the discussions when the participants drew on widely circulating and dominant discourses around the faraway places impacted by climate crisis and the future consequences even as they reference ideas of optimism for the future.

Jacob said he had "never really processed what a threat rising sea levels would be since I have never really lived on the coast and I haven't really seen it for myself." This statement fits within discursive conditions which allow us to imagine that the most ravaging impacts of climate crisis will be for others, rather than for ourselves. While the participant spoke with great empathy for those who were already experiencing these losses, there is comfort in the imagining that other people in other places will be most impacted, it seemed to cushion the difficulty of this knowledge.

In one example of optimistically understanding the impacts as far away, Kevin spoke about the ‘longness’ of climate change. This response draws on widely circulating optimistic discourse that there is plenty of time remaining to save our species and planet as we know it. In illustrating ambivalent optimism, he said

> *It's like you hear about it and then you're like, wow, that's going to be awful and we need to do something right now, and then the next day goes by and you're still going to do life the same. You know what I mean? It's kinda hard. It's hard to worry about problems when the consequences are long, not immediate.*

Kevin’s simultaneous recognition that climate breakdown will be "awful" and that it requires immediate action, and "then the next day goes by" and things are still the "same", speaks to the complexity of ambivalence as it comes at our individual and collective peril.

In these examples, Eleanor and Kevin draw on optimistic narratives to provide themselves with comfort and deny some of the realities of climate crisis. Eleanor as she draws on sunny children's lyrics to capture the sentiment she wants to share with students and Kevin as he optimistically imagines that the harm of climate change is far away. These examples demonstrate the way that optimism can provide certainty and comfort which leads to more nuanced denials of the realities and needs for action. In this way, it functions similar to more outright climate denials and stands to have significant impacts on how climate crisis might be engaged in classroom spaces. As these educators articulate optimism for the future, the belief that everything will work out sometimes functions to deny the nearness and complexity of climate crisis. The challenge becomes teaching which too rosily depicts possible outcomes that relegate us from action or impede understanding of the full urgency of the crisis already arrived.

As these teachers describe ambivalent attachments and the certainty offered by either pessimism or optimistic narratives, they work to avoid the discomfort of facing the realities and implicated causes of climate crisis. They release themselves from a responsibility to act, while still articulating grave concerns about the climate crisis. To deny the complexities, proximity, and urgency of the crisis and to rationalize inaction through overly pessimistic or optimistic narratives mirrors the more outright climate denials in which the full scope of the climate crisis cannot be accommodated. These knots of ambivalence, attachment, and desire for comfort show up in classroom practice are further explored in the next section.

Pedagogical Choices: Contradictions in Providing and Withholding Information

In this subsection, I explore examples from Diane, Addison, and Jacob to examine instances of ambivalence among teachers' articulations of their worries about pedagogical choices. These examples are derived from these educators' reflections on watching the aforementioned walrus clip. These are different kinds of contradictions than those above, rather than differences between the stories told to self and student, here teachers grapple with how and what to share with students often returning to the example of the walrus clip. In these responses, ambivalence surfaces as educators simultaneously articulate commitments to sharing even the bleakest realities of climate crisis with students and protecting them from facing these realities. An impossibility emerges. In these examples of contradiction between providing and withholding information to students based on anticipated emotional response, uncertainty can be traced. There are uncertainties as a pedagogical question as teachers try to anticipate what questions students may ask. There are also uncertainties as learners engage with new thoughts. These articulations illustrate spaces for teacher education that put a focus on developing the capacity to tolerate uncertain outcomes.

Comfort with uncertainty is key to pedagogical engagements with difficult knowledge including the bleakest realities of climate crisis. Simon (2013) argued that pedagogies that forgo attachments to certainty to offer difficult knowledge allow affect to be understood as "mobilizing thought about the substance and limitations of any given historical narrative and its significance, without attempting to guarantee in advance what this thought might be" (p. 200). The same argument regarding historical narratives holds here in thinking about the role of uncertainty in pedagogical encounters around climate crisis and the ways that ambivalent attachment complicates the associated pedagogical choices.

Figure 7:Images from Walrus Clip

In exploring notions of what to teach and how to present content to students, several participants expressed that they would avoid “holding back” even as they sometimes simultaneously articulated ways they would hold back. This surfaced particularly as they referenced the walrus clip. The excerpts analyzed below come from written assignments that these student participants completed throughout the semester in which they referenced the clip. The assignments were not particularly about the walrus clip, though the clip surfaced in several of their responses. In this subsection, I explore how emotion is connected to classroom enactments. Articulations about what to teach about climate and how to teach it are full of ambivalence, affect, and defend against

conflict. These contradictions surfaced as teachers discussed the walrus video clip, a nature documentary narrated by David Attenborough (Fothergill, et al., 2019).

In one instance of clashing attachments surfacing contradiction around the death of the walrus, Diane wrote

> *I don't think that we should hold anything back, because that is only sheltering them from what is really going on. Middle schoolers hate nothing more than if you hold out on them. I think it is important to expose them to all views in order to focus on the facts and to decipher what is fact and what isn't. We do a lot of claim, evidence, and reasoning in our class, and so students can take all kinds of viewpoints and decipher for themselves where the evidence lies. I don't think we should avoid scaring them...that is just setting them up for failure in the future. I think that there is a way to present difficult information in an age-appropriate way. Would I show the walrus video from Youtube to my 6th graders? NO WAY. But I think maybe saying many animals are dying because their habitats are no longer accessible to them as they once were gets the same message across. Keeping truths from them though is only building a generation that won't be fully informed about the issues*. (sic)

Diane begins by expressing a totalizing idea that "we should not hold anything back". She articulates that students should be presented with a wide variety of evidence and then decipher what is true based on "where the evidence lies". Diane draws on the notion that we should present students with "all sides", a suggestion that is vastly problematic regarding classroom engagements with climate crisis. Then, in the following sentence, the teacher articulates a desire to shield students from the image of the death of a walrus.

On one hand, then, Diane says that we should not hold anything back and in the next moment alludes to the “age appropriateness” and declares there is “NO WAY” she would include this particular source. The contradiction expressed here is one between showing and not showing. These articulations represent ambivalent affective attachments that conflict with one another: there is an attachment to sharing information in a way that represents all sides and levels with students. Simultaneously, there is an attachment to shielding students from these images. In order to narrate safe passage through this contradictory landscape, she draws on the language of rationality, citing that her classroom practice involves “claim, evidence, and reasoning”. In furthering the complexity and adding even more texture to the contradictions, Diane articulates that we should focus on these rational components of learning at the same time she says that she doesn’t think we “should avoid scarring them...that is just setting them up for failure in the future”. This statement implicitly acknowledges that learning has the capacity to induce fear, that it can be more than rational.

These statements about holding nothing back, focusing on rationality, and then not being concerned about “scarring” students are immediately followed by the idea that any presentation of "difficult information" should be made in ways that soften the information. The participant seems to nod to this conflict as she ends by noting that "keeping truths from them is only building a generation that won't be fully informed". In other words, in this short excerpt, Diane is articulating exceptionally divergent ideas. On one hand, holding nothing back, on the other articulating some need to protect students by "softening" content, and then shifting back again to the idea withholding an idea would prevent a fully informed future subject.

In describing her experience of the walrus clip during the interview immediately after watching the clip she articulated

> *So, my response to this video was like oh it's just two minutes, I am sure it will be cute. Then I was like they are going to fall off that cliff- she wouldn't show that would she?! Then sure enough the walrus tumbled to his death and I was like traumatized!*

She was "traumatized" by the video and she was certain that I would not show the death of the walrus. In the interview, I experienced her tone as one of anger. While she was usually an eager student who I experienced as chipper in interactions, in this moment, she seemed genuinely frustrated with me and shocked at what she understood to be such a misstep. Her anger was not at the fossil fuel industry or systems of capitalism for causing the problem, not at the government for failing to respond, but at me for showing the image in our class.

Her reaction of disbelief at "my" showing her this clip comes into conflict with her idea that these choices about pedagogy should be made with "age appropriateness" in mind. In reflecting on her frustration with me for showing the clip, an argument based on age appropriateness is made stranger by the fact that she was an adult when I used this clip as curriculum as the teacher in our course. The porosity between the inner world and outer world becomes clear in such contradictions. Diane's internal responses are shaped by her interaction with outer representations (i.e., the walrus clip) and outer discourses (i.e., focus on rationality in teaching; commitment to teaching both sides; not shield students, etc.). These inner experiences of what she terms "trauma", anger at me as the

teacher, shock, and desire to protect students also shape her outer engagements with the world, including her classroom practice.

This clip and the emotional response it enlivened for her, not only shapes her meaning-making but also how she talks about making choices about teaching. This is significant as it demonstrates that these psychical dynamics of affective response to the walrus clip have implications for how Diane might include this content in her classroom, though the direction of those implications remains uncertain. The emphasis on the fact that she would never show her students the walrus video demonstrates the ways that making classroom decisions around what to teach is inseparable from our internal psychic responses which are often full of complicated knots of contradiction and ambivalence. In this example, this demonstration is made as Diane experiences discomfort in watching the clip, anger at me for showing the clip, and subsequently shapes her decision to not use this clip despite her contradicting articulated desire to "not hold anything back".

Diane was not the only participant who manifested this sort of conflict. In further examining the personal and often conflicted nature of these teaching choices, Kevin articulated

> *This is certainly a personal teaching preference and differs based on individual teaching philosophies, but it is my belief that we should very rarely hold back in talking to students, especially about serious issues. Mainly, students will often feel a greater sense of respect and comfort when teachers are open about topics that may be deemed "too serious"…I certainly don't want to scare my students but, like my own personal feelings, I want them to understand how serious our current climate situation is and the potential outcomes if we do nothing.*

Here, in articulating fear and a desire to separate "personal feelings" from what students should know and encounter through pedagogical design, he wants to avoid scaring students, but also wants to avoid holding back. The ambivalent contradiction here is attachments to the idea that we can share all the realities of climate crisis with students and simultaneously control student affective and emotional responses to this information. Also, interesting here is Kevin's overstatement of possibility in either direction. Kevin implies that his lessons and pedagogical design can either save the world or result in utter failure. Such an oversimplified understanding of the possibilities of climate pedagogies speaks to the impossible stakes Kevin has constructed and represents an oversimplification of the possible outcomes of any pedagogical encounter that may unfold in his future classroom. Grappling with a desire to avoid invoking fear or other defensive postures in students does indicate that Kevin sees that there is some connection between these emotional and affective responses and the ways that students make sense of content about climate crisis.

Compounding the complexities of ambivalence between withholding and providing information, balancing the push and pull between showing everything and withholding upsetting information, are worries about making the 'right' pedagogical choices. Throughout the interviews, participants referenced these choices about how and what to teach as a source of anxiety as they think about teaching climate crisis. In one such instance Brett said, "*teaching about a current crisis is scary and I certainly don't want to get anything wrong.* In another instance of this Addison said, "I am really worried about making choices about how to teach this content" These worries include their concerns about the children's responses, but also about the responses of other

teachers, parents, and administrators. These compound with worries about lacking content knowledge and a feeling that this is high-stakes teaching. The examples from Addison, Jacob, and Diane, demonstrate the connections between feelings, meaning making, and teaching as they are complicated by these feelings of anxiety often plagued with uncomfortable conflict.

