

Climate Change And The Many Faces of Denial

by
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Abstract

Despite growing evidence, there seems a general reluctance to accept the seriousness of climate change or that human activities are a prime cause. While there needs to be a substantial change in humanity's relationship with the Earth, evidence confirms that we have done very little about it. For many, this reluctance manifests itself as a kind of denial. For others, their reluctance is embedded in cultural, religious, or tribal beliefs. This human ability to ignore those things that conflict with one's values and beliefs, or that are so unimaginable that one can't deal with them, as they can often increase our anxiety.

This project explores the inaction around climate change, as well as the impact of that inaction on people and communities. It explores why some people are in varying degrees of denial about climate change, and how climate change relates to social, political and economic issues. While it may not be hopeless as some experts suggest, it is deadly serious.

This is a narrative-based inquiry that considers the narrative or storytelling format as a non-neutral, rhetorical account that aims at "illocutionary intentions." This approach follows a recursive, reflexive process of storytelling that subsumes a group of approaches that in turn rely on the written or spoken words or visual representation of individuals. This approach utilises field texts, stories, journals, interviews of over seventy experts, and personal observation and experience as the sources to understand this complex topic better.

Keywords: Climate Change; Denial; Culture; Religion; Capitalism

Dedication

This project is dedicated to those who applauded my return to school and helped me along the way. Heartfelt thanks to SFU's faculty and my cohort, my kids - Paisley, Heath, Ally, Evan, Shalon, Monique, and to my closest friends who have been a constant source of support and encouragement during the challenges of graduate school and in life. Had it not been for Dr. Anne Newlands who encouraged me to chase my dream of going back to school, Tracey Friesen for recommending the Graduate Liberal Studies Program at SFU, or my sister Khristan Lee Shafer who championed me to become a better writer, it is unlikely that I would have undertaken this path. For those academics, authors, scientists, colleagues, and others that went out of their way for me as I was trying to make sense of this world, I am forever grateful.

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Dr. Sasha Colby opened this world of GLS at a critical time in my life as I began building a new community radio station. Making sense of the old and new world with many of the “big books”, a tour of Italy, and our hometown. They provided a better understanding and appreciation of the diversity and richness of Vancouver and the world in which we live. I am grateful for her leadership and direction and a glimpse into the life of H.D. and other extraordinary women.

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Dr. Lara Campbell allowed the older kids like me to share their lived experience in Sex and Gender studies in the Sixties which seemed surreal at times, to have grown up in this period, and Dr. Gary McCarron whose conversations about forgiveness and apologies contributed to a breadth of knowledge and inquiry in many areas.

Dr. Anne Newlands graciously shared her knowledge and many hours of depth psychology as I struggled to understand myself, human interactions and relationships throughout this pivotal time in my life.

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Ms. Sandra Zink made all of us feel at home at GLS. She juggled many details that kept us and the program together allowing all of us to find our way as we returned to school. No obstacle was too great, and I am touched by her warmth and optimism and many encouraging conversations.

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Finally, I'd like to acknowledge my colleagues and friends at Roundhouse Radio for supporting my curiosity and interest in this project. I am humbled and touched by the impact our team had in such a short period of time. They brought our station, our city, and me alive as they put their heart and soul into its mission of bringing our twenty some neighborhoods closer together. The passion that they brought to this work reminds me that there is a greater need for independent journalism on all platforms large and small and that we need those places that allow for spacious conversations, where all points of view are welcomed, and dialogue is encouraged. Somehow, I am confident these voices will be heard if we listen closely closely.

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List of Acronyms

CLP	Climate Literacy Project
CRP	Climate Reality Project
DSF	David Suzuki Foundation
ICPD	The International Conference on Reproductive Health
IPPC	Intergovernmental Panel on Climate Change
LAC	Library and Archives Canada
NGO	Non-Government Organization
SFU	Simon Fraser University
WWF	World Wildlife Federation

Glossary

Adaptation	Initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects.
Carbon Cycle	Circulation of carbon atoms through the Earth systems because of photosynthetic conversion of carbon dioxide into complex organic compounds by plants, which are consumed by other organisms, and the return of the carbon to the atmosphere as carbon dioxide because of respiration, the decay of organisms, and combustion of fossil fuels.
Climate	The long-term average of conditions in the atmosphere, ocean, and ice sheets and sea ice described by statistics, such as means and extremes.
Climate Change	A significant and persistent change in the mean state of the climate or its variability. Climate change occurs in response to changes in some aspect of Earth's environment: these include regular changes in Earth's orbit about the sun, re-arrangement of continents through plate tectonic motions or anthropogenic modification of the atmosphere.
Climate Forecast	A prediction about average or extreme climate conditions for a region in the long-term future (seasons to decades).
Climate System	The matter, energy, and processes involved in interactions among Earth's atmosphere, hydrosphere, cryosphere, lithosphere, biosphere, and Earth-Sun interactions.
Climate variability	Natural changes in climate that fall within the normal range of extremes for a region, as measured by temperature, precipitation, and frequency of events. Drivers of climate variability include the El Niño Southern Oscillation and other phenomena.
Cognitive Dissonance	The mental discomfort experienced by a person who holds two or more contradictory beliefs, ideas or values.
Denial	An assertion that something said is false: refusal to believe a doctrine, theory, or the like. Disbelief in the existence or reality of a thing. Refusal to recognize or acknowledge; a disowning or disavowal; sacrifice of one's own wants or needs; self-denial.
Feedback	The process through which a system is controlled, changed or modulated in response to its own output.

	<p>Positive feedback results in amplification of the system output;</p> <p>Negative feedback reduces the output of a system.</p>
Fossil fuels	Energy sources such as petroleum, coal or natural gas, which are derived from living matter that existed during a previous geologic time period.
Global Warming	The observed increase in average temperature near the Earth's surface and in the lowest layer of the atmosphere. In common usage, "global warming" often refers to the warming that has occurred because of increased emissions of greenhouse gases from human activities. Global warming is a type of climate change; it can also lead to other changes in climate conditions, such as changes in precipitation patterns.
Likely, very likely, extremely likely, virtually certain	These terms are used by the Intergovernmental Panel on Climate Change (IPCC) to indicate how probable it is that a predicted outcome will occur in the climate system, according to expert judgment. A result that is deemed "likely" to occur has a greater than 66% probability of occurring. A "very likely" result has a greater than 90% probability. "Extremely likely" means greater than 95% probability, and "virtually certain" means greater than 99% probability.
Mitigation	Human interventions to reduce the sources of greenhouse gases or enhance the sinks that remove them from the atmosphere.
Vulnerability	The degree to which physical, biological, and socio-economic systems are susceptible to and unable to cope with adverse impacts of climate change.
Weather Forecast	A prediction about the specific atmospheric conditions expected for a location in the short-term future (hours to days).

Preface



Figure 1 Phu Quoc, Vietnam, Ocean Garbage¹

I've been a broadcaster and journalist most of my working life and have sat in many chairs at radio and television stations in the United States and Canada, as well as apprenticed at a few century-old newspapers, *The Los Angeles Times* and *The Toronto Star*. I have witnessed the Cold War in Turkey, the not so cold war in Viet Nam, the Gulf War, the Watts Riots, Front de Libération du Québec (FLQ) protests, "love-ins" with John and Yoko, Standing Rock, and Kinder Morgan. This thing that we've labelled climate change, or climate disruption, appears to be another historic moment.

This is a narrative-based inquiry that follows Jerome Bruner's *Acts of Meaning*.² Bruner considers the narrative or storytelling format as a non-neutral, rhetorical account that aims at "illocutionary intentions," or the desire to communicate meaning. His approach places the narrative in time, to "assume an experience of time," rather than just referring to historical time. This approach captures the emotion of the moment and my curiosity, as I explore these various issues rendering the events active rather than

¹ Phu Quoc, Vietnam. Polluted resort beach. Photo by Peter Diemer. 2015.

² Jerome Bruner, *Acts of Meaning* (Harvard University Press, 1990).

passive and infused with meaning. This approach is also challenging with new knowledge changing and reshaping our opinions daily.

This project has benefited from careful study of hundreds of experts in various fields and from over seventy hours of interviews specifically about climate change, culture, and other related areas to understand denial and humankind better. These storytellers and experts joined me on my daily radio program and podcast for this project.³ These generous conversations provided hours of rich dialogue and the sharing of many different viewpoints about the world we share. They have been transcribed with their permission and available for listening at www.donshafer.com.