In one example of this, in describing how she feels about teaching climate crisis during the interview, Addison articulated

> *I feel excited, but also nervous. It is my job to teach them the facts and to get them invested in their future world. What if because I left something out, or moved on too quickly, there is a whole generation of kids left not invested or knowledgeable about climate change. That is nerve-wracking. I also feel excited though, because I know that I do the best that I can, and I know that lot of my students leave me more knowledgeable than what they came in and also a lot more passionate about climate change. It is rewarding watching them learn and grow and really take their learning into their own hands and want to do something about climate change.*

In this passage Addison lists several feelings, including “excited” and “nervous”. She articulates that she understands this teaching to be high stakes, arranging the possible outcomes on a spectrum between “a whole generation of kids left not invested or knowledgeable about climate change” and alternatively “a lot of students leav[ing] more knowledgeable than what they came in” and “passionate” about acting in the face of climate change. She describes that if this best-case scenario came to fruition after she did “the best that [she] can”, she imagines that she would feel rewarded and that students

would begin to take their "learning to their own hands". In this articulation, Addison's desires for her students to be transformed by her teaching and move towards action are clear. She wants to "teach them the facts and to get them invested in their future world". The prospect of leaving something out or "mov[ing] on too quickly" is "nerve-wrecking". There is entanglement here between Addison's articulated desires for her students and her feelings of both excitement and worry. I distinguish these as she uses the words "excited" and then "nervous". She places an extraordinary and perhaps unreasonably high expectation for any series of pedagogical encounters to produce such investment, knowledge, action, and passion. A lot is riding on this teaching in Addison's understanding, it is seemingly overstated in each direction.

In the previous example, Addison expresses worry at getting it right, and she is committed to working towards this inclusion in ways that are meaningful, complex, and support students towards action. While Addison's worry might spur her to give time and focus to her teaching of climate crisis, in other circumstances teachers might be spurred away from teaching because of the uncertainty of the terrain. The next two examples explore utterances of such instances of teachers expressing worry which may dissuade them from including this content. The dissuasion in each of these cases is at least partially blamed on worry, fear, or discomfort. These are examples of the possibility that the ways that teachers experience worry about climate crisis have impacts on classroom enactments. Jacob articulated the worry resulting from the "seriousness" at hand in teaching this topic during the interview

> *Teaching climate change makes me extremely nervous. Honestly, I just don't feel educated enough in order to teach it…people say "when you have mastered*

something, that you can teach it"…I have certainly not mastered climate change. I think the seriousness is also a daunting thing…it is easy to teach about past events, even horrible ones, like the Holocaust, but something about teaching about a current crisis is scary and I certainly don't want to get anything wrong.

Similar to Addison, Jacob uses the word "nervous" and describes not wanting to get anything wrong. They share an understanding of this teaching as high stakes in some way. Different from Addison's desire to fully engage her students, Jacob articulates that he doesn't "feel educated enough in order to teach it." He justifies this by saying "people say when you have mastered something that you can teach it". He then pauses for a moment before asserting that he has "certainly not mastered climate change". Although he seems to believe teaching about climate crisis is important in stating that it is "daunting" and using the word "crisis" to describe the current situation around climate change, the discomfort is overwhelming and results in his move to avoid teaching this in claiming that he simply does not know enough. Jacob's emotional entanglement with this content is evidenced by his use of the words "daunting", "scary", and "extremely nervous". His paralysis in the face of uncertainty of what and how to teach are inseparable here from his experience of this topic as a daunting crisis.

Jacob references the Holocaust, another content area that is often studied using the framework of difficult knowledge (e.g., Britzman, 1998; 2000; Garrett, 2017; Simon, 2000; Levy & Sheppard, 2018). He likens these topics in their seriousness and daunting nature, before asserting that "it is easy to teach about past events, even horrible ones, like the Holocaust, but something about teaching about a current crisis is scary." Jacob's assertion that it is "easy" to teach the Holocaust is profound, as this teaching is

undoubtedly vastly entangled with learning of the trauma of others and has been the basis of much research and theorizing around difficult knowledge. It seems decidedly uneasy. The unfolding and impending nature of climate crisis seem to heighten its uncertainty and make it even more unapproachable to Jacob. In using the word "scary", Jacob is perhaps referring to his own fear and the fear he imagines for his students as they confront and begin to process climate crisis. The entanglements between Jacob's articulated feelings, his expressions of worry about teaching this content in the classroom, as well as objects of knowledge demonstrate an interactionist construction of emotion. This is important because of its implications in how Jacob says he will teach this to his students.

A different worry emerged for Diane. She is not worried about how the content will be received by students, but by her colleagues and administrators. During the interview she articulated:

> *I am aware of how many standards actually relate to climate change, but the fear is in differing my lessons from my colleagues. So many of my lessons are also used by other content teachers, and I want to make sure we are all together. I'm also not sure how my administration would feel about teaching this content and that uncertainty scares me as well.*

Diane's teaching is also shaped by her worry about uncertain terrain. She articulates knowing that this content is defensible by legitimized metrics through the "many standards" that "actually relate to climate change". Despite this knowledge, she describes "fear" in having different lessons from colleagues. Diane is hesitant to engage climate change curriculum not because it is not related to the content of her middle school social studies class, or because the content itself is difficult to engage for some reason, but

because she does not want to approach the topic with her fellow teachers. She describes the "fear" of being different.

While such pressures are dominant in many classrooms and schools around the country, noteworthy in this example is my own experience of the school in which Diane taught. I supervised student teachers at this school for two years and had a working relationship with the administration she references. Two of the participants in this study taught at this school. My experience of the administration was that they placed a high priority on creative and inquiry-driven teaching and that they valued the inclusion of social justice across content areas. Brett, who taught just down the hall from Diane, never mentioned such pressures to adhere to a common curriculum or fear of administration. As part of the pilot study for this dissertation, I was able to watch Brett's students engage with lessons that directly engaged climate crisis. Although these teachers work on different grade level teams, they have both been teachers for several years at this school and I was struck by the differences between these descriptions and my own observations. The fears Diane articulates here seem to me to be a way to avoid including these topics for some reason she is unwilling or unable to articulate.

Conclusion

In the first part of this chapter, I explored contradictions between the stories teachers tell themselves and those they wish to share with students. The contradictions surfaced represent ambivalence as teachers articulate conflicting desires to share messages with students that are hopeful and position students with agency and simultaneously articulate believing something entirely different about climate crisis and their role in responding. These are difficult to make sense of, they reflect something

about what the teachers believe about the roles and responsibilities of educators and they are analogous to a "tangle of yarn" (Lertzman, 2015) in their complexities of attachment, desire, and tension. I have explored instances in which teachers grapple with what and how to teach about climate crisis as they discuss the walrus video clip. Here the competing affectionate attachments are to both the idea that teachers should provide students with the whole truth and simultaneously the idea that teachers should protect students from upsetting content. Exploration of such ambivalence matters, because it illuminates the complexities of the sense-making processes that these educators are working through despite their articulations to both include and support students towards generative action in the face of climate crisis- it is not apathy that prevents appropriate intervention but ambivalence.

CHAPTER 5

ASPIRATION

In this chapter, I explore participants' engagements with their imagined aspirational futures and the paths they imagine might help realize such a future. I understand these dreams for the future and possibilities for action to be entangled with notions of hope and action and influenced profoundly by neoliberal and other dominant discourse. This chapter surfaces noteworthy tensions between the implicated individual I have been arguing is an important component of climate crisis teaching and learning and more collective and political actions that are necessitated by the scale of the emergency at hand. Despite the emerging tensions, I argue that attending the possible pathways for action and exploring how teachers are making sense of them are particularly relevant to social studies education. Attending to aspiration as it surfaces in conversations about climate crisis "can amplify our investigations, and ideally supplant a reductive tendency to focus on values alone as a key driver of behavior change" (Lertzman, 2019, p. 25).

This chapter engages themes of aspiration as they manifest in participant imaginings of sustainable futures and possibilities for action towards these imaginings. In this chapter, I analyze the participant stories about a day in the life of imagined futures. These imaginings leave intact major systems and discourses including those which have actively contributed to climate crisis. I theorize that weakened imaginations and aspirations of possibility function to increase toleration for the most traumatic tragedies both impending and already unfolding. Additionally, the data analyzed in this chapter

illustrates participants consistently articulated desires to include issues of climate crisis in their classrooms and to act in the face of climate crisis, but they do not demonstrate robust understandings of the possibilities for action in the face of complex environmental or climate justice challenges. Importantly, in this chapter, I recognize a tense connection between difficult knowledge and notions of action but argue this is an important inclusion because of this study's situating in social studies education.

Our hopes for the future, manifesting through our aspirations, can be understood in two main ways. One version of hope is a passive stance waiting for things to be better. Such a view of hope is found in such statements as, "I hope it's nice out tomorrow so I can enjoy a walk". The other version of hope insists on a more active notion. Hope is, as Rebecca Solnit wrote, "not a lottery ticket you can sit on the sofa and clutch, feeling lucky. It is an ax you break down doors with, in an emergency" (2016, p. xix). The difference between these two conceptions of hope is that one is a belief that things will have positive result through wishing and the other is an action, a space of uncertainty in which agentive acts against oppression can exist, things might be different, be better- but only through our active intervention. Hope is collective work despite necessary insufficiency and uncertainty. Hope allows us to save one starfish even though we know we will not save them all and that even though such circumstances don't always make us feel good.

Similar to Solnit's theorization of hope as the space in which a belief that things might be different only if we enact it as a verb, Rob Hopkins hypothesized connections between notions of hope and imagination. He argues the seriousness of the existential crisis we face demands a "radical engagement with the future", operationalizing the idea

that hope functions as a space for the belief that things could be different. Wallace-Wells (2019) further argued that at the root of the climate crisis we suffer an incredible failure in imagination, both as we imagine that things might be different and imagine what that difference may be. In this way, hope might be expressed as imaginings of some otherwise different future. In this chapter, I also understand aspiration to be closely linked to the action teachers imagine might bring forth their aspirational futures and theorize how they make sense of these actions. I find that in addition to a lack of imagination about what might be possible in the future, participants also lack imagination about what sorts of things might bring about the types of change they articulate desiring. To be clear, I am not critiquing these particpants for their inability to imagine robustly, but instead using their words illustrate our collective inability and inattention to this work of imagining otherwise shaped by both discourse and the defensive response to the difficulty of climate crisis.

In this dissertation, therefore, I endeavored to try to understand participants' sense of the future in relationship to this spectrum of hope through the idea of imagination and aspirations. In this chapter, I begin by explaining my methods for eliciting articulations of aspiration, then theorize participants' imagined futures and the actions they articulate as possible. I conclude by explaining the implications I see for these theorizations for social studies education.

Collecting Representations of Aspiration

The data analyzed in this chapter was collected in two parts. The first was a written assignment in which students wrote a two-page story about a day in the life of an imagined sustainable future (Appendix C). Students were prompted to focus on any

component of sustainability that was important to them and their community. The readings for the week included a similar imagining extracted from the book From *What is to What could Be* (2019), in which Rob Hopkins imagines that capitalism has been replaced, rapid transit has been implemented, there are shortened work weeks, local food, closer relationships with neighbors, off-grid housing, composting toilets, and radically reimagined school spaces.[6] These stories were designed to elicit their wildest imaginings for what might be possible in a sustainable future in which climate crisis has been meaningfully and justly addressed. Eliciting stories is also congruent with psychosocial qualitative inquiry, which values narrative storytelling as a way to elicit data.

The second set of data that is analyzed in this chapter is related to the action steps teachers articulate as possible action moves on climate crisis. Students were asked to identify a person or group acting in response to a climate crisis and write 300 words about the action and then about how it might be useful in their classroom instruction. The prompt is included below and further contextualized in Appendix B:

> Find a person or community acting positively on climate crisis. Include in your post a brief summary of what they are doing, the issues they are concerned with, and how you might include this person/group as an example in your classroom. (Post should be less than 300 words)

This component of the data collection was designed to collect information around the idea that most preservice teachers do not have very robust ideas about what sorts of actions may be done in the face of the climate crisis or environmental injustice (Alvey,

[6] Excerpt can be viewed at https://www.yesmagazine.org/economy/2019/10/16/book-sustainable-future-town/

2020) and that the possible actions people most often describe beyond classrooms are individual and consumer-based (i.e., metal straws) (Leiserowitz, et al 2018). The analysis of teacher articulations of possibility draws heavily on larger discursive availabilities regarding the prominence of neoliberal and individualized action and in a few glimmering moments more subversive examples focusing on more transformative and systemic political actions. This task was designed to elicit how teachers are making sense of the possible actions around climate crisis and what actions they might think appropriate to share with students. Because difficult knowledge attends most commonly to events transpiring in the past, intervention is not heavily attended to in the existing literature. Part of what makes difficult knowledge so traumatic is the inability to intervene (Pitt & Britzman, 2003). In using difficult knowledge to theorize encounters with currently unfolding and still impending harms (elaborated in chapter 2), I contend that it is necessary to attend to possible actions for intervention. While this does surface some of the edges of the usefulness of difficult knowledge as a theory in this project, I have attended to it in this chapter because I believe it illuminates important implications around the teaching and learning of climate crisis in social studies educational spaces. These articulations of possibility also represent aspirations these participants have for themselves and their students around possible futures.

Imagined Aspirational Futures

Political action is a vital part of democracy and can lead to very real change, but in addition to thinking we always need to campaign and lobby harder, design bigger and more disruptive demonstrates and rally more people through online petitions, perhaps we

need sometimes to stop, stare out the window and imagine a world in which things are better."

(Hopkins, 2019, p. 8)

In the following instances of educators describing their most ideal and sustainable future, a range of ideas presented in relationship to the structure of school, some suggesting deconstructing and interruptions of the existing structure, while most retained without interrogation the dominant social paradigms and structures. Each of these stories hopefully and aspiringly recognizes that things could be different than they are now. Some of the imaginings were lovely and robust, drawing on definitions of sustainability and climate action which included social and economic justice, but most were limited in scope and drew heavily on many of the discourses and logics which have caused the problem including capitalism, neoliberalism, green consumerism, and ecological modernization. These stories of desire are indicators of aspirational futures. Hopkins (2019) notes that imagination, like other human capacity and creativity, has often been co-opted in the service of our own extinction and that is evidenced in the stories these participants dream up. Some of these examples serve as beautiful imaginings of meaningful transformation and possibility, but most responses serve as examples of the ways that our collective diminished capacity to imagine beyond the discourses which have caused climate crisis may be at least partially to blame for our tolerance of such tragedy.

Imaginings Challenging Current Conditions

Some of the imaginings were more robust in their challenging of dominant discourse and systems than others. In one example of dreaming of possibility, a

participant focused primarily on increased social equity related to issues of housing and labor. Addison wrote:

> *Due to publicly funded initiatives, there are several programs instituted to help the homeless population find housing and jobs. With fair wages policies, there are no longer minimum wage requirements as all employers are required to pay fairly, giving employees enough income to live off. Now that all citizens are entitled to basic healthcare, funded by the government, individuals don't have to worry about medical care as everyone has it.*

While continuing to draw on ideas that can be found widely in the zeitgeist of political policy conversation, including Medicare For All, fair pay, and universal housing, Addison imagines a world in which the solutions to climate crisis attempt to address some of the underlying causes of the crisis is in relationship to vast inequity and profoundly impactful issues of resource distribution. This is evidenced by her references to fair wages and Medicare For All. Addison does implicitly recognize the need for some of the major structures of society to shift in significant ways. Such an imagining also acknowledges the ways that other social injustices like "basic healthcare" and "enough income to live off" are entangled in exacerbating issues of climate justice.

Eleanor, meanwhile, reflected on the possibility of material changes as they might manifest in her art classroom:

As a sustainable art educator …I work with [students] to use only materials that can be composted or recycled. As artists in a sustainable world, we no longer use things like microplastics (glitter), tape, synthetic glues, or other materials that pose a threat to the environment. In fact, I hold multiple workshops within the community to teach people how to make natural dyes from food scraps and gouache and oil-based paints from pigments harvested from local soils and rocks.

Figure 8: Screenshot of Eleanor's Paint Making Process

Here, Eleanor imagines how her work would be transformed into an imagined sustainable future drawing on localized and more sustainable production systems that alter the material realities of their classroom work. She describes the elimination of certain materials like glitter and other plastics paired with an increase in the greater use of natural and local materials like "pigments harvested from local soils and rocks". While the description here is

Figure 9: Excerpt of Eleanor's final portfolio of paintings made from local soils

at a classroom level, it reflects an imagining of changed systems of production and distribution in relation to environmental catastrophe. These hopes for possibility recognize that climate crisis is inseparable from other issues of environmental, social, and economic justice. Such a recognition of the complex causes and consequences of climate is evidenced by an implicit recognition of the harms throughout production processes as materials are produced, used, and disposed of. While there is often a gap between imaginations built through the end goal and the development of conceptions about how to make such visions come to fruition, Eleanor gave an example for how this might be operationalized in her final project for the course (Figures 11 & 12). In this final project, she documented her collection of soils and processes for creating pigments that could be used to create art. In addition to a lesson plan created to guide students through such a process, she included a portfolio of her artistic creations using this method. Such an imagining of a material difference in her classroom and artistic practice represents how hope might create the possibility for imagination and subsequent action, however muddied, partial, and insufficient.

Eleanor and Addison described imaginings of the future that in some way challenged current systems of imagining production, consumption and the profit motifs that drive capitalism. Addison in imagining more just wealth distribution and Eleanor through material changes in her art classroom. These responses offer some window into the capacity to imagine different futures in ways that offer the possibility for a different world, As Hopkins (2019) wrote

> We do have the capability to effect dramatic change, but we're failing because we've largely allowed our most critical tool to languish human imagination. As

> defined by social reformer John Dewey, imagination is the ability to look at things as if they could be otherwise. The ability, that is, to ask What if? And if there was ever a time when we needed that ability, it is now (p. 3)

Eleanor and Addison did respond to the question "What if?", they imagined things could be otherwise. The material differences described and operationalized by Eleanor, as well as the social justice orientation to sustainability described by Addison, were unique among the participants as several other imaginings seemed to function to reify systems, logics, and discourses of harm and illustrate Hopkins' reminder that imagination is often "co-opted in service to our own extinction".

Imaginings Refining the Status Quo

Despite calls for robust reimagining that demonstrates the collective capacity for exciting possibilities across these reflections on future possibilities, most of the educators imagined that the basic structures of society, including economic systems and educational structures, remained constant in these imaginings. In this section I'll present the participants' imaginings that seem "stuck" in the extractive ontology of the western present. These function in ways that sustain rather than challenge the imaginations of capitalism, neoliberalism, and extractive futures. In one instance Jacob imagined:

> *Big companies such as Amazon struggled for a while to reduce their plastic use. Soon, they invested into what they called "Amazon Outposts" which spread throughout almost every major city in the US! Instead of receiving packages at home and wasting more plastic, packages would be sent to your local outpost and the plastic would immediately be recycled there. This created more local jobs and helped reduce plastic waste!*

In this expression of imagination, Jacob conceptualizes that capitalism has been able to produce more jobs and more plastics to be recycled, while the very notion of capitalism remains unquestioned. In imagining the best possible outcome at the end of climate resilience, he can imagine only possibilities which include the continuation of Amazon as the world's largest corporation. A corporation with enduring ethical issues around each step of the production and distribution chain and which is unflinchingly anti-labor. The power of a discursive condition which make thinking beyond capitalism not only unspeakable, but also inconceivable, are certainly at play here. In addition to these social circumstances, I theorize that articulating that Amazon will need to make changes might be read as an example of the defense that Wallace-Wells gives nod to in writing that "the burden of responsibility is too great to be shouldered by a few, however comforting it is to think all that is needed is a few villains to fall" (Wallace-Wells, 2019, p. 30).

We are all implicated in these systems and the discursive conditions which make them possible, and Jacob receives comfort, even excitement evidenced by repeated exclamation points, in articulating that just these "villains" need to change. In contrast, Brett imagined a world in which all "online shopping ceased" in favor of more localized economies, but in which our primary patterns of consumption remained both unchanged and unchallenged. This might be read as a manifestation of discourses of capitalism in which it is impossible to imagine anything other than the continuation of some version of our current cycles of purchasing. When thinking through psychoanalytic qualitative inquiry, this might also be read as a defense against the discomfort that is born in encountering the idea that each of our lives will need to profoundly change. Such moves to suggest that only others need to change, or that our changes will not fundamentally

alter our lives- like shopping locally rather than online, but not changing patterns of production or consumption- makes it more tolerable to continue to avoid the realities of the crisis. In this way, imagination might function as a defense against the pain of knowing and forwards the limits of particular kids of education, investment, and desire. Other educators hoped for smaller changes and imagined possibilities in more personal ways. In an example of such personal possibility, Jacob noted in the future he would like to able to ride a bike past a community garden on the way to work.

Concerning teaching and schooling in Brett's imagined sustainable utopia solar-powered buildings, renewable energy fueling student devices, and bountiful school gardens. He articulates, "the building is completely solar-powered, so while the students use their devices during the day, the charging blocks gather power and students can leave devices to charge when they go home". Addison wished for schooling without standards and curriculum guides, she hoped to be able to teach at their own pace and have students engage in more outdoor learning. Jacob hoped that in the future students would spend "equal amounts inside the classroom as well as outdoors", the result of moving away from the "mandated curriculum". While these hopes do question the driving assumptions of most educational institutions in the United States, they are also in line with the widely available discourse around the possibility. Teachers' unions, along with progressive educational theorists, have long advocated against these contemporary standardization efforts and these ideas circulate widely. So, while Naomi Kline called for an imperative and collective hope manifesting as imagination towards sustainability in response to environmental injustice and catastrophe, in demanding that we must "dream big, out loud, in public and together" (as cited in Aronoff, et al., 2019, p. 3), these instances of

imagining do not stretch the limits of possibility even though they very well might be stretching the limits of possibility for these participants given the current hegemony of the our collective discursive condition.

In another instance of imagining a future in which environmental catastrophe has been addressed and education is working in service of sustainability, Diane theorized that schools should focus on literacy efforts as, "higher literacy rate in a country leads to a higher GDP for the country, and higher standard of living for its citizens". Here, she is drawing upon notions of economic growth and progress which have been part of the very fabric of the problems we face. The articulation about higher literacy rates and an increased GDP leaves nothing challenged and adopts the dominant paradigms most widely available about the purpose of education in service to increase gross domestic product. In terms of traditional social studies education, these are the terms of engagement. There is not a language available to them to imagine an alternative future perhaps because of their defensiveness or the collective defense against risking the status quo. Again, drawing on ideas of economic logic, competition, and neoliberalism Diane goes on to hypothesize that each year schools at the state level:

> *have a contest to see which school is being the most sustainable. The leading school in each state gets $10,000 to use however they choose… I know this seems radical, but think of how much money we are spending on COVID right now*

Diane is suggesting a competition and encouraging economic incentives to schools in the form of a 10,000-dollar strings free prize. She does not specify what sorts of metrics might be used to determine the winner of the idealized competition but implied here is the notion that the desire to win a competition paired with a monetary prize will motivate

schools and teachers to change their behavior to be more "sustainable". She imagines that carrot-like incentives will be the way forward, rather than stick-like regulations that demand and enforce more sustainable schools. This imagining of competition can be read as a reification of the dominant axiological assumptions that maximizing wealth is a priority worth the risks and costs (Field, 1997), that it can be ethical, and that the current structures of government, economics, and society are sufficient (Harper & Snowden, 2017).