I have examined volumes of scientific data and attended dozens of seminars and conferences in search of a deeper understanding of this material. While I initially believed that there was a reasonable argument to be made during this project, it became an exploration of contradictions as these different voices from around the world added to its complexity. No matter how much I attempted to keep the focus of this project to climate change and denial, they bumped into many other interconnected things that beg for more exploration and research beyond this current project. I found myself going down other rabbit holes that I am ill prepared for exploring, such as psychology, geography, anthropology, colonization, religion, and critical race theory to examine society and culture as they relate to categorisations of race, law, and power. I hope to explore these connections further in the future.

By using a narrative-based inquiry method, this project explores many aspects of climate change. It attempts to understand why some people are in denial about it, as I thought initially that the science seemed simple and the solutions therefore straightforward. Many of my assumptions are at the edges in these conversations as we consider what got us here and why so many people see the world differently. I have utilised field texts, story telling, journals, interviews, and personal experience as the units of analysis to better understand this complex topic.

This project represents a journey that helped me to understand where each of us might fit into this complex conversation. I have attempted a preliminary overview that helps to organise some of the paths that I thought intersected with climate change and

³ Key interviews have been recognized in the Appendix.

outline many of the implications between populations, ethics, social justice, and the impact of capitalism throughout six chapters. By distilling this information, I have attempted to move us away from the edges of a catastrophic outcome to one that may allow us to “brace for impact” as Paul Gilding suggests with more understanding and optimism. This does not suggest that we are likely to fix this thing called climate change. While it may not be apocalyptic, there appears to be too much naïve optimism. It has been challenging to write these pages due to the rapidity of change in the world around us, many differing opinions, the ambiguity and fear that has erupted with U.S. President Donald Trump and ever-worsening changes in our environment. This said, I am occasionally buoyed by random acts of kindness and human generosity around our troubled world and recognize that somewhere in this chaos and uncertainty there is hope.

Climate Change And The Many Faces of Denial begins with an introduction to climate change and outlines the many faces of denial as we start to ask questions about how we arrived at this place in chapter one, “There Is No Way Off This Ride.” This title came to me during the summer of our worst forest fire season in British Columbia as I looked out over the smoke-filled skies of Vancouver realizing that there really is no way off.

Chapter two, “The Science Must Be Wrong,” looks at many of the facts, as well as the fake facts, in the science of climate change. Despite the widespread acceptance and reliance on science in contemporary times, there remains a high degree of scepticism and doubt about climate science. The self-interest and greed of some of the world’s largest corporations make a mockery of the science as they create their own “fake news” to create doubt and denial.

Chapter three, “Self Deception, False Beliefs, and Denial,” might be uncomfortable if you don’t believe we have a problem. In this chapter, I spend time getting closer to the triggers of denial, psychological distancing, and the work of Sigmund and Anna Freud, Carl Rogers, Carl Jung, Elizabeth Kubler Ross, Connie Zweig, and others who look at the lighter and darker sides of humanity.

Chapter four, “Where Did God Go,” opens the door to religion and identifies some of the tensions at play between church and state, different societies, cultures, self-interest and beliefs. I am curious about the influence of religion on culture and society as we walk through mosques, synagogues, churches, and temples to try and figure out what responsibility God may have in this denial theme.

Chapter five, “Adaptation and Mitigation,” attempts to frame the worst case and best-case scenarios as we look at strategies that may help us adjust to this new normal as well as what it might take to get us out of this mess, and if it's even possible as we search for a new definition of the good life. Looking for a new vision of what life might look like in our changing world seems a good place to start.

“This is The End” is the title of the concluding chapter. Inspired by Jim Morrison’s famous song by the Doors, it is not intended as a spoiler alert as much as a temporary placeholder to end this project. The aggregated summations from many experts as well as a response to the argument about why so many are in denial about climate change and what hope might look like remains a work in progress.⁴

Hope is the story of uncertainty, of coming to terms with the risk involved in not knowing what comes next, which is more demanding than despair and, in a way, more frightening. And immeasurably more rewarding.⁵

Rebecca Solnit

4 All Interviews used for this paper have been referenced and MP3 files and transcripts are have been provided to the SFU library.

⁵ Rebecca Solnit, *Hope in the Dark: Untold Histories, Wild Possibilities* (Haymarket Books, 2016), 7.

Chapter 1

Introduction: There Is No Way Off This Ride



Figure 2 NASA Earth Photo⁶

Over one hundred years ago, Swedish scientist Svante Arrhenius asked if the mean temperature of the ground was in any way influenced by heat-absorbing gases in the atmosphere. He went on to become the first person to investigate the effect that doubling atmospheric carbon dioxide would have on our global climate. This question was debated throughout the early part of the 20th century, and it remains a growing concern today as our weather becomes more extreme due to climate change and litigation emerges within judicial systems wanting to determine who is responsible.⁷ Regardless, the amount of carbon dioxide that has increased since the industrial revolution and exponentially in the 20th century has had a dramatic impact on our climate, making it increasingly difficult for humans and our natural world to adapt in what some now believe is an apocalyptic scenario. While the end of our civilisation may seem

⁶ NASA Earth Photo. 2016.

⁷ Sudhin Thanawala. "Lawsuits Versus Big Oil Lead to Court Lessons on Climate Change: Judge Turns Courtroom into Classroom." *Financial Post*. March 22, 2018.

far-fetched as we creep to a three, maybe a four-degree, increase in the planet's temperature, many experts believe that we have passed a point of no return and that nothing can be done about it.⁸ According to a large majority of the global scientific community, “we have failed to adequately limit population growth, reassess the role of an economy rooted in growth, reduce greenhouse gases, incentivise renewable energy, protect habitat, restore ecosystems and curb pollution,” among a long list of other things.⁹ Humanity, or certainly some of us, are not taking the urgent steps needed to safeguard our imperilled biosphere, and therefore it’s challenging to understand how humanity will cope with these conditions and what ultimately will become of us. While some men and women weep for their grandchildren’s future, concerned that they will not live full lives due to what humans have done to the planet, a growing number of people around the world are working on finding ways to prosper in this “new normal.”¹⁰ And then there are others who seem oblivious that there is even an issue.

Many people around the world are already affected by global warming due to rising sea levels, droughts, floods, storms, wars, heat waves, and other catastrophic events that disrupt food production and threaten wildlife as well as their habitat. The picture in the preface¹¹ provides a glimpse of life on the other side of the ocean and beaches full of plastics and ocean debris. Charles C. Mann and others write about the notion that human innovation can overcome scarcity and want, while some environmentalists on the other side of this discussion are committed to the idea that humans must scale back their aspirations lest we exceed the carrying capacity of the planet.¹²

Who is right, and why is this happening? Attempting to answer these questions leads to interesting conversations involving eco and social psychology, religion, domestic and foreign policy, anthropology, as well as socioeconomic inequality. While important, they seem irrelevant if none of us survives to address them. In an effort to find out this project utilises an interdisciplinary approach as it looks at many issues regarding

8 “Climate Change is Irreversible.” <http://oceanleadership.org/effects-climate-change-irreversible-u-n-panel-warns-report/>. (accessed May 22, 2018).

9 United Nations Convention on Climate Change 1992. Convene. Pdf. <https://unfccc.int/resource/docs/convkp/conveng.pdf>. (accessed June 1, 2017).

10 Fergeron, Don. Interview with Don Fergeron. Impact, CIRH FM, March 14, 2018.

11 Figure 1. Nasa Earth Photo.

12 Charles C. Mann, *The Wizard and the Prophet* (Penguin Books, 2018), 12.

our potential disappearance, climate change, denial, and the impact of inaction on people and communities. This subject is difficult to write about as the landscape changes daily and many people appear to be in denial about many things other than just climate change. Nonetheless, I have attempted to find the many edges in this conversation and shed some light on the issues that intersect with climate change. Paul Gilding frames our predicament simply:

We have now reached a moment where four words — the earth is full — will define our times. This is not a philosophical statement; this is just science based in physics, chemistry and biology. To keep operating at our current level, we need fifty percent more Earth than we've got. ¹³

Dr. David Suzuki echoed this sentiment at a recent climate change event reiterating the merits of the science as he pointed to our growing populations and diminishing resources.¹⁴ As we approach a global population of ten billion people, with so much scientific knowledge about our environment, it seems as if we are doing very little to address the many issues. Governments are often criticised for not doing enough or, based on their actions, do little to indicate that they even understand the severity of the crisis. For example, Canada's Federal Environment Commissioner, Julie Gelfand, and the auditors general in nine provinces, conducted an audit of climate change planning and emissions-reduction programs between November 2016 and March 2018. They concluded that "most governments in Canada were not on track to meet their commitments to reducing greenhouse gas emissions and were not ready for the impacts of a changing climate."¹⁵

I was curious to learn if this inaction suggests that humans are uncaring about how we treat each other and the world we live in, or if it is something more complex? And, if so, what is the psychological mechanism that allows us to know something is true but act as if it is not? What are those "messy parts that affect our reasoning?"¹⁶ This

13 Paul Gilding, *The Great Disruption* (Bloomsbury Press, 2013), 12.

14 David Suzuki address at the Vancouver International Mountain Film Festival. February 12, 2018.

15 Perspectives on Climate Change Action in Canada—A Collaborative Report from Auditors General—March 2018 http://www.oag-bvg.gc.ca/internet/English/parl_otp_201803_e_42883.html (accessed March 18,2018).