In Diane's example, she is making sense of climate crisis, even imagining solutions, by reflecting, refining, producing, and reproducing larger discursive trends towards varying levels of deferral and avoidance. Furthermore, she understands her imagining of this articulated possible future to be "*radical"*. She defends her idea of a competition with the clause, "I know this seems radical, but…". In this colloquial use, radical might be understood to align with the Marriam-Webster definition "favoring extreme changes in existing views, habits, conditions, or institutions". What seems remarkable here is that the expressed hopes are not radical and indicate Diane's construction of what she articulates radical change might look like.

In this section, I have examined the ways that the research participants' stories about an imagined aspirational futures illuminate the ways that hope functions in relation to imagination and hypothesize that such weakened imagination structures increase the capacity to defend against the difficulty of encountering climate crisis. In the next section, I will analyze the ways that teachers talk about action concerning building such futures.

Action Towards Aspiration

> Bad things are going to happen. What can you do as a person? You don't run around saying, 'We're fucked! We're fucked! We're fucked!' It doesn't—it doesn't incentivize anybody to *do* anything.
>
> (Schmidt in Robinson, 2018)

As suggested by NASA climate scientist Gavin Schmidt in the quote opening this section, the ways we engage and conceptualize climate crisis and the possibilities for a response have impacts on how we are thinking about what to *do* in the face of such a complex challenge. Perhaps unsurprisingly given that stories we learn of intervention and resistance cannot always be accommodated by our imaginative structures and that the stories described above lacked the language to begin to imagine alternative structures, many of the actions teachers suggested as possibilities were similarly in service to a continued status quo.

Difficult knowledge theorizes that part of what makes encounters with it so difficult is the trauma of not being able to intervene. This makes climate crisis distinct from other representations of difficult knowledge which have been studied like war and genocide. For this reason, research employing difficult knowledge does not often engage questions of "what to do now". Despite this distinction, I have included these reflections on the ways participants imagine intervention for several reasons. I think these actions which leave unchallenged the most serious causes of climate crisis, demonstrate the powerful discourses at work that shape our capacity to imagine otherwise. They seem to be an important classroom implication of the internal psychic defenses described as part of lacking imagination in the previous section. Furthermore,

I understand this to have important consequences for social studies education in particular. In the following examples, despite explicit instruction on a variety of examples of successful activism responding to climate and environmental injustice, students continue to draw on dominant discourses, demonstrating that simply exposing students to a larger range of options does not necessarily change how they think about action. I argue that this is the result of collective and individual inability to accommodate knowledge which disrupts these discourses and can be understood as a psychic move, which often manifests unconsciously.

As part of the data collection, each of the participants was asked to identify a group of people working on the climate crisis and describe how it could be useful in the classroom. Before this assignment, the coursework had students engage in ideas of collective political activism over two weeks. All students in the course, including each of these participants, read 18 one-page summaries of organizations and people who were engaged in climate activism (Bigelow & Swinehart, 2014), a case study of teaching about the Dakota Access Pipeline protests (Haynes, 2020), and watched a 20-minute video titled *The Story of Solutions* on the importance of focusing on structural and collective actions to climate crisis (Leonard & Sachs, 2013). As participants identified actions and groups, they illuminated something about what they think is an innovative, effective, or important action in working towards an aspirational future. The groups identified and further theorized below include four profit-driven companies, two non-profits, and one in-school project in partnership with a company focusing on entrepreneurship skills. None of the participants engaged in ideas of direct political action, including lobbying efforts or direct actions like marching or protesting. Throughout the data collected in this

project, teachers expressed an eagerness toward action and were conceptualizing their agency concerning this crisis in a variety of ways. The ways they conceptualized possible action ranged from ideas centering individual action focusing on green consumerism and drawing on neoliberal discourses to more transformative political and collective actions. Many participants expressed a new or renewed sense of urgency. After all, the only thing between a worst-case scenario climate catastrophe and "the world we live in now lies only the question of human response" (Wallace-Wells, 2019, p.14).

As Wallace-Wells (2019) reminded us, we are all implicated in these systems and the discursive conditions which make them possible. This sort of discourse often becomes entangled with notions of green consumerism and can function to support the continued dominant axiological assumptions that maximizing wealth is a priority worth the risks and costs (Field, 1997), that it can be ethical, and that the current structures of government, economics, and society are sufficient (Harper & Snowden, 2017). Such entanglements are further explored in this section. In the following discussion of systems of knowledge and power, another important tension emerges here: We must remain individually implicated in these problems *and* simultaneously see solutions as more than our individualized actions. I attend to the ways these educators pick up such tension by discussing idealizations.

In the following subsections, I theorize data that serve as examples of idealization, demonstrates a discursive subject often unable to accommodate imaginings beyond dominant discourse, highlight moves to avoid action altogether, and finally analyze how participant understandings of political action have implications for social studies education.

Discursive Subject

In many instances throughout this research project, the heavy presence of neoliberal discourse became abundantly clear. Given the shared recognition of a discursively shaped subject by difficult knowledge and psychosocial methodologies, it is no surprise that an analysis of the ways teachers talk about what to do in the face of climate crisis would be saturated with such language and ideas. One example of the entanglements of action and neoliberal discourses can be found as Diane describes her imagining of possible action around a school garden saying that

> *It teaches them entrepreneurial skills and gets them involved in something much bigger than our small school garden. It shows then how the little things that they do each day to take care of the garden and the things that they are learning, are being put to use in our community and everyone is able to benefit from it by eating their yummy food!*

The use of the word "entrepreneurial" and the conception of the product being "put to use" employ terms and ideas that are associated with the economic logic of neoliberalism. Diane understands action in the face of climate from within the very structures and discourses of capitalism that have been largely responsible for the crisis. They see skills around entrepreneurship as what makes this project valuable, rather than any relation to the existential threat to the climate. In an even more direct entanglement of these discourses, particularly those around *green consumerism*, two participants listed companies selling products as the group working in the face of climate crisis. Brett identified a global company headquartered in Seoul, South Korea

that makes solar panels, Q Cells. In talking about the classroom uses of this example, Brett identifies that students

> *could use the research that they did to ask questions to better understand the processes of Q Cells…. and come up with a way that we could pitch Q Cells to the community. Although prices may be high to install solar panels, students could come up with a sales pitch to encourage members of the community to use them in their homes and businesses.*

Noteworthy about this understanding of action is the way it holds up individual action through the form of local community members making different consumer choices. This is markedly different than having students advocate for solar energy through a political campaign to increase subsidies, change regulation that mandates solar on new construction, gives tax breaks to installers, or any other of the myriad of ways this idea may be moved towards more collective action. This also rests on assumptions that a technocratic solution will solve the crisis rather than a more fundamental questioning of the structures, both material and discursive, which continue to allow the conditions of climate collapse. The discourse of *ecological modernization* has served to legitimize capitalism and soothe our environmental anxieties resulting from capitalism's impact on our world by promising "green" capitalism that offers both continued economic development and environmental sustainability (Sharma & Alvey, 2020).

Another technocratic solution identified by a participant is a non-profit which has created a "giant ocean barrier to trap some of the floating plastic without disturbing the marine life below". The teacher goes on to describe the usefulness of this in the classroom, saying students "could write up proposals or advertisements for their

environmental solutions. They could imagine things that utilize solar power, replace plastic bags, reduce carbon emissions, etc." The use of the word "advertisement" is an indicator of the circulation of green consumerism discourse. Jacob employed economic logic in describing possible solutions in articulating a business that has sprung up in response to a need for composting, noting that the business had successfully "rebranded" itself and that they provide subscribers with a paid service with a profit motive. Jacob is articulating privatization mechanisms employed through capitalism and neoliberal discourses to support the idea of composting. Alternatively, he could have framed the same issue without such discourse in describing a local farmers market that collects compost for a community cooperative or a classroom project in which students were engaged in reducing food waste from their cafeteria. It is not the act of composting that is inherently entangled with these discourses, but how they have framed the participants thinking about this act. I want to reiterate that this is not meant to be a critique of these individual participants constructions of the possibilities for action, but instead indicative of our collective weakened imaginings about paths forward, shaped by both societal conditions and our individual subjectivities.

Idealization

Another theme that emerged in this discussion of action is that of idealization. As evidenced in the examples below, "idealization can become an engagement of control that wards off the capacity to acknowledge the profound experience of loss and grief" (Britzman, 2000, p.34). In the example explored below, idealization is not separate from the types of discourses described above. In describing a profitable development company in South Florida, Kevin articulates a profit-driven organization that does not challenge

many of the systems that have caused climate change and remains firmly unquestioning of patterns of production and consumption. In this way, he is able to avoid imagining the real losses at hand. While reimagining what might be possible, Kevin described that this included the "development of a K-8 charter school with a STEAM-based curriculum, a lakeside gastropub only serving locally-grown organic food" along with "plans to expand the pilot to an Uber-style on-demand service. Innovations in the house include Alexa-controlled smart homes with 1-gigabit fiber internet and wiring for electric cars in every garage." In this passage, Kevin describes what he sees as exciting possibilities for an imagined future. He dreams of "Alexa controlled smart homes" and in a subsequent passage, "clean natural gas piped to the kitchen". There is idealization at work here of what natural gas and Alexa-controlled homes may make possible and what they might interrupt. There is an idealization here suggesting that our lives will only get more comfortable and consumption filled as we address climate change. Additionally, this idealization connects imagination in service to the status quo as described in the previous section to these imaginings about action which leave unchallenged such a status quo. This collective weakened capacity to vision a different world is evidence that imagination, like other human capacity and creativity, has often been co-opted in the service of our extinction (Hopkins, 2019). Wallace-Wells (2019) further argued that at the root of the climate crisis we suffer an incredible failure in imagination, both as we imagine that things might be different and imagine what that difference may be. This stands to have implications for the teaching and learning of climate crisis.

In holding this up as an example that might be helpful for students, Kevin also idealizes what it is that middle schoolers might really be able to do. Here emerges the tension between both individualizing our implication in these challenges and understanding action in ways that are collective and political in scope. While construction development is beyond the field of influence of most middle schoolers, advocating for policy changes may not be. Moving to a sustainable housing development in South Florida is beyond the scope of most middle schoolers' realm of influence but understanding production and conception implications are within reach. Teachers might both want to help students see the actions and simultaneously recognize that the heavy lifting of remaking discursive, political, and material realities should not fall to children.

Instances of Inaction

While some participants focused upon individual, idealized, and neoliberally saturated actions, some articulations removed them from action altogether. These happened in a variety of ways, all while each educator maintained that something must be done- just not by them. These function as psychoanalytic ambivalence as participants simultaneously removed their responsibility to act and articulated the need for urgent action. In theorizing ambivalence and action, it is important to note that “engagement or the lack thereof is not a straightforward expression or valuation of attitudinal positions” (Lertzman, 2015, p. 108). And that “the presence and process of ambivalence reflect the highly complicated nature of our deep investments in practices that are both life-affirming and life-degrading” (Lertzman, 2015, p. 108). In one example, Addison articulates that

> *governments and large corporations across the world will establish limitations on greenhouse gas emissions and receive hefty fines for pollution. The world will be a better place when we can reduce our carbon footprint on large-scale operations as well as small-scale matters.*

Here in imagining the possibilities, she articulates systemic action and that action is needed, but here it is "government" and "large corporations" that need to act. While perhaps true, this serves to abstract her from the action. It functions differently than articulating that people must put pressure on these entities.

Even when articulating the actions they take, participants announced their inconsistency and contradicting investments. Eleanor wrote "it's okay that I don't remove the label off of every glass item I use for the recycling center or to compost every food scrap because I am tired. A little bit of inconsistency will not matter too much." Diane articulated, "the story I tell myself is that it is okay for me to not always do my part because one little thing here or there doesn't matter." In a subsequent sentence, she argues that there is a need for students to be inspired to act continuously towards a common good. This is representative of a process of ambivalence in which the teacher wants students to be inspired to act in ways that are life-affirming and towards a common good and simultaneously holding on to investments in ways of life that have root causes in the systems and discourses that have caused the very harm they seek to elevate, including those of neoliberalism and capitalism.

Political Action and Social Studies Education

I have situated this study in social studies education because of the work of the field to prepare citizens ready to actively engage in the challenges of democracy.

Although each of the teachers in this study articulated that they identify as civics educators and saw their work as closely connected to social studies education, political actions that I expected to see teachers talk about rarely emerged. While the vast majority of teacher's articulations about action in the face of climate were individual, rooted in neoliberal logics, and impacted by the psychic experience of ambivalence, in a few instances educators illuded to more transformative and political possibilities for action. These conceptions seek to be "an insistence that students have access to the tools with which to negotiate and transform the world" (Ayres, et al., 2000, p. 2–3). While these teachers articulate circumstances of an outer world that requires transformative political action and systemic responses to global climate crisis, these articulations are steeped in the defenses against anxiety, competing investments, and attempts towards comfort evidenced by more directly ambivalent moments. Kevin mentioned that voting was an important contribution to intervening in climate crisis and Eleanor noted the political causes of the problem, saying "this feels like a battle we are losing and that if people do not wake up, especially self-serving politicians". Of the story they want to tell students, another Emma wrote

> *There is always hope. You are important and your actions make a difference. You are the future leaders of the world. Here are the facts about what's happening. Let's write letters to politicians. Let's make brochures to educate our community. Let's recycle our paper and try not to waste food. If we all work together, we can make a difference.*

The mention of writing letters to politicians or working to educate the wider community alongside more individual actions like reducing food waste and recycling

can be read as a recognition of the need for more political actions, actions that move beyond discourses of green consumerism. In another example Addison articulated

> *The story I want to teach my students is that they are the future and their battle for our planet begins now through the small things that they are capable of doing as well as through the system in which they are raised. They can be those next advocates, lobbyists, politicians, and voters who act to effect change for our world so that they are the agents of change for the better.*

This response is markedly different from most of the other actions articulated by participants as possibilities for young people. Here, the educator uses strong language about the "battle for our planet". The analogy of a battle indicates a combative tone. The use of the word "our" indicates a collective investment in the outcome, rather than a more removed reference to "the" planet. The teacher mentions that students can become "advocates, lobbyists, politicians, and voters". They articulate actions that are systemic and political, these solutions are about transforming systems of power as they entangle with climate crisis. While anxiety and fear cannot be absent from either this teaching or the ways students engage with such knowledge, these conceptualizations of action provide students with some way to imagine a path forward that is more complex and complete than discourses of green consumerism and environmental technocratic salvation.

In considering the more political actions mentioned in this subsection and the pedagogical implications, it is important to note that the exposure of teachers to a wide range of stories about effective, political, collective, and more transformative actions did not seem to have much bearing on their ability to imagine such actions for

themselves and their students. That is, through their coursework and the structure of the assignments they were exposed. Just because someone has encountered information, we cannot know what they will do that information. Because of the capacity to avoid and route around knowledge that does not easily fit within what we already accept to be true, it will take more than simple exposure to examples of successful activism to help teachers and students see what might be done next to resist climate crisis and its vast injustices. This has important implications for thinking about teaching and learning about climate crisis in social studies education.

Conclusion

In this chapter, I have analyzed data around the theme of aspiration through participant articulations of desired futures and their imagined agentive paths towards those desires. I theorize that our individual and collective inability to imagine robustly and beyond neoliberal discourses contributes to the capacity to bear the horrific realities of climate crisis. In the second section of this chapter, I identify evidence of a discursively saturated subject and make note of the ways that idealization shapes how we understand possible action. I suggest that understanding political actions is of particular relevance in social studies educational spaces, but also note that given the power of the psychic moves and discourses at work, it will likely take more than exposure to the possibilities to truly expand how teachers and students conceptualize action.

CHAPTER 6

CONTRIBUTIONS, IMPLICATIONS, & CONCLUSIONS

> The news is not good. It feels as though we are hurtling down a hill without any brakes, through an unfamiliar landscape, to an uncertain destination. The evidence is mounting that we are well past the point where climate change response can be a planned, gradual transition. It is much more likely that profound and unwanted change in the next few years will make a mockery of current policies on climate change and other issues. We need to deal with at least the possibility of catastrophe. Yet daily life continues more or less unchanged, in varying combinations of struggle and contentment. We are in collective denial. We are grieving. (Head, 2016, p. 1)

This dissertation has drawn on interviews and participant-produced written data collected from preservice and inservice teachers to theorize the complexities of teaching and learning about climate crisis. I have drawn on the theoretical notion of difficult knowledge to explore themes relating to ambivalence and aspiration. I find that teachers often soften or defend against this knowledge to protect students and themselves from the bleakest realities of climate crisis. I also find that there is a significant connection between the ways teachers affectively experience climate crisis and the ways they make meaning about climate crisis. In this chapter, I conclude this dissertation by connecting the data themes, suggesting ways that more robust imagination and accommodation of

the emotional experiences of learning may support more complex and helpful climate education in social studies classrooms. In addition to exploring these classroom implications, I will then review the chapters and outline the contributions to the field of social studies.

Review of Chapters & Findings

In chapter 1, I outline the problem addressed in this dissertation. Namely that the emotional elements of teaching and learning about the climate crisis are impacting the teaching of this content in ways that impedes students' ability to make sense of and act in the face of such an urgent challenge. This introductory chapter outlines the research question: *What are the implications of engaging climate crisis in social studies education?* and the supporting questions: *How do teachers make sense of encounters with the difficult knowledge of climate crisis?* and *What are the associated pedagogical and curricular implications?* The chapter also builds the argument for situating such an inquiry in the field of social studies. I argue that the field of social studies offers rich possibilities towards supporting the development of citizens ready to agentively participate in democracy and intervene in injustice, and that the challenges of the climate crisis are inherently social in nature.

In chapter 2, I described the theoretical notion of difficult knowledge and the assumption of a defended subject which underpins it. I extend that although difficult knowledge has been most frequently used to describe the trauma response that can be induced in pedagogical encounters with historical content that is deeply unsettling, such a notion might also help look forward towards the impending suffering caused by climate crisis. Britzman argued that part of what makes trauma traumatic in difficult knowledge

is an inability to intervene towards a different outcome, but trauma can be part of learning about still unfolding and impending catastrophe too. Trauma in the case of the climate crisis is induced by the extraordinary and existential nature of the issue.

In chapter 3, I explained the methods and methodologies which informed this study. Drawing on psychosocial methodologies, particularly the work of Hollway and Jefferson (2012), Hoggett (2019), and Lertzman (2005, 2012, 2019), I have gathered data through participant interviews and written reflections. These interviews were conducted using a Free Association Narrative Interview method in which participants are asked to tell stories about their lives and experiences. I extend that the written reflections and assignments produced by the participants in this study provide further insight into their experiences of climate crisis pedagogies and allow for inquiry into how these emotional and affective responses might impact their classroom practice. The data collected through this interview process and participant-produced written text were then coded for analysis. This coding process was informed by Lertzman's framework (2012) as well as an open coding method (Dyson & Genishi, 2005) supported by data mapping (Gillespie, 2019; Lertzman, 2012) and coding in context (Hollway & Jefferson, 2012; Snipe & Ghiso, 2004). In this chapter, attention is given to the ways that the theoretical assumptions underpinning difficult knowledge align closely with those of psychosocial qualitative inquiry, particularly as they are employed in this study around the notion of a defended subject.

The following two chapters analyze the data collected. Chapter 4 engages themes of ambivalence. Participants conflicting attachments surfaced between participants' own beliefs and those they express communicating to their students. Such ambivalence is used

in this chapter to theorize the implications of the defended and discursive subject on the teaching of climate crisis. I theorize that it is ambivalence rather than a lack of care which prevents participants from acting to disrupt the status quo. Chapter 5 engages themes of aspiration as they manifest in participant imaginings of sustainable futures and possibilities for action towards these imaginings. In this chapter, I analyze the participant stories about a day in the life of imagined futures. These imaginings largely leave intact major systems and discourses including those which have actively contributed to climate crisis. I theorize that weakened imaginations and aspirations of possibility function to increase toleration for the most traumatic tragedies both impending and already unfolding. Additionally, the data analyzed in this chapter illustrates participants consistently articulated desires to include issues of climate crisis in their classrooms and to act in the face of climate crisis, but they do not demonstrate robust understandings of the possibilities for action in the face of complex environmental or climate justice challenges. This matters because a lack of imagination increases our toleration for the tragedies of climate crisis and shapes the ways that teachers articulate offering possible actions to students. Importantly, in this chapter, I recognize a tense connection between difficult knowledge and notions of action but argue this is an important inclusion because of this study's situating in social studies education. These two data chapters are united in their exploration of the implications of climate crisis instruction. They each theorize particular defensive postures and the ways that our inner psychical dynamics interact with discourse to shape what unfolds in classroom engagements with climate crisis.

Through this data analysis, I answer the question *How do teachers makes sense of encounters with the difficult knowledge of climate crisis?* by suggesting that they

make sense of these encounters as emotional and affective and theorizing a variety of defensive postures that are unconscious and conscious as they navigate this teaching and learning. Their responses are full of deferral and moves to distance themselves and their students from the bleakest consequences and many of the most implicating causes of climate crisis. I attend particularly to the ways that ambivalence and aspiration are circulating through this sense-making process for teachers. Furthermore, I argue that the participants in this study are experiencing encounters with representations of climate crisis in ways that are both conscious and articulatable, and unconscious and beyond articulation. Evidence of a defended subject, working to protect themselves from pain and uncertainty in ways they cannot identify, represent important and significant ways that teachers are making sense of these encounters. In answering the second research question, *what are the associated pedagogical and curricular implications?* I theorize the ways that teachers offer possible action to students (chapter 5) and the ways that worry, grief, and anxiety are entangled in pedagogical and curricular choices (chapter 4). I also hypothesize that teachers' desires to offer students a preponderance of optimism shape classroom offerings in ways that stand to impact students abilities to make sense of and intervene in climate crisis and that contradictions in teachers' thinking shape how they think about teaching this content (chapter 4). The themes analyzed in the two data chapters are not discrete from one another. They each contribute to the overarching research question: *what are the implications of engaging climate crisis in social studies education?* and particularly to the supporting questions of how teachers are experiencing this teaching and learning. Each of these chapters also illuminate some of the ways that these experiences of teachers may be informing or shaping classroom practice.

These findings support the arguments embedded throughout this dissertation including those which answer the overarching question driving this dissertation: *What are the implications of engaging climate crisis in social studies education?* These include the ideas that teachers miss substantive and important components of teaching climate crisis if they fail to recognize the ways these topics are emotionally and psychically entangled; that a lot of climate crisis pedagogies are not functioning in the ways that teachers think they are, and that the emotional and affective responses of teachers shape teaching and learning in classrooms. I also argue that there is a significant connection between meaning-making and these emotional and affective experiences.

The more than rational experiences of learning and the ways participants in this study worked to avoid the realities of climate crisis, even while articulating a commitment to its classroom inclusion suggests that teachers and social studies education should attend more carefully to climate crisis as difficult knowledge and offer more robust ways for students to think and navigate the affective and emotional components of teaching and learning as they are entangled in these pedagogical engagements for both teachers and students.