16 Martha C Nussbaum, *Upheavals of Thought: The Intelligence of Emotions* (Cambridge University Press, 2003), 6.

cognitive dissonance or denial to accept the seriousness of something, acting as if it doesn't exist in the face of convincing evidence, is considered one of the most primitive of human defence mechanisms. Our individual beliefs about risk appear to be formed by what is appropriate in our community, from family, friends, and the groups or tribes that we associate with rather than strictly based on facts, figures, or scientific information. As pointed out by Sara Harris and Sara Burch, climate change has become entangled in our discussions of religion and politics. "It has become a political weapon, a topic of dinner conversation, and a crucial entry point for discussing the multitude of ways in which many industrialised societies have become fundamentally unsustainable."¹⁷

"Science tells us that we are creatures of accident clinging to a ball of mud hurtling aimlessly through space. This is not a notion to warm hearts or rouse multitudes."¹⁸ Paul Ehrlich provides a sobering reminder that there is no way off this ride as I look out over the smoke-filled skies of Vancouver from the worst forest fires in British Columbia's history as thousands of hectares of pristine wilderness burn to ashes. Those ashes were the equivalent of a medium size volcano and had an impact around the world.¹⁹

I am reminded how climate change and this theme of denial started as a whisper when I first discovered Aldo Leopold's *A Sand County Almanac*, Kelly Oliver's *Animal Lessons*, and other authors who wrote about nature and ecopsychology. I was drawn to Neil Evernden's ideas that asked us to question our anthropocentric worldview as he held out hope for another way to be human. If anthropocentrism is a basic belief that regards humans as separate from nature and holds that human life is paramount over animals, plants, and perhaps even the planet itself, and that they may all be exploited for the benefit of humankind, then biocentrism offers the view that the rights and needs of humans are not more important than those of other living things. It seemed that this nature-centred living or requirement might open the door to the way we think and impact

17 Sarah Burch and Sara Harris, *Understanding Climate Change: Science, Policy, and Practice* (University of Toronto Press, 2014), 5.

18 Paul R. Ehrlich, *Human Natures: Genes, Cultures, and the Human Prospect* (Penguin Books, 2001), 85.

19 Bethany Lindsay. <http://www.cbc.ca/news/canada/british-columbia/b-c-wildfires-triggered-mega-thunderstorm-with-volcano-like-effects-1.4635569>. (accessed April 29, 2018).

the way we tackle climate change. I realised as well that this line of thinking might be too altruistic for some, or bump into different creation stories that may require me to tip-toe down this path. Some people believe that many of the problems we face are a result of Genesis or some variation of it from one of many Holy books. Passages like “be fruitful and multiply and till the earth and subdue it and have dominion over the fish of the sea and over the birds of the heavens and over every living thing that moves on the earth.”²⁰ Naomi Oreskes and Katherine Hayhoe will elaborate on how the Bible has been misinterpreted over the centuries later in this project.

Gabriel Hecht, the Frank Stanton Foundation Professor of Nuclear Security at Stanford University, asks us to look at the Anthropocene from a different lens:

While the Anthropocene continually inscribes itself in all our bodies – we all have endocrine disruptors, microplastics and other toxic things chugging through our metabolisms – it manifests differently in different bodies. Those differences along with the histories that generated them, matter a great deal – not just to the people who suffer from them, but also to humanity’s relationship with the planet.²¹

Hecht asks us to consider what picture of the Anthropocene emerges when we begin our analytic adventure in Africa instead of in Europe. “Minerals from Africa’s wilderness played a significant role in motivating colonialism and powering industrialisation. Their extraction helped fuel the Anthropocene.”²² Hecht’s speciality is nuclear energy and its exploitation and use by the rest of the world and again, at Africa’s expense. In our conversation, Hecht was animated about the impact of colonialism in Africa and how it benefited Europe as wilderness was exploited. She spoke to recent examples of mining, deforestation, and countless human rights issues. She pointed out that the colonial experience began in the late 1400s when Europeans carved out empires, destroyed existing kingdoms and split up or combined many ethnic groups. Africa experienced diminishing wilderness and exploitation and did not benefit from many of its own resources as they were shipped around the world. This may provide a

20 Genesis 1.1, *The New Oxford Annotated Bible*, eds. Michael Coogan et al. (Oxford University Press, 2010).

21 Gabriel Hecht, “The African Anthropocene.” <https://aeon.co/essays/if-we-talk-about-hurting-our-planet-who-exactly-is-the-we> (accessed February 8, 2018).

22 Hecht, Gabriel. Interview with Gabriel Hecht. Impact, CIRH FM, February 18, 2018.

glimpse into capitalism, and also begin to explain how humans experience wilderness differently.

Ironically, some of my first questions seemed simple as I began trying to define wilderness from mostly a romantic point of view. I was struck by one of the things Aldo Leopold said: "I am glad I will not be young in a future without wilderness."²³ I found his comment haunting and like a ball of twine more questions began to unravel. When humans enter a space for the first time that has only been enjoyed by other than humans, does that mean that the wilderness is gone? Or are we as humans part of the larger ecosystem who share all of the planet with all that inhabit it, very much at home in wilderness regardless of where it is or who got there first? As cities spread out around the world, population growth, the exploitation of resources, tourism, and other things cause wilderness to shrink and threaten wildlife. Many animals are not just adapting to urban centres, but they are actually thriving and biting back, so to speak. Apparently, some urban trees can grow faster than their counterparts outside of the city, which seems to beg the question, is there an urban wilderness? If you were homeless and sleeping on the street, what would be the difference between sleeping under the stars in an untamed forest? And finally, is wilderness a place or a state of mind that resides deep within each of us? It's noteworthy to consider that some ecologists who think a lot about wilderness contend that keeping humans in more self-sufficient cities is the only hope for wilderness preservation. I wonder though if at our current pace of exploitation and consumption if there will be enough wilderness or resources to look after all of us?

Mary Catherine Bateson is a cultural anthropologist, scientist, and author. She writes that the "self does not stop at the skin nor even with our circle of human relationships but is interwoven with the lives of trees and animals and soil; that caring for the deepest needs of persons and caring for our threatened planet are not in conflict."²⁴ This indigenous and perhaps holistic point of view may seem altruistic as species diminish and oxygen and natural resources, including wilderness, become scarce. It's hard not to wonder how we have come to a place where some people are destroying the very home that supports all of us. It's therefore easy to wonder if at this pace we will ever

²³ Marybeth Lorbiecki, *A Fierce Green Fire: Aldo Leopold's Life and Legacy* (Oxford University Press, 2013), 243.

²⁴ Mary Catherine Bateson, *Composing a Life* (Grove Press, 1989), 34.

recognise or care what wilderness is, or worse, to Leopold's point, what it once was. Some believe that there are too many signs all around us of a society and planet in decline and nothing to be done about it as we await the final destruction of the world. Others are in denial due to their busy lives and distracted. Some believe that the same technological advances that got us here will ultimately save us. How then do we make the transition from what some believe is a catastrophic scenario to a place of living in relationship with the rest of life as Bateson and indigenous elders suggest?