In this subsection, I have reviewed the findings of this dissertation and the primary arguments of each chapter. In the next section, I will briefly suggest possible classroom applications that might begin to address the need for more robust and complex climate crisis education in social studies classrooms corresponding to these findings and implications.

Possible Classroom Applications

While it is not the primary focus of this project to produce classroom applications, in working through this data and listening closely to the experiences of teachers as they begin to engage these issues, I hypothesize there are important ways to begin the work of addressing some of the findings of this dissertation in classroom work. This section articulates some of these possible avenues towards honoring the complex emotional experiences of learning and teaching about the impending and unfolding climate crisis. I hypothesize that among the most important of these possible classroom actions are intentional support for the development of more robust imagination structures, and attention to the emotional dynamics of learning about climate crisis.

Fostering Robust Imagination

The exploration of these educators' stories about imagined sustainable futures in chapter 6 highlights the dangers of diminished imagination. In this chapter, I hypothesize that the hindered capacity to imagine an alternative future beyond climate crisis and the systems which have enabled it, are at least partially to blame for toleration of such a condition. One possible response to this might be instructional spaces that intentionally support teachers and students towards more robust imagination. Imagination, like other human capacity and creativity, has often been co-opted in the service of our extinction (Hopkins, 2019). It is harder to stay sustained in movements when we cannot imagine the world we are working towards and our imaginings of the future shape how we imagine the actions to arrive at that future. This invites questions about how it is that we might provide space and structure for radical imagining in the social studies classroom which provides an impetus for both hope and generative action in the face of such an existential

crisis. This opens lines of inquiry worthy of our own robust imaginings both for the possibility of sustainable futures and also specifically in the work of social studies scholars investigating ecological issues.

Left un-pedagogically considered, encounters with difficult knowledge can result in pessimism, including notions of resignation that there is nothing to be done or that our fate has been sealed, they are all manifestations of defense against loss and pain. The fear of pessimism and its function leading to inaction has long been a consideration of some advocating action on complex environmental issues. One climate scientist recently warned against writing about these challenges as if it is "unsolvable, and feed[ing] a sense of doom, inevitability, and hopelessness" (Mann, 2017 in Becker, 2017). While others, including Burnell (2018), argued that there is danger in avoiding discussion of the "likelihood and nature of social collapse due to climate change" in fear that it might cause hopelessness and despair. Developing robust imagination of what is possible might serve to combat such despair and support students in making sense of difficult knowledge.

Attending to Emotional Dynamics

Commitments to acknowledging and responding to collective grief, worry, ambivalence, denial, and other affective experiences as part of the reality of classroom life serve as an important avenue towards deepening the possibilities of learning and action in the face of social injustice. The participant comments described in this dissertation represent some of the ways these educators are making sense of the immense challenge of honoring these affective experiences which shape both teaching and learning. Like all of us, the language they have to describe both the injustice and the grief

is too gentle, their ability to comprehend it is muddled by its incomprehensibility, and their understanding of appropriate political action is underdeveloped by dominant social paradigms which nudge us into order. It is a bold and important commitment to see student's grief, sadness, anxiety, worry, and pain, sometimes the result of our important classroom inclusions of injustice, to hold that pain for a moment, and then work then support them as they work towards the other side. It is perhaps among the most important challenges we might undertake as teachers. Bill Ayers argued that "there is no promised land in teaching just the aching and persistent tension between reality and possibility" (Ayers, et al. 2010, p. 15). However, we might start on this long, muddy, and sometimes grief-flooded road by seeing and naming our sadness, asking students about their own emotional experiences.

In addressing the issue of climate crisis in social studies, teachers might begin by seeing and naming their own uncertainty and emotional responses**.** Our own experiences of grief and sadness shape what we present to students in the classroom. While the desire to protect students from the pain of the world is understandable, we must begin to face our grief, denial, passion for ignorance, or other responses and carefully consider the ways it shapes our choices about what to include or exclude from our classrooms. Affect is circulating in our classrooms as we teach these topics regardless of intentions to shield students or ourselves from what might be most uncomfortable.

Attending to the emotional dynamics circulating in classrooms, particularly in pedagogical encounters with difficult knowledge, requires toleration of uncertainty and insufficiency. It is impossible to predict how an "affective plume" (as in Garrett, 2011) might materialize, or the ways in which students may engage defensive mechanisms to

route and reroute, to distance or deny difficult knowledge they encounter in the classroom. In addition to the uncertainty of response, there is also uncertainty in content. All the people in schools and classroom spaces bring with them conscious and unconscious ideas and language formed by the discursive availabilities of our society. How these may interact with one another is another matter of uncertainty in the fabric of an unfolding pedagogical encounter. Jansen (2009) importantly noted "it is not simply the master narratives of the official curriculum or the controlling ideologies of state examinations or the capitalist interests of the textbook industry that are at stake in the critical classroom" (p. 257). He went on to explain that "it is also the people there, the bodies in the classroom, who carry knowledge within themselves that must be engaged, interrupted, and transformed" (p. 258). Both teachers and students will respond to this engagement and interruption in ways that are insufficient and unknowable. There are uncertainties as a pedagogical question as teachers try to anticipate what questions students may ask. There are also uncertainties as learners walk into new spaces with new thoughts. There is discomfort in the crumbling of some previously held notion of what it means to be a human being living in a community with others. Pedagogies of difficult knowledge must leave room for the toleration of such inadequacies and uncertainties.

Developing comfort with this uncertainty is key to these pedagogical engagements. Simon (2013) argues that pedagogies that forgo attachments to certainty to offer difficult knowledge allow affect to be understood as "mobilizing thought about the substance and limitations of any given historical narrative and its significance, without attempting to guarantee in advance what this thought might be" (p. 200). The same argument regarding historical narratives holds here in thinking about the role of

uncertainty in pedagogical encounters around challenging and complex environmental problems like climate crisis. Imagining that classroom spaces and pedagogical encounters may provide room for such unknowability requires teachers and students to think in new ways about the nature of their work and about knowledge itself.

In this section, I have described two possible classroom applications of the findings of this dissertation including the need to foster robust imagination, as well as attending more intentionally to emotional dynamics present in learning. Such attention to these dynamics requires teachers to acknowledge their emotional investments as best they can and develop a tolerance for uncertainty, unknowability, and insufficiency. In the next subsection, I discuss the importance of these findings in relation to the field of social studies education and the contributions of this dissertation towards that field.

Contributions to the Field of Social Studies

This dissertation project adds to the growing but still underrepresented body of work in social studies which calls for the inclusion of climate crisis as part of teacher education and classroom instruction. Projects from a variety of theoretical paradigms and methodological homes will be needed to create a robust body of work arguing for climate crisis and other environmental issues to take a prominent role in the field of social studies education. This dissertation adds to that growing body of work from within the theoretical framework of difficult knowledge. In this section, I will highlight three additional contributions I believe the findings of this dissertation make to the field of social studies education. These contributions include new positionings of environmentally focused social studies research namely 1) positioning against the preponderance of positivity in the field which I believe oversimplifies the work of

including climate crisis in social studies and 2) the positioning of human experience at the center of this inquiry, in place of the more predominantly employed ecologist frameworks challenging anthropocentrism. This dissertation also 3) complicates notions of instructing about action.

Preponderance of Positivity

Much of the literature in social studies, particularly that which is written for practitioners on climate crisis and other environmental challenges, is overwhelmingly optimistic. Authors make oversized claims about the possibilities for individual intervention and make strong claims about the work such pedagogies are doing. This dissertation project finds that many of the climate pedagogies teachers are enacting or plan to enact is likely not doing what they think or hope it is doing. Such a finding requires the field of social studies to reckon in more nuanced ways about the benefit of such claims. I argue that the preponderance of positivity in the field oversimplifies the pedagogical task at hand. Such tendencies towards optimism and simple solution represent a gap in the existing research. This dissertation attempts to add to more robust understandings of the uncertainty, unknowability, insufficiency as well as grief, sadness, and anxiety, which muddy the waters of this teaching. It is only in recognizing how muddy these instructional waters are that we may be able to imagine more robust pedagogical and curricular offerings. What is demonstrated here is that there is are important implications of oversimplifying the pedagogical encounters and that students and teachers are ill-prepared to encounter the seriousness of the problems at hand.

Centering Human Experience

While much of the existing literature in social studies works to challenge anthropocentrism, this dissertation centers the human experience of climate crisis. I believe this is an important contribution to the field as it provides an example of the ways that human-centered frameworks can be additive in working towards the inclusion of climate justice in social studies. Such a human centering of the ways that educators experience and make sense of climate crisis is consistent with centering the human causes and consequences of the climate crisis, appropriate particularly within social studies. The ecologist frameworks used in most social studies literature require many readers to reorient their onto-epistemological understandings of the world, away from anthropocentrism. I contend that human centering may have important rhetorical importance as the larger field of social studies comes to consider climate crisis.

Instructing about Political and Collective Action

The inability of research participants to identify collective or political actions that provide the possibility for intervention in climate crisis is explored in chapter 5. When asked to identify actions, participants consistently named individual actions, particularly those entangled with capitalism and green consumerism. The pilot study (Alvey, 2020) similarly found that participants often undervalued the achievements of social movements for political action. This was particularly true as participants reflected on the student protests following the school shooting at Marjorie Stoneman-Douglas High School and stated that they had been unsuccessful despite several key legislative victories. These findings demonstrate the need for classroom instruction on climate crisis, particularly in the field of social studies, to include attention to political and collective actions. This

instruction might include more robust and complex instruction about the history of social movements and the tactics that have resulted in movement victories. Additionally, it might include direct instruction about the available options for action in the face of climate crisis. The limited selection of options called upon by students in this dissertation and pilot study highlights the need for greater sustained attention to this issue. Activism is a skill more than a disposition and without knowing the options for action, students and teachers are unlikely to act in meaningfully collective, political, or transformative ways.

However, the data presented in this dissertation also demonstrates other substantive internal barriers which prevent people from acting. Learning about what to do in the face of climate action will take more than exposure to a larger rolodex of options. These participants articulate sentiments that corroborate scholarship which states that learning more does not necessarily make us think or act differently (Crocco et. al (2018). This complicates conventional wisdom in social studies about how it is that we might prepare people for active and critical participation in civic life. This conundrum represents one space for continued grappling in the field.

Directions for Future Inquiry

Based on the findings of this dissertation and the limits of difficult knowledge I encountered, particularly around notions of how to proceed forward, I am eager to continue to explore questions which seek to understand, imagine, create, and advocate for educational spaces which honor the complexity of climate crisis and move teachers and learners agentively towards climate justice. While this project has greatly supported my understanding of what prevents climate action and added great complexity to my own thinking about why the collective has been so painfully slow to respond to climate crisis,

I am eager to turn next to imagining possibilities for this sort of robust climate education. This continued work and inquiry around imagining, creating, and advocating for this sort of climate education which honors both the complexity of the problem and the complexity of the learning will be underpinned by the central findings of this dissertation. When assumed that the goal of climate change education is not to convince people to care, but instead help them navigate unbearable discomfort and anxiety pedagogies shift in orientation. The findings described in chapter 5 regarding the failures of individual and collective imagination and the ways these failures actually support the toleration of the ongoing suffering of climate crisis, and I suspect other injustices, leaves me full of excitement to take time to really explore and imagine what else might be possible in order to disrupt those desires for the comfort and certainty of what is, rather than what could be.