As this discovery process began, dozens of other questions and conversations arose. One of my discussions was with Jason W. Moore who wrote *A History of the World in Seven Cheap Things: A Guide to Capitalism, Nature, and the Future of the Planet*. He believes that nature, money, work, care, food, energy, and lives are the seven things that have made our world and will shape its future. In making these things cheap, modern commerce has transformed, governed, and devastated Earth. Is this motivation for denial? In our discussion, Moore elaborates about the latest ecological research together with histories of colonialism, indigenous struggles, slave revolts, and other rebellions and uprisings:

Human's have been doing terrible things to nature for a very long time. However, we know who those humans are. They're not you and me! They are people with huge bank accounts who work at places like Goldman Sachs, General Motors and the White House who understand the world in the way that Christopher Columbus understood the world, as a place where profit-making rules everything else, where everything can be potentially grabbed, appropriated and then made into something profitable. It's the age of the Capitalocene, and this makes a pretty important difference in how we look at the problem and the people that have brought us to this disastrous planetary state of affairs.²⁵

Where I had once hoped to provide a simple, secure, and definitive home for this thing called wilderness, this project opened the door to more uncertainty and more questions, as invitations appeared to explore our history, culture, the imperfections of colonisation, industrialisation, religion, psychology, and overconsumption. Thanks to Hecht and Moore, Christopher Columbus and his contributions to capitalism were added to this growing list of issues. A random Google search will produce current examples

25 Moore, James. Interview with James Moore. Impact, CIRH FM, January 19, 2017.

that demonstrate that not much has changed over the centuries as we continue to take what we want around the world.

As an example of taking what we want, a recent search stumbled onto a 2016 report by York University's Osgoode Law School in which they discovered 28 Canadian mining companies have been tied to at least 44 deaths, 403 injuries and 709 cases of "criminalisation" across Latin America between 2000 and 2015. About a quarter of this violence took place in Guatemala. Local human rights defenders say that if every mining project proposed in Guatemala by Canadian mining companies goes forward, there will be one mine for every 100 kilometres in a country of just 108,000 square kilometres — roughly the same size as the State of Ohio.²⁶ It would seem that not much has changed since the Europeans exploited Africa and Canadians are doing the same in the 21st century.

Margaret Wheatley is an American writer and management consultant who studies organisational behaviour. In our conversation, she says that humans are "withdrawing from each other as we become more fearful of the world we live in".²⁷ It's not surprising that self-preservation and the notion that we may well be on our way to the sixth extinction became a popular theme in this quest if we are not willing to make major changes in search of a new definition for the "good life" or frankly any kind of life at all. Tim Flannery writes in *Atmosphere of Hope*, "If we are to have real hope, we must first accept reality. We must cut through the dense and complex debates about climate that leave many feeling lost and paralysed."²⁸

My first questions about wilderness were simple, but they seemed to get stuck on the premise that it likely won't matter what wilderness is or what it was if we can't treat each other (humans) well. If we can't figure this out, how can we expect to treat animals and our planet any better? I might have dismissed Bateson and others as being too altruistic. However, this seems a common quandary that has been brought up in hundreds of interviews that I have had with community groups, non-government

26 York University, "The Canada Brand: Violence and Canadian Mining Companies in Latin America"
http://digitalcommons.osgoode.yorku.ca/cgi/viewcontent.cgi?article=1272&context=all_papers
(accessed January 19, 2018).

27 Wheatly, Margaret. Interview with Margaret Wheatly. Impact, CIRH FM, March 2, 2018.

28 Tim Flannery, *Atmosphere of Hope* (Harper Collins, 2015), 18.

organisations (NGOs), indigenous elders, authors, academics, and others whom I refer to as friends of the earth. What seemed a simple question became very complex. We don't have to look far to find examples of the careless disregard for our planet, animals, and one another. There have been significant benchmarks or events that question our humanity and perhaps offer a glimpse of our future as the world seems to be racing out of control and the list of what's wrong grows longer. There must be a better way!

It is hard to believe that there are still First Nations reserves in the U.S. and Canada without clean water. Major cities are regularly releasing raw sewage into rivers and our oceans. Air pollution is responsible for too many premature deaths and growing health concerns. We casually ignore our homeless and those less fortunate than us, close our borders and turn our backs as millions of displaced families search for new homes likely destined to modern-day internment camps with no way out.²⁹ Perhaps worse is the ravenous appetite of capitalism and the need for more of everything as the fossil fuel industry, mining, forestry, agriculture, and industrialisation of all types choke governments and our planet and undermine current legislation and human rights.

At this juncture, there appears linkage between social issues, inequality, and the many "isms" with environmental collapse. The long list of examples of our disregard for each other and the many faces of denial grow around the world as governments change policies to meet the needs of business. And as Moore suggests, "we still take what we want."³⁰ While conservative critics complain that serious attention to anthropogenic climate change will adversely impact economic growth, radical environmentalists contend that mitigating climate change in the long term will require substantial transformation of the capitalist system. Some argue that its demise is eminent. While this duality could easily be the shadow of humanity, I would be remiss not to point out that as human beings we are often inescapably vulnerable to caring for the things and people that we are close to, that move us in a particular and different way performing generous acts of kindness that we see daily. Somewhere in this darkness, there is a light!

29 American Friends Service Committee, "Family Immigrant Detention Centers" <https://www.afsc.org/blogs/acting-in-faith/family-immigrant-detention-centers-new-internment-camps> (accessed December 2017).

30 Moore, Jason. Interview with Jason Moore. Impact, CIRH FM, June 22, 2017.

Sigmund Freud in *Civilization and Its Discontents* believed that “the sum of our achievement and the regulation that distinguish our lives from those of our animal ancestors and serve two purposes, to protect men against nature and to adjust their mutual relations.”³¹ Freud suggests that the primal needs of community and civilisation are largely responsible for society’s misery and that “human predisposition to aggression is a consequence of this primarily natural hostility of human beings, and as such, civilised society is perpetually threatened with disintegration.”³² Freud goes on to say most memorably, “men have gained control over the forces of nature to such an extent that with little help they would have no difficulty in exterminating one another to the last person.”³³ In our quest to control nature it would appear at times that we have lost control, and for all the optimism and hope that some seem to find, it is easy to understand why Freud thought them naïve. Jason Moore echoes Freud as he blames Christopher Columbus for many of our problems dating back to 1492:

You can see for the first time that the European’s who were a very backward civilization started to figure out something about how to conquer the world and they said, oh look, we can marry commerce with warfare, and we can create a model and then go around the world and find all sorts of other goodies that we can turn a profit on.³⁴

Jason Moore goes further in *Capitalism in the Web of Life: Ecology and the Accumulation of Capital* by writing that this “civilisation is already over and that we’re in a downward spiral.”³⁵ It would seem that Moore is referring to Western civilisation as well as to capitalism.

The interviews that have been accumulated for this project vary greatly and travel from the edges of hopelessness to hopefulness. While Roy Scranton, author of *Living and Dying in the Anthropocene*, seemed the bleakest as he believes “that we have passed our best before date, that we should prepare for a conscious death as there is nothing more that we can do.”³⁶ Other opinions range from those like Al Gore and David

31 Freud, Sigmund, *Civilization and Its Discontents* (W.W. Norton & Co. 2010), 222.

32 Sigmund Freud, *Civilization and Its Discontents* (W.W. Norton & Co. 2010), 149.

33 Sigmund Freud. *Civilization and Its Discontents* (W.W. Norton & Co. 2010), 149.

34 Moore, Jason. Interview with Jason Moore. Impact, CIRH FM, June 2017.

35 Jason Moore, *Crisis of Capitalism* (PM Press, 2016), (11).

36 Scranton, Roy. Interview with Roy Scranton. Impact, CIRH FM, 2017.

Suzuki who warn of the seriousness and a call for immediate change so that it doesn't get any worse, to many like Katharine Hayhoe, Naomi Oreskes, and Tzepporah Berman believe that it's serious, but that we can fix it.³⁷ There are climate experts like Vanessa Timmer, Sara Harris and Sara Burch who believe that there is "a powerful opportunity for improving the social, economic, and environmental sustainability of our communities – a much more inspiring task than simply striving to avoid disastrous impacts."³⁸ And finally, yes, spoiler alert, there are still intelligent men and women that I have met during this project who are oblivious that there is a problem, believing climate change is a hoax or that humans did not cause it, and they remain in denial or psychological distancing for numerous reasons. I have been fortunate to speak with some psychologists and experts on denial such as Andrew Hoffman, Kari Norgaard, and Connie Zweig about this dark, and perhaps a protective side of human nature.

One of the earliest interviews in this project was with poet and professor David Whyte who said that the "courageous conversation is the one we don't want to have. It's the one that we hope isn't true and that we could have another one instead."³⁹ This conversation about climate change and denial is one of those conversations as it may be too confronting and deeply troubling. It could begin almost anywhere as there are many centuries or signposts to look at when we started to lose control. Perhaps it goes back 100,000 years or so when we first walked out of Africa. Jason Moore believes that it was likely with King Ferdinand and Queen Isabella of Spain funding Christopher Columbus that opened the way for European exploration, exploitation, and colonisation of the Americas pillaging the world for "free stuff." Others point to the industrial revolution or the late 1940's. I chose 1962 with Rachel Carson's *Silent Spring* as she carefully unpacked many of the questions arising for the 20th century.

Rachel Carson was an American marine biologist, author, and conservationist whose books and other writings are credited with advancing the global environmental movement. Until she spoke up, there were no governmental environmental agencies in place and caring for our environment was a new concept for many in the Western World.

37 Selected Interviews. Impact, CIRH FM, January 2016 – March 2018.

38 Sarah Burch and Sara Harris, *Understanding Climate Change: Science, Policy, and Practice* (University of Toronto Press, 2014), 2.

39 Whyte, David. Interview with David Whyte. Impact, CIRH FM, January 12, 2016.

While I never met her, we share a childhood of growing up on the banks of the polluted Allegheny, Monongahela, and Ohio rivers and the coal burning haze that engulfed Pittsburgh and its suburbs. The steel mills bellowed with the pollution of capitalism in the 1950's and 1960's as Carson pointed out in her controversial book *Silent Spring*:

We stand now where two roads diverge. But unlike the roads in Robert Frost's familiar poem, they are not equally fair. The road we have long been travelling is deceptively easy, a smooth superhighway on which we progress with great speed, but at its end lies disaster. The other fork in the road — the one less travelled by — offers our last, our only chance to reach a destination that assures the preservation of the earth.⁴⁰

Carson's reference in *Silent Spring* for a choice between two roads offers a metaphor. She suggests that we have a choice to continue doing things the way we always have or a not so gentle tug to look at the world, each other, and nature differently with the hope that we might avoid the sixth extinction.⁴¹ Similarly, Carson's journey along two roads would appear to bring awareness and attention about the many poisons - chemical, political, economic, religious, and cultural issues affecting climate change and how they are destroying our ecosystem and a global bureaucracy or neoliberalism that appears uncaring or unprotective of its citizenry. Sarah Burch and Sara Harris point out in *Understanding Climate Change* that the dominant rhetoric of the climate change conversation has emerged out of the modern environmental movement, which has been growing and reinventing itself since Carson's book:

As evidence has mounted of accelerating deforestation, the widespread effects of toxic pesticides and industrial emissions on human health and ecosystems, a growing list of endangered species, and exploding human populations, the conversation at the core of the environmental movement largely has become focused on the damaging effect of human activity.⁴²

These poisons that Carson refers to show up everywhere as we see this “mud ball” that we are on seemingly racing out of control. This appears in part, to be the result of carbon-fueled capitalism and corrupt or mismanaged governments who are driven by

40 Rachel Carson, Linda Lear, and Edward O. Wilson, *Silent Spring* (Mariner Books, 2002), 222.

41 Earth has witnessed five extinctions where more than 75% of species disappeared. Biologists suspect we're living through the sixth major mass extinction.

42. Sarah Burch and Sara Harris. *Understanding Climate Change: Science, Policy, and Practice* (University of Toronto Press, 2014), 23.

profit at any cost, regardless of the impact on humans, animals or the planet. Also at fault are tribal or cultural beliefs that defy science or logic. As like before and after Carson, many capitalists view Canada and the world as a place to do with as they like. Their approach seems to be that once mine tailings poison a lake, fishing grounds are wiped out, a forest clear-cut, or pipelines placed anywhere at any cost that they just move on to the next place with total disregard for the havoc and devastation that they wreak on people or our environment.

Those that speak out like Carson are attacked by industry and special interest groups. Carson was painted as a hysterical woman with negative articles that appeared both in chemical and agricultural journals as well as in the popular press. As Carson had no institutional affiliation and took her project on alone, she was dismissed as an amateur who didn't understand the subject like a professional scientist would. This gaslighting technique, like today's fake news and smear campaigns, are used today by special interest groups to discredit modern day activists like Katharine Hayhoe, Jason Mann, Naomi Oreskes, Al Gore, David Suzuki, and many others who have dared to point out that we have a serious problem. James Hogan writes in *I'm Right and You're an Idiot*:

Our public forums should be forums for open and honest, higher quality debate, but sadly, these meeting places have become polluted by a toxic mix of polarised rhetoric, propaganda and miscommunication. A dark haze of unyielding one-sidedness has poisoned public discourse and created an atmosphere of mistrust and disinterest.⁴³

This point of view can be claimed by anyone or any organisation from either side of this argument. There are many organisations and individuals like the Koch Brothers funding “fake news” outlets, journals, and research projects, and other prominent people promoting self-interest as well as political agendas that take precedence over the best interest of civilisation. It is difficult to know sometimes who is telling the truth and what information is being withheld from the public to suit corporate interests. And then again, what is the truth? This question has been debated for centuries and seems to reside somewhere between scientific observation and moral intuition.

43 James Hogan, *I'm Right and You're an Idiot: The Toxic State of Public Discourse* (New Society Publishing, 2016), 5.

While with the World Wildlife Fund, David Miller was asked how Carson might feel today if she were alive. He said simply that “Rachel Carson would be pissed.”⁴⁴ This is due to the lack of information available to the public then and now in many areas. Regarding the WWF this issue surfaced regarding assessing the health and threats to our freshwater watersheds across the country and the lack of publicly accessible data. Sometimes there’s been a required environmental assessment for an industrial plant but this information is not available to the public and something Carson was fighting for in 1962.

We have Carson and many other environmentalists, naturalists, and scientists to thank for their courage and commitment to save our planet. This sentiment was echoed by former U.S. Vice President and Nobel Prize recipient, Al Gore who thanked Carson and spoke to her work and of a simple binary view between right and wrong. He told a story about a teacher he’d had who taught him that we all face the same choice in life over and over again between right and wrong decisions. When contemplating why the hard “right” is so difficult to reach, Gore stated: “This is likely a moment in time that will not last for all that long. But it will hopefully last long enough for us to make the right choice so that we can say to future generations that we did what was necessary to bring us back from the edges of extinction.”⁴⁵ Thanks to Gore, Carson and many others, we know many of those edges and the things that we need to change to help make the right decisions about our future.

The word edge is interesting and defined as the outside limit of an object, area or surface. It’s that place next to the steep drop; the point before something unpleasant or momentous occurs. As personal as an epiphany at the beginning or end of a self-realised moment, it can be as large as a country or civilisation at the edge of collapse. An edge is also a thin linear thread or a thought that holds the edges of time between this and that, then and now; the line along which two surfaces, real or imagined, meet.⁴⁶ These edges are transitional or liminal spaces that exist in everything known. They occur every day, in every moment, and they have throughout time. They are often

44 Miller, David. Interview with David Miller. Impact, CIRH FM, 2017.

45 Al Gore. Climate Reality Project Training. Seattle Washington, June 2017.

46 Oxford Dictionary, <https://en.oxforddictionaries.com/definition/edge> (accessed September 11, 2017).

unannounced as they gradually take shape around and within us, often unconsciously as we often don't recognise them at first, sometimes for decades, like climate change. Others have a more momentous entrance defining the beginning or end of something such as the ice age, a birth or death, the end of war, hunger, and poverty.

Ironically science confirms that our planet was destined for another ice age, however, with the onslaught of capitalism, the industrial revolution, increasing populations, over-consumption and our reliance on fossil fuels, this has changed the nature of things, which we will spend time within the following chapters.⁴⁷ The speed of which current climate change is now unfolding is making it increasingly difficult for humans and our natural world to adapt, and the many distractions that abound are not helping as we seem to be approaching the edge and that steep drop where it feels like something unpleasant or momentous is about to happen. Rather than giving in to feelings of helplessness, one might consider how to frame these choices differently as we project ourselves into a future that Naomi Oreskes, Martha Nussbaum, and many others have painted for us by asking what we are going to bequeath to future generations. When they inherit the earth that we leave to them, what will we be passing on? At the Climate Reality Project training in Seattle, Al Gore offered this reflection:

If they find themselves in a world of steadily diminishing hope and increasing despair, with political disruptions and chaos and billions of refugees threatening governance structures and social cohesion; diminished food supplies and challenges to the availability of fresh water, deeper droughts, stronger storms, floods and mudslides, rising sea levels, tropical diseases, and all of the other horrors that the scientists have been right about in their predictions all along, and who are telling us that we must act quickly to avoid much worse. If we fail to make the right choices, they will likely ask us what we were thinking! If on the other hand, we can do the right things, they may ask us how we found the courage to do them, and perhaps thank us.⁴⁸

There are people all over the world working for peace and justice, trying to do the right things, and who deeply care for the earth. There are others who will take advantage of any situation to benefit their self-interest. While climate change may appear an

47 "Global Warming vs Another Ice Age," <https://www.technologyreview.com>. (accessed January 10, 2018) Note: There could be an argument that the risks of climate change are better than the risks of another ice age.