Conclusion

> The complexity of our present trouble suggests as never before that we need to change our present concept of education… It's proper use is to enable citizens to live lives that are economically, politically, socially, and culturally responsible. This cannot be done by gathering or "accessing" what we now call "information" - which is to say facts without context and therefore without priority.
>
> Wendell Berry (2001, para. 25)

The research participants examined in this dissertation experienced a variety of emotional and affective dynamics as they engaged in making sense of climate crisis for themselves and exploring the pedagogical complexities of engaging this content with students. Producing and reproducing larger discourses, these educators spoke of turning

away from the climate crisis, sometimes implicating themselves and sometimes deferring to others. Their sense-making processes were fraught with conscious and unconscious responses and the interplay between the inner world they make up and the outer world of circumstance and discourse. Their conceptualizations of this difficult knowledge offer important implications for climate crisis education, including a need to attend to the ways teachers and researchers might consider more robustly the emotional experience of both teaching and learning. As Wendell Berry articulated in the quote opening this section, learning is more than just the accumulation of facts, and it should be attended to as such. This project contributes some understanding of the dynamics which shape the experience of teaching and learning about climate crisis and offers some implications of these experiences. It offers some way to begin to understand our individual and collective inaction and the ways we route and reroute difficult knowledge to avoid looking at the bleakest and nearest realities. Writing this dissertation has enlivened a lifetime of questions. I look forward to inquiries into other corners of this data and the many remaining questions I have about how to support students and teachers as we prepare them to meet the vastly complex challenges of teaching and learning about climate crisis. I am reminded of a Wendell Berry poem which reads, in part, that "it may be that when we no longer know what to do, we have come to our real work and when we no longer know which way to go, we have begun our real journey" (Berry, 1983, para. 1). I book end this dissertation between the words of conservationist Aldo Leopold and farmer Wendell Berry, as these are thinkers who first brought my attention to the transformative possibilities of attending to issues of environmental and ecological harm as matters of education. Regardless of the future directions of inquiry into the challenges articulated by

the students at the Surrey Climate Conference opening this dissertation, this work remains existentially urgent. And so, I end this dissertation at the beginning of a lifetime of work which seeks to understand, imagine, and advocate for teaching and learning which honors the complexity of climate crisis and find ways to reduce the continuous violence we commit “against one another and our only world” (Berry, 2015, p. 19).

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APPENDICES

Appendix A: Wallace-Wells Text Excerpt

This is an edited extract from The Uninhabitable Earth: A Story of The Future, by David Wallace-Wells (2019)

I have never been an environmentalist. I don't even think of myself as a nature person. I've lived my whole life in cities, enjoying gadgets built by industrial supply chains I hardly think twice about. I've never gone camping, not willingly anyway, and while I always thought it was basically a good idea to keep streams clean and air clear, I also accepted the proposition that there was a trade-off between economic growth and cost to nature – and figured, well, in most cases I'd go for growth. I'm not about to personally slaughter a cow to eat a hamburger, but I'm also not about to go vegan. In these ways – many of them, at least – I am like every other American who has spent their life fatally complacent, and willfully deluded, about climate change, which is not just the biggest threat human life on the planet has ever faced, but a threat of an entirely different category and scale. That is, the scale of human life itself.

A few years ago, I began collecting stories of climate change, many of them terrifying, gripping, uncanny narratives, with even the most small-scale sagas playing like fables: a group of Arctic scientists trapped when melting ice isolated their research center on an island also populated by a group of polar bears; a Russian boy killed by anthrax released from a thawing reindeer carcass that had been trapped in permafrost for many decades. At first, it seemed the news was inventing a new genre of allegory. But of

course, climate change is not an allegory. Beginning in 2011, about a million Syrian refugees were unleashed on Europe by a civil war inflamed by climate change and drought; in a very real sense, much of the "populist moment" the west is passing through now is the result of panic produced by the shock of those migrants. The likely flooding of Bangladesh threatens to create 10 times as many, or more, received by a world that will be even further destabilized by climate chaos – and, one suspects, less receptive the browner those in need. And then there will be the refugees from sub-Saharan Africa, Latin America, and the rest of south Asia – 140 million by 2050, the World Bank estimates, more than 10 times the Syrian crisis.

My file of stories grew daily, but very few of the clips, even those drawn from new research published in the most pedigreed scientific journals, seemed to appear in the coverage about climate change we watched on television and read in newspapers. Climate change was reported, of course, and even with some tinge of alarm. But the discussion of possible effects was misleadingly narrow, limited almost invariably to the matter of sea level rise. Just as worrisome, the coverage was sanguine, all things considered. One California fire burned so quickly, evacuees sprinting past exploding cars found their sneakers melting to the asphalt. As recently as the 1997 signing of the landmark Kyoto Protocol, 2C of global warming was considered the threshold of catastrophe: flooded cities, crippling droughts and heatwaves, a planet battered daily by hurricanes and monsoons we used to call "natural disasters" but will soon normalize as simply "bad weather". More recently, the foreign minister of the Marshall Islands in the Pacific offered another name for that level of warming: "genocide".

There is almost no chance we will avoid that scenario. The Kyoto Protocol achieved, practically, nothing; in the 20 years since, despite all our climate advocacy and legislation and progress on green energy, we have produced more emissions than in the 20 years before.

In reading about warming, you will often come across analogies from the planetary record: the last time the planet was this much warmer, the logic runs, sea levels were here. These conditions are not coincidences. The geologic record is the best model we have for understanding the very complicated climate system and gauging just how much damage will come from turning up the temperature. Which is why it is especially concerning that recent research into the deep history of the planet suggests that our current climate models may be underestimating the amount of warming we are due for in 2100 by as much as half. The authors of one recent paper suggested that slashing our emissions could still bring us to 4 or 5C, a scenario, they said, would pose severe risks to the habitability of the entire planet. “Hothouse Earth”, they called it.

Because these numbers are so small, we tend to trivialize the differences between them – one, two, four, five. But, as with world wars or recurrences of cancer, you don’t want to see even one. At 2C, the ice sheets will begin their collapse, bringing, over centuries, 50 meters of sea-level rise. An additional 400 million people will suffer from water scarcity, major cities in the equatorial band of the planet will become unlivable, and even in the northern latitudes heatwaves will kill thousands each summer. There would be 32 times as many extreme heatwaves in India, and each would last five times as long, exposing 93 times more people. This is our best-case scenario. At 3C, southern Europe would be in permanent drought, and the average drought in Central America

would last 19 months longer. In northern Africa, the figure is 60 months longer: five years. At 4C, there would be 8m more cases of dengue fever each year in Latin America alone and close to annual global food crises. Damages from river flooding would grow thirtyfold in Bangladesh, twentyfold in India, and as much as sixtyfold in the UK. Globally, damages from climate-driven natural disasters could pass $600tn – more than twice the wealth that exists in the world today. Conflict and warfare could double.

Global warming may seem like a distended morality tale playing out over several centuries and inflicting a kind of Old Testament retribution on the great-great-grandchildren of those responsible, since it was carbon burning in 18th-century England that lit the fuse of everything that has followed. But that is a fable about historical villainy that acquits those of us alive today – and unfairly. The majority of the burning has come in the last 25 years – since the premiere of Seinfeld. Since the end of the second world war, the figure is about 85%. The story of the industrial world's kamikaze mission is the story of a single lifetime – the planet brought from seeming stability to the brink of catastrophe in the years between a baptism or bar mitzvah and a funeral.

Between that scenario and the world, we live in now lies only the question of human response. Some amount of further warming is already baked in, thanks to the protracted processes by which the planet adapts to greenhouse gas. But all of the paths projected from the present will be defined by what we choose to do now. If we do nothing about carbon emissions, if the next 30 years of industrial activity trace the same arc upward as the last 30 years, whole regions will become unlivable as soon as the end of this century. Of course, the assaults of climate change do not end at 2100 just because most modelling, by convention, sunsets at that point. In fact, they could accelerate, not

just because there'd be more carbon in the atmosphere then, but because increased temperatures could trigger feedback loops that might send the climate system spiraling out of control. This is why some studying global warming call the hundred years to follow the "century of hell".

It would take a spectacular coincidence of bad choices and bad luck to make a completely uninhabitable Earth possible within our lifetime. But the fact that we have brought that eventuality into play at all is perhaps the overwhelming cultural and historical fact of the modern era. Whatever we do to stop warming, and however aggressively we act to protect ourselves from its ravages, we will have pulled the devastation of human life on Earth into view – close enough that we can see clearly what it would look like, and know, with some degree of precision, how it will punish our children and grandchildren. Close enough, in fact, that we are already beginning to feel its effects ourselves, when we do not turn away.

In southern California, December is meant to bring the start of rainy season. Not in 2017. The Thomas fire, the worst of those that roiled the region that year, grew 50,000 acres in one day, eventually burning 440 sq miles and forcing the evacuations of more than 100,000 Californians. A week after it was sparked, it remained, in the ominous semi-clinical language of wildfires, merely "15% contained". For a poetic approximation, it was not a bad estimate of how much of a handle we have on the forces of climate change. That is to say, hardly any.

By accidents of geography and by the force of its wealth, the US has, to this point, been mostly protected from the devastation climate change has already visited on parts of the less developed world. The fact that warming is now hitting its wealthiest citizens is not

just an opportunity for ugly bursts of liberal schadenfreude; it is also a sign of just how hard, and how indiscriminately, it is hitting. All of a sudden, it's getting a lot harder to protect against what's coming. What is coming? Much more fire, much more often, burning much more land. American wildfires now burn twice as much land as they did as recently as 1970. By 2050, destruction from wildfires is expected to double again. For every additional degree of global warming, it could quadruple. At three degrees of warming, our likely benchmark for the end of the century, the US might be dealing with 16 times as much devastation from fire as we are today, when in a single year 10m acres were burned. The California fire captain believes the term is already outdated: "We don't even call it fire season anymore," he said in 2017. "Take the 'season' out – it's year-round." But wildfires are not an American affliction; they are a global pandemic. Each year, between 260,000 and 600,000 people worldwide die from the smoke they produce. In icy Greenland, fires in 2017 appeared to burn 10 times more area than in 2014; and in Sweden, in 2018, forests in the Arctic Circle went up in flames. Fires that far north may seem innocuous, relatively speaking, since there are not so many people there. But they are increasing more rapidly than fires in lower latitudes, and they concern climate scientists greatly: the soot and ash they give off can blacken ice sheets, which then absorb more of the sun's rays and melt more quickly. Another Arctic fire broke out on the Russia-Finland border in 2018, and smoke from Siberian fires that summer reached all the way to the mainland US. That same month, the 21st century's second-deadliest wildfire swept through the Greek seaside, killing 100. At one resort, dozens of guests tried to escape the flames by descending a narrow stone staircase into the Aegean, only to be engulfed along the way, dying literally in each other's arms. There were

record-breaking fires in the UK, as well, including one on Saddleworth Moor that was thought to be defeated – until it emerged again from the forest's peat floor, to become the largest British wildfire in living memory.

The effects of these fires are not linear or neatly additive. It might be more accurate to say that they initiate a new set of biological cycles. Scientists warn that the probability of unprecedented rainfalls will grow, too – as much as a threefold increase of events like that which produced the state's Great Flood of 1862. Mudslides are among the clearest illustrations of what new horrors that heralds; in January 2018, Santa Barbara's low-lying homes were pounded by the mountains' detritus cascading down the hillside toward the ocean in an endless brown river. One father, in a panic, put his young children up on his kitchen's marble countertop, thinking it the strongest feature of the house, then watched as a rolling boulder smashed through the bedroom where the children had been just moments before. One child who didn't make it was found close to two miles from his home, in a gulley traced by train tracks close to the waterfront, having been carried there, presumably, on a continuous wave of mud. Two miles.