48 Al Gore. Climate Reality Project Training. Seattle Washington, June 2017.

environmental issue, it has become very political as we watch what is happening in the United States and Canada in particular. Tony Morrison points out that “many dictators and tyrants routinely begin their reigns and sustain their power with the deliberate and calculated destruction of art: the censorship and book burning of unpoliced prose, the harassment and detention of painters, journalists, poets, playwrights, novelists, essayists.”⁴⁹ This historical perspective would appear to be playing out today just south of the twenty-ninth parallel with President Donald Trump allowing new meaning to the art of war with his shock and awe politics. Perhaps, for this reason, it is just as easy to break the human spirit by taking those things away that are most precious. Naomi Klein writes about how a large-scale crisis, whether a terrorist attack, climate-related catastrophe or a financial crash, would likely provide the pretext to declare a state of emergency where the usual rules would no longer apply:

This would provide the cover to push through aspects of the Trump agenda that require a further suspension of core democratic norms – such as his pledge to deny entry to all Muslims, to bring the feds to quell street violence in Chicago or his obvious desire to place restrictions on the press.⁵⁰

Whether due to hurricanes in Florida and Texas or catastrophic fires in Southern and Northern California, “illegals” form encampments fearful of authorities who might deport or scatter their families if they report to a shelter. Are these issues of migration and temporary encampments of displaced humans just the beginning of fascism in the United States? Jason Moore spoke about his many friends with children and grandchildren who are “looking ahead at a world in which the powerful seem to be increasingly committed to more security, more violence, bigger walls and more repression to deal with the problems that come from how climate change and social inequality are linked.”⁵¹ University of Toronto Professors Dr. Minelle Mahtani and Dr Aisha Ahmad wrote in a Globe and Mail article about the impact this far reaching action has:

49 Toni Morrison, “No Place for Self-Pity, No Room for Fear: The Artist’s Task in Troubled Times.” Brain Pickings, November 15, 2016. <https://www.brainpickings.org/2016/11/15/toni-morrison-art-despair/>. (accessed November 22, 2017).

50 Naomi Klein, *No Is Not Enough-Resisting the New Shock Politics and Winning the World We Need* (Alfred A. Knopf, 2017), 33.

51 Moore, Jason. Interview with Jason Moore. Impact, CIRH FM, June 26, 2017.

Research is stifled without freedom, inclusion and equality. Without Somali, Sudanese, Yemeni, Syrian, Libyan and Iranian scholars at the table, we have scant chance of understanding these crucially important parts of the world. Their exclusion from our intellectual communities not only undermines our cherished academic freedoms and offends our deeply held moral principles, but it also blinds us to the world at a time when we are desperate for truth and light. Without them, we are in the dark.⁵²

We are reminded of conquering civilisations since time began that have helped themselves to the spoils of war in the name of their God or political self-interest. Naomi Klein points out that the Trump agenda is all about deconstructing the state and outsourcing as much as possible to “for-profit corporations.” She calls it a “naked corporate takeover.”⁵³ It is not a stretch to consider that given half a chance with the right catastrophic opportunity due to climate change, Trump would push anything in Morrison’s definition of art, and likely many social programs, over the cliff. It therefore seems reasonable to assume that given half a chance the Trump administration could easily entertain censorship and book burning, the harassment and detention of painters, journalists, professors, poets, playwrights, novelists, and essayists. Closer to home, lest we forget Stephen Harper's book burning where scientists said that the closure of some of the world's finest fishery, ocean, and environmental libraries with irreplaceable collections of intellectual capital built by Canadian taxpayers for future generations have been lost forever.⁵⁴

Naomi Klein reminds us that “we are creating conditions eerily like those in the 1930’s.”⁵⁵ Since the financial crisis of 2008, the International Monetary Fund (IMF), the European Commission, and the European Central Bank have forced country after country to accept shock therapy types of reforms in exchange for desperately needed bailout funds. They humiliated Greece, Italy, Portugal, and even France and forced them

⁵² Minelle Mahtani and Aisha Ahmad, “Trump Immigration ban ushers in an age of academic darkness.” <https://www.theglobeandmail.com/opinion/trump-immigration-ban-ushers-in-an-age-of-academic-darkness/article34220048/> (accessed May 20, 2018).

⁵³ Klein, Naomi. Interview with Naomi Klein. Impact, CIRH FM, August 25, 2017

⁵⁴ Stephen Harper, http://www.huffingtonpost.ca/capt-trevor-greene/science-cuts-canada_b_4534729.html (accessed November 12, 2017).

⁵⁵ Klein, Naomi. Interview with Naomi Klein. Impact, CIRH FM, August 25, 2017.

to give up economic control in many key sectors and privatise many parts of their economy with the loss of jobs and cuts to salaries, pensions, and healthcare. “The bitter irony”, Klein states, “is that the IMF was created after World War II with the express mandate of preventing these kinds of economic punishments that fuelled so much resentment in Germany after World War I.”⁵⁶

In an article by Ana Eiras of the Heritage Foundation, an examination of the record of IMF and World Bank performance in developing countries shows that, far from being the solution to global economic instability and poverty, these two international institutions are a major problem. She suggests that their lending practice deters growth because the money they loan removes incentives for governments to advance economic freedom, and breeds corruption. For these reasons, the vast majority of recipient countries have been unable to develop fully after depending on these institutions for over 40 years.⁵⁷

There are no simple answers. Climate change shows up in many difficult and interconnected conversations, conversations that many people don't want to have, which may explain why denial is pervasive. There is no straight line in this discussion about climate change and denial as we bump into big and small things along the way. The imprecise and vast nature of global warming and global conquest defy the possibility of representation --- they cannot be narrated or drawn because they permeate beyond a single historical event. As I attempt to draw an imaginary line in the sand to finish this project the many faces of denial continue to look over my shoulder. Donald Trump has done everything he can to continue his business as usual approach as he digs in his heels insisting that Western nations shouldn't give up their sovereignty and that coal is good for business. Canada's Prime Minister talks about our environmental needs while making sure that we extract what remaining fossil fuels we have out of the ground. Trudeau smiles warmly as he states “governments grant permits and communities grant permission,”⁵⁸ while British Columbia stalls the flood of diluted bitumen from Alberta who

56 Klein, Naomi. Interview with Naomi Klein. Impact, CIRH FM, August 25, 2017.

57 “IMF and World Bank Intervention: A Problem, Not a Solution”
<https://www.heritage.org/monetary-policy/report/imf-and-world-bank-intervention-problem-not-solution>. (accessed November 17, 2017).

58 “Justin Trudeau reacts to Quebec seeking an injunction against the Energy East pipeline.”
<http://www.cbc.ca/player/play/2684686536> (accessed February 8, 2018).

reciprocate by boycotting BC wine. There appear more and more mixed messages using jobs, the economy, indigenous rights, our environment, and social justice to mask the pervasive reach of capitalism.

These mixed messages create tension and fear and leave people more alarmed and often paralyzed. These are a few of the many reasons why there is more activism as well as why denial may be so popular. The more research I do and the more people I speak with, the more these conversations deepen. Climate change becomes another point of entry in an interconnected, interdisciplinary pathway about humanity's denial and its many challenges. In our interview Klein explained that the way we navigate this "frightening moment in history"⁵⁹ is with an alternative vision for how we get at the underlying reasons why we live in this age of multiple overlapping crises:

Whether it is an ecological crisis like climate change, whether it is surging white supremacy and widening inequality, I think the only way we protect ourselves from going even further down this dangerous road is with a vision of the future that gets at these underlying crises and that have real solutions.⁶⁰

Jason W. Moore agrees with Klein:

We need to have a holistic approach to climate change that says climate is not separate from questions of racism and sexism and profound class inequality and that indeed class, not just class inequality but class power is at the centre of climate inaction. It's the class power of the world's one percent or an even smaller number of billionaires who own more wealth than the bottom half of the population who are re-enforcing climate inaction.⁶¹

I had initially thought climate change should take priority over everything else as self-preservation for ourselves, our families, and our planet seemed paramount. After all, if the wilderness is gone, the rest seemed mute. As Klein eloquently reminds us, this is a five-alarm fire. We seem a long way from celebrating our differences or becoming allies on the many issues important to saving humanity. Mayer Hillman who is a social scientist thinks that "we're doomed," and that "the outcome is death, and that it's the end

59 Klein, Naomi. Interview with Naomi Klein. Impact, CIRH FM, June 26, 2017.

60 Klein, Naomi. Interview with Naomi Klein. Impact, CIRH FM, June 26, 2017.

61 Moore, W. Jason. Interview with Jason W. Moore. Impact, CIRH FM. August 25, 2017.

of most life on the planet because we're so dependent on the burning of fossil fuels."⁶²
Perhaps. So what then are the facts or the science of climate change and how will we
address how we treat each other in this ever-changing world?

The fateful question for the human species seems to me to be whether and to
what extent their cultural development will succeed in mastering the disturbance
of their communal life by the human instinct of aggression and self-destruction. It
may be that in this respect precisely the present time deserves special interest.⁶³

Sigmund Freud

62 Mayer Hillman, <https://www.theguardian.com/environment/2018/apr/26/were-doomed-mayer-hillman-on-the-climate-reality-no-one-else-will-dare-mention> (accessed April 26 2018).

63 Sigmund Freud, *Civilization and Its Discontents* (W.W. Norton & Co., 2010), 149.

Chapter 2

The Science Seems Simple



Figure 3 WWF Graphic ⁶⁴

For centuries storytellers, academics, and scientists have written about the world we live in as well as the political and social revolutions that have come with it. They have written volumes about the beauty of nature as well as our interconnectedness with it. In the last few decades, there is more pivotal writing about over-consumption, damage to our environment and how we are destroying our planet at an alarming rate. If growing populations of humans on our planet that can't produce enough to support themselves wasn't the first clue, the fact that natural habitats are being destroyed and that we have poisoned every stream, river and ocean, wildlife, and even ourselves with dangerous pesticides and chemicals should be a wakeup call. Scientists point out that it took hundreds of millions of years to produce life on our planet and with the rapidity of change and humanity's recklessness in the mere one hundred thousand years since we walked out of Africa, we seem to be racing to our end. As Mayer Hillman suggested earlier, while the planet may be fine in the long run, existing life as we know it is at risk.

⁶⁴ World Wildlife Fund Belgium. Stop Climate Change Graphic. With Permission.

There is no shortage of material or opinions regarding our interconnectedness with all of the natural world. John Muir, during his first summer exploring the Sierra Nevada, wrote in his journal; “When we try to pick out anything by itself, we find it hitched to everything else in the Universe.”⁶⁵ Like Muir, philosophers, scholars, scientists, mystics, industrialists, holy women and men, have helped shape public opinion and to carefully show us the way along the many paths that all seem to lead to the same place. A beautiful planet in distress!

Immanuel Kant wrote in *What Is Enlightenment*: “One age cannot bind itself, and thus conspire, to place a succeeding one in a condition whereby it would be impossible for the later age to expand its knowledge to rid itself of errors, and generally to increase its enlightenment.”⁶⁶ He thought that this would be a crime against human nature. I wonder what Kant would say today? It seems inconceivable that we may have knowingly robbed our children and their children of their future. Were we asleep or so self-absorbed that we didn’t care, perhaps in denial that anything was wrong? I wonder what Svante Arrhenius,⁶⁷ Rachael Carson⁶⁸ and others would think if they were alive today?

Thirty years after Carson’s *Silent Spring*, near the end of the Cold War, Francis Fukuyama wrote that the “worldwide spread of liberal democracies and free market capitalism could signal the end of humanity’s sociocultural evolution and become the final form of human government .”⁶⁹ A few months later, in 1992, the United Nations (UN) put the world on notice and hosted a framework convention on climate change where it acknowledged changes to the Earth’s climate and its adverse effects. The UN announced its concern and cautioned that “human activities had substantially increased the atmospheric concentrations of greenhouse gases and that these increases are

65 John Muir, https://vault.sierraclub.org/john_muir_exhibit/writings/misquotes.aspx (accessed June 8, 2017).

66 Immanuel Kant, *What is Enlightenment* (Penguin, 2013), 32.

67 Svante Arrhenius, <https://earthobservatory.nasa.gov/Features/Arrhenius/> (accessed November 12 2017).

68 Rachel Carson, <http://www.rachelcarson.org/> (accessed April 15, 2017).

69 Francis Fukuyama, *The End of History and the Last Man* (Free Press 2006), 33.

resulting in additional warming of the Earth's surface and atmosphere, adversely affecting natural ecosystems and humankind."⁷⁰

A recent newsletter from the David Suzuki Foundation included a 1992 article entitled "*World Scientists' Warning to Humanity*." Signed by a majority of Nobel laureates in sciences and more than 1,700 leading scientists worldwide, it warned that "human beings and the natural world are on a collision course." It called for a new ethic to ourselves and nature and recognises our dependence on Earth. It also called for stabilising human population through "improved social and economic conditions, and the adoption of effective, voluntary family planning."⁷¹ Now, 25 years later, we've added two billion people (a 35 percent increase) and, despite progress in stabilising the stratospheric ozone layer, all the other problems scientists looked at then have worsened. On the 25th anniversary of the original United Nations report, more than 15,000 scientists from around the world signed a new warning, the most scientists to ever co-sign and formally support a published journal article. The Bioscience article states:

By failing to adequately limit population growth, reassess the role of an economy rooted in growth, reduce greenhouse gases, incentivize renewable energy, protect habitat, restore ecosystems, curb pollution, halt defaunation, and constrain invasive alien species, humanity is not taking the urgent steps needed to safeguard our imperilled biosphere.⁷²

It is noteworthy to mention that in 1998 at The International Conference on Reproductive Health (ICPD) a paper was presented to the UN that recognised women's rights to reproductive and sexual health as being key to their health.⁷³ The basis for these rights can be found in various articles of the Convention on the Elimination of All Forms of Discrimination Against Women. Twenty years later, in Paul Hawken's latest book *Project Drawdown*, education is cited as one of the key initiatives in effectively

70 United Nations Convention on Climate Change 1992, Convene. Pdf. <https://unfccc.int/resource/docs/convkp/conveng.pdf>. (accessed December 4, 2017).

71 David Suzuki Foundation, One Nature. <https://david Suzuki.org/story/ignore-urgent-global-warnings-peril/> (accessed January 18, 2018).

72 William J. Rippel et al., "World Scientists' Warning to Humanity: A Second Notice." Bioscience. Volume 67, Issue 12, December 2017. (accessed January 3, 2018).

73 ICPD Report, <http://www.un.org/womenwatch/daw/csw/shalev.htm>. 1998. (accessed October 9, 2017).

dealing with climate change as it lays a foundation for girls and women, their families, and their communities. It also is one of the most powerful levers available for avoiding emissions by curbing population growth. Women with more years of education have fewer and healthier children, and actively manage their reproductive health.

The Intergovernmental Panel on Climate Change summarizes key scientific research carried out by thousands of scientists and states that greenhouse gases have “increased as a result of human activities since 1750 and now far exceed pre-industrial levels,”⁷⁴ and “most of the increases in global temperatures have occurred since the mid-twentieth century.”⁷⁵ According to the IPCC, the Earth's temperature has increased systematically over the last century, sea levels have risen significantly, and carbon dioxide emissions have increased almost exponentially since the 1940's. Most (97%) of the scientists in the world are convinced that burning fossil fuels cause carbon dioxide emissions, which make the temperature increase and causes sea levels to rise as our planet heats up.

It is important to point out that these are not new conversations and that we were put on warning several times by the scientific community. As much as words like apocalyptic and catastrophic may seem distasteful or extreme, they are now embedded at the edges of our consciousness and as poet professor Davie Whyte points out, this is one of those conversations that we would rather not have. Edward Saltsberg echoed this sentiment at a recent Sustainability Forum at the University of Arizona. He spoke about the near-unanimous consensus among climate scientists that the massive burning of gas, oil, and coal is having a cataclysmic impact on our atmosphere and climate, depleting the Earth's natural resources, including its land, food, fresh water, and biodiversity.⁷⁶ This is not a conversation that some want to hear.

74 Intergovernmental Panel on Climate, *Climate Change 2013: The Physical Science Basis: Working Group I Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. (Cambridge University Press, 2014), 6.