It gets worse. When trees die – by natural processes, by fire, at the hands of humans – they release into the atmosphere the carbon stored within them, sometimes for as long as centuries. In this way, they are like coal. This is why the effect of wildfires on emissions is among the most feared climate feedback loops – that the world's forests, which have typically been carbon sinks, would become carbon sources, unleashing all that stored gas. The impact can be especially dramatic when the fires ravage forests arising out of peat. Peatland fires in Indonesia in 1997, for instance, released up to 2.6 gigatons (Gt) of carbon – 40% of the average annual global emissions level. And

more burning only means more warming only means more burning. Wildfires make a mockery of the technocratic approach to emissions reduction.

In the Amazon, 100,000 fires were found to be burning in 2017. At present, its trees take in a quarter of all the carbon absorbed by the planet's forests each year. But in 2018, Jair Bolsonaro was elected president of Brazil, promising to open the rainforest to development – which is to say, deforestation. How much damage can one person do to the planet? A group of Brazilian scientists has estimated that between 2021 and 2030, Bolsonaro's deforestation would release the equivalent of 13.12 Gt of carbon. In 2017, the airplanes.

This is not simply about wildfires; each climate threat promises to trigger similarly brutal cycles. The fires should be terrorizing enough, but it is the cascading chaos that reveals the true cruelty of climate change – it can upend and turn violently against us everything we have ever thought to be stable. Homes become weapons, roads become death traps, air becomes poison. And the idyllic mountain vistas around which generations of entrepreneurs and speculators have assembled entire resort communities become, themselves, indiscriminate killers. **And yet I am optimistic.**

Since I first began writing about warming, I've often been asked whether I see any reason for optimism. The thing is, I am optimistic.

Warming of 3 or 3.5C is, I'd wager, the likeliest range this century, given conventional decarbonization and the existing – dispiriting – pace of change. It would unleash suffering beyond anything that humans have ever experienced. But it is not a fatalistic scenario; in fact, it's a whole lot better than where we are headed without action – north of 4C by 2100, and the perhaps six or even more degrees of warming in the centuries to

come. We may conjure new solutions, in the form of carbon-capture technology, which would extract CO_2 from the air, or geoengineering, which would cool the planet by suspending gas in the atmosphere, or other now-unfathomable innovations. These could bring the planet closer to a state we would today regard as merely grim, rather than apocalyptic.

I've often been asked whether it's moral to reproduce in this climate, whether it is fair to the planet or, perhaps more importantly, to the children. As it happens, last year I had a child, Rocca. Part of that choice was delusion, that same willful blindness: I know there are climate horrors to come, some of which will inevitably be visited on her. But those horrors are not yet scripted. The fight is, definitively, not yet lost – in fact, will never be lost, so long as we avoid extinction. And I have to admit, I am also excited, for everything that Rocca and her sisters and brothers will see, will witness, will do.

She will be entering old age at the close of the century, the end stage bookmark on all of our projections for warming. In between, she will watch the world doing battle with a genuinely existential threat, and the people of her generation making a future for themselves, and the generations they bring into being, on this planet. And she won't just be watching it, she will be living it – quite literally the greatest story ever told. It may well bring a happy ending. Western liberals contort their consumption into performances of moral or environmental purity – less beef, more Tecla's, fewer flights. Climate change is not an ancient crime we are tasked with solving now; we are destroying our planet every day, often with one hand as we conspire to restore it with the other. Which means we can also stop destroying it, in the same style – collectively, haphazardly, in all the most quotidian ways, in addition to the spectacular-seeming ones. The project of

unplugging the entire industrial world from fossil fuels is intimidating and must be done in fairly short order – by 2040, many scientists say, with others guessing 2050. The UN's Intergovernmental Panel on Climate Change says we'll need to halve our carbon emissions by 2030 to avoid catastrophe. In the meantime, many avenues are open – wide open, if we are not too lazy and too blinkered and too selfish to embark upon them.

Perhaps as much as half of British emissions, one report recently calculated, come from inefficiencies in construction, discarded and unused food, electronics, and clothing; two-thirds of US energy is wasted; globally, according to one paper, we are subsidizing the fossil fuel business to the tune of $5tn each year. None of that has to continue. Americans waste a quarter of their food, which means the carbon footprint of the average meal is a third larger than it has to be. That need not continue. Five years ago, hardly anyone outside the darkest corners of the internet had even heard of bitcoin; today, mining it consumes more electricity than is generated by all the world's solar panels combined, which means that in just a few years we've assembled a program to wipe out the gains of several long, hard generations of green energy innovation. It did not have to be that way. And a simple change to the algorithm could eliminate that bitcoin footprint entirely.

These are just a few of the reasons to believe that climate nihilism is, in fact, another of our delusions. What happens, from here, will be entirely our own doing. The planet's future will be determined in large part by the arc of growth in the developing world – that's where most of the people are, in China and India and, increasingly, sub-Saharan Africa. But this is no absolution for the west, which accounts for the lion's share of historical emissions, and where the average citizen produces many times more than

almost anyone in Asia, just out of habit. I toss out tons of wasted food and hardly ever recycle; I leave my air-conditioning on; I bought into bitcoin at the peak of the market. None of that is necessary, either.

But it also isn't necessary for westerners to adopt the lifestyle of the global poor. It's estimated that 70% of the energy produced by the planet is lost as waste heat. If the world's richest 10% were limited to the average European footprint, global emissions would fall by a third. And why shouldn't they be? Almost as a prophylactic against climate guilt, as the news from science has grown bleaker, western liberals have comforted themselves by contorting their own consumption patterns into performances of moral or environmental purity – less beef, more Teslas, fewer transatlantic flights. But the climate calculus is such that individual lifestyle choices do not add up to much unless they are scaled by politics. That should not be impossible once we understand the stakes.

Annihilation is only the very thin tail of warming's very long bell curve, and there is nothing stopping us from steering clear of it.

Appendix B: Stories Reflection Assignment Prompts

Instructions and Weekly Content Given to Students:

Hello all, I have been thinking of each of you during this wild and unprecedented time and hoping that you and your loved ones are well. I am sure, like me, you are preoccupied with dealing with the new and fast-changing reality over the past week. I have honestly grappled tremendously with how to proceed with the course, and I am not sure I have the right answers. I have tried to think about questions like How much brainpower will you all have for this course? What is demanded by the moment? What new demands are you experiencing in your lives at the moment that are more important than this class? Should this change the content I was planning to cover? What is helpful to you as we finish the semester in this moment of such wild uncertainty? I am sure many of you are adapting your own curriculum and grappling with similar questions. I was reminded of a story that one of my professors told about a teacher whose young students were really distracted by the death of a classroom plant, and when they expressed sadness at the death of the plant, she moved on as if nothing happened- my professor told the story as a tragedy, it was such a big mistake for the teacher to rush past the experience of the students, even though it seemed largely unrelated to the content. The moral here being that, as teachers, we have to see our students as people, and as people who experience life far beyond the context of our classes. At this moment, when everything seems different than it seemed last week, I know there is disruption, worry, and distraction far beyond the scope of this class. Although I am not sure of the perfect solution: I will plan to continue on our normal routine (Wednesday-Wednesday) as best we can (with total flexibility as needed and very loose late policy) and I will plan to reduce the weekly readings/assignments for the remainder of the course and offer additional readings as optional

and supplementary. You can save these supplementary readings for another time or dive in now if you find yourself with extra slow time. In addition to making many readings and assignments optional/supplemental, I have decided to eliminate the professional development assignment (listed on the syllabus as 5% of your grade- these points will be rolled into the final project).

If there is anything at all I can do to support you please do not hesitate to reach out. I am happy to work with you on deadlines or anything else as needed- please do not worry about this class without reaching out! I had long planned for our reading this week to focus on the possibilities of agency and action (the power we have to make things different in our communities and the range of choices we have as possibilities to act). Lots of things seem uncertain at the moment, but I still think that focusing on all of the amazing potential of people to work towards better communities seems relevant both inside and outside of our work around sustainability education- so onward we go! Including stories of possibility and action in sustainability education is an important pedagogical move. Research shows us that when people hear dire news, they often feel overwhelmed, frustrated, and shut down. However, when we include stories that highlight possibility and action, people are more likely to feel moved to change behavior or act in some way. This week's content turns towards these stories around the possibilities of action on sustainability issues.

1. **Readings Linked Below:**
    - Reading 1: Climate Mixer (focus on pages 5-23; skimming acceptable)
    - Optional Reading 2: 2nd Grade Lesson on Agency and Pipelines
    - Optional Reading 3: Video on Agency in the Classroom
    - Optional Reading 4: Idea bank for teaching agency

2. **Read the instructions for the final project**. Please email any questions or concerns.
3. **Complete a draft project proposal based on the questions and the requirements of the instruction**. Rough drafts and bullet points are totally fine!
4. **Story Reflection Assignment-** Instructions included below.
5. **ELC Post- Post on possibilities for action**.

Story Activity Instructions:

In thinking about the actions that are possible in the face of the climate crisis, environmental injustice, and other issues of sustainability, take a moment to reflect on your feelings and how that may impact your teaching.

Finish these sentences:

- The story I tell myself is…
- The story I want to teach my students…

1. How do you make sense of any differences in what you feel for yourself versus what you want your students to feel?
2. What do you think this might mean for your teaching?

A non-sustainability-related example: I tell myself that it's okay not to exercise because I am really busy, and my grandma lived to be 94 and never worked out. The story I want to tell my students is that exercise is extremely important every day because of the way it can help them manage stress and live longer, healthier lives.

Possibilities for Action Activity Instructions:

Choose any component of sustainability- does not have to be climate change- and find a person or community acting positively on that topic. This should be a person or group beyond the readings this week. Include in your post a brief summary of what they are doing, the issues they are concerned with, and how you might include this person/group as an example in your classroom. (Post should be less than 300 words)

Appendix C: Imagination Assignment Prompts

"Everything seems impossible until it's done!"

Nelson Mandela

For the next few weeks, we are turning towards innovative solutions and actions that may help us create more sustainable communities and focusing on the ways these ideas could be included in our classrooms. One of the challenges of becoming sustainable, at both on a personal and social levels, is that it hasn't been done before! While there are amazing examples of people, particularly young people, engaged in all sorts of awesome activism and all sorts of people building community gardens, our larger economic systems, and political systems have not ever been sustainable. *One new theory about how we might help students think about the possibilities around sustainability is to focus on the skills of imagination.* Susan Griffin writes that "one might say that human societies have two boundaries; one boundary is drawn by the requirements of the natural world and the other by the collective imagination." We have been reading about the boundaries of the natural world, focusing on many serious ecological problems that have dire consequences, this week we will give attention to the other boundary: our imaginations! Next week we will turn towards all of the ways that people are working to build more sustainable communities, the ways people are making this stuff happen, but this week the activities focus on prioritizing and practicing imagination in our teaching of sustainability.

Read and consider the following passages and excerpts:

1. Reading 1: Excerpt *from What is to What could Be*
2. Reading 2: The art of sustainability, the need for imagination

3. Reading 3: Strategies for stirring imagination: https://www.edutopia.org/article/stirring-students-imaginations
4. Reading 4: Quote from Neil Gaiman
5. Optional Resource for Additional Reading: This is a link to an academic journal special edition about this topic. It includes a variety of fascinating articles on imagination and sustainability. https://collections.elementascience.org/imagination/

From what is to what could be community imagination activity:

Using the principles of imagination from this week's readings, please imagine what a "day in the life" (however you want to define that) would look like if it were sustainable (remembering our original definitions from early in the course including a wide range of environmental, social, and economic issues). You should focus on issues that are important to you or your community. You don't need to address every aspect of sustainability- this is just space to imagine something different than what is! (less than 600ish words) Here is an example which is extracted from the book From *What is to What could Be*: https://www.yesmagazine.org/economy/2019/10/16/book-sustainable-future-town/