75 IPCC, *The Physical Science Basis: Working Group*. Cambridge University Press, 2014) 6.

76 Edward Saltzberg, <http://securityandsustainabilityforum.org/arizona-state-university> (accessed February 22, 2018).

Gabriel Hect mentioned earlier that climate and environmental impacts are particularly magnified and debilitating for low-income communities and communities of colour around the world. These communities often live closest to toxic sites extracting natural resources, and who are disproportionately impacted by high incidences of asthma, cancer, and rates of morbidity and mortality, and lack the financial resources to build resilience to climate change and social justice issues. Chris St. Clair is a presenter and host with The Weather Network and spoke about the aftermath of hurricanes in the United States and how one after the other, wealthy neighbourhoods are the first to receive attention where poorer neighbourhoods are often last and in some cases forgotten.⁷⁷

Katharine Hayhoe is one of the leading atmospheric scientists in the world, a professor of political science at Texas Tech University and director of the Climate Science Center in Houston. She is perhaps best known as an evangelist and scientist. When speaking to her about climate change and its inequalities she was quick to point out how long we have been aware of the many issues. She discussed how the first studies linking fossil fuels to the build-up of carbon dioxide in the atmosphere were done in the eighteen hundreds:

We've known since the 1850's that burning coal produced carbon dioxide. We've known since the 1890's exactly how much the Earth is yet to double or triple the level of carbon dioxide in the atmosphere. Why it's come to our consciousness now is because we're feeling the impacts. We're like the frog in boiling water. It's starting to get uncomfortable, and that's why all of a sudden, we're talking about it because we realise it's real, it's here, and we have to do something about it.⁷⁸

At a Sustainability Forum conference in 2017, Hayhoe reiterated what was paramount at the Paris Climate Accord: "We need a price on carbon in the U.S. and other countries that accurately reflects its real costs on our society and our well being."⁷⁹ Fortunately, this is happening in Canada as roughly 85% of Canadians already live in a jurisdiction that has a price on greenhouse gas (GHG) emissions with B.C. and Quebec in the lead. Others must now implement either a carbon price or a cap-and-trade system in their jurisdiction, with the express purpose of reducing emissions to help Canada meet

77 Chris St Clair. Globe Forum Conference. Vancouver. March 14, 2018.

78 Hayhoe, Katharine. Interview with Katharine Hayhoe. Impact, CIRH FM, July 5, 2017.

79 Hayhoe, Katharine. Interview with Katharine Hayhoe. Impact, CIRH FM, July 5, 2017.

reduction targets set out in the Paris climate agreement. Although the Paris agreement is a federal commitment, Canada is relying on each of the provinces to enact appropriate climate change policies to achieve compliance.⁸⁰

It's interesting to consider that over the last 100,000 years, the average temperature never rose above 61 degrees Fahrenheit, and carbon dioxide concentration didn't rise above 300 parts per million (PPM). We are now at 400 ppm, and methane has increased from 770 parts per billion to more than 1,800 (ppb). Every time we start a car, waste our food, throw out an old refrigerator, or charge our smartphones, we are putting more CO₂ into the air.⁸¹ According to the IPCC and other organisations, we face the imminent collapse of the agricultural, shipping and energy networks upon which the global economy depends, a large-scale die-off in the biosphere that's already underway, and whispers of our possible extinction as a species. The IPCC, The World Bank, NASA, and universities around the world point to the fact that we have passed the point where we could have done anything about it. Now the question is how are we going to adapt to life in the hot, volatile world we have created? (We will look at this further in chapter 5)

The World Bank published a report in 2014 entitled *Turn down the Heat* and forecast the worst-case estimates of a 7 to 8 foot rise in sea level by 2040. John Englander is a leading expert on sea level rise and its societal and financial impacts. As the former executive director of the Jacques Cousteau Foundation, he works with businesses, government agencies, and communities to understand the risks and potential opportunities from rising seas and the need for "intelligent adaptation".⁸² He predicts that when all the ice sheets and glaciers in the world melt, sea level will be approximately 212 feet (65 meters) higher than it is today:

Rising sea levels will be the single most profound geologic change in recorded human history. It will transform our physical world beyond anything we can imagine, dwarfing continents and eliminating some nations. Coastlines will move inland by hundreds and, in some places, thousands of feet this century. The impacts will be far greater during the next century as our planet continues to heat

80 CBC News, <http://www.cbc.ca/news/politics/provinces-with-carbon-pricing>.(accessed January 4, 2017).

81 Paul Hawken and Tom Steyer, *Project Drawdown* (Penguin Books, 2017).

82 Englander, John. Interview with John Englander. Impact. CIRH FM, November 8, 2017.

up. Trillions of dollars of the most valuable real estate and infrastructure will vanish.⁸³

It is difficult to fathom the socio-economic and cultural impact this will have around the world. Warmer, drier weather and rising sea levels are not the only factors at play. Perhaps the worst factor, is the perennially hubristic attempt by humans to control nature and re-engineer natural forces far more powerful than us.

Anthropocene or Capitalocene

According to the International Union of Geological Sciences (IUGS), the professional organisation in charge of defining Earth's time scale, we are officially in the Holocene (meaning entirely new or recent) epoch, which began 11,700 years ago after the last major ice age.⁸⁴ Many, like Roy Scranton, think the label is outdated and argue for the word Anthropocene, from anthropoid or “man,” and cene for “new”, because humankind has caused mass extinctions of plant and animal species, polluted the oceans and altered the atmosphere, among other lasting impacts.⁸⁵ This is the age of humans. Anthropocene has become an environmental buzzword ever since the atmospheric chemist and Nobel laureate Paul Crutzen popularised it in 2000. Jason Moore added to the notion that this may be better framed as the Capitalocene.

The National Aeronautic and Space Administration (NASA) and most scientists on our planet agree that the Earth's climate has changed throughout history. In the last 650,000 years there have been seven cycles of glacial advances and retreats, with the end of the last ice age about 7,000 years ago, marking the beginning of the modern climate era and of human civilisation as we know it.⁸⁶ According to the experts, most of these changes are attributed to small variations in Earth's orbit that change the amount of solar energy our planet receives. This current warming trend is of significance

83 John Englander, *High Tide on Main Street: Rising Sea Levels and the Coming Coastal Crisis* (Boca Raton: The Science Bookshelf, 2013), 3.

84 International Union of Geological Sciences, IUGS - Home.”. <http://www.iugs.org/> (accessed November 12, 2017).

85 Roy Scranton, *Learning to Die in the Anthropocene: Reflections on the End of a Civilization*. (San Francisco, CA: City Lights Publishers, 2015).

86 Climate Change, <https://www.coursehero.com/file/pd67gc/15-The-amount-of-in-the-atmosphere-direct> (accessed January 20, 2018).

because most of it is the result of human activity since the mid-20th century due to increased CO₂ emissions and it is proceeding at a rate that is unprecedented over any other time in Earth's history⁸⁷. While the IPCC is often criticized for their conservative use of language, like "it is extremely likely the result of human activity," other scientists like Naomi Oreskes and Katharine Hayhoe have little problem pointing out the acceleration of CO₂ emissions since the Industrial Revolution followed by the mass use of fossil fuels shortly after WWII is the primary reasons our planet is heating up. There can be little doubt when viewed in Figure 4.

In a 2017 Climate Reality Project training session in Seattle, Washington, Al Gore presented a two-hour powerpoint presentation with the help of guest scientists, academics, and indigenous leaders talking about how our planet is heating up. He explained that the planet's average surface temperature has risen about 2.0 degrees Fahrenheit (1.1 degrees Celsius) since the late 19th century, a change driven largely by increased carbon dioxide and other human-made emissions into the atmosphere.⁸⁸

Most of the warming occurred in the past 35 years, with 16 of the 17 warmest years on record occurring since 2001. Not only was 2016 the warmest year on record, but eight of the 12 months that make up the year — from January through September, except June — were the warmest on record for those respective months.⁸⁹

Mr. Gore pointed out in his presentation that CO₂ is being released into the atmosphere faster than at any time in the last 66 million years. Kevin Trenberth of the U.S. Center for Atmospheric Research says: "Global warming is contributing to increased incidents of extreme weather because the environment in which all storms form has changed due human activities."⁹⁰ Al Gore framed this differently by explaining that "individual organisms survive within specific ranges of temperature, precipitation,

87 Climate Change, Intergovernmental Panel on Climate. *Climate Change 2013: The Physical Science Basis: Working Group I Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2014), 6.

88 NASA, NOAA Data Shows 2016 Warmest Year On Record Globally, <https://climate.nasa.gov/news/2537/nasa-noaa-data-show-2016-warmest-year-on-reco> (accessed January 20, 2018).

89 Gore, Al. Presentation with Al Gore. Climate Reality Conference, June 17, 2017.

90 Kevin Trenberth, "The climate crisis: An introductory guide to climate change." June 2011. <https://agupubs.onlinelibrary.wiley.com/doi/abs/10.1029/2011EO250010> (accessed June 11, 2017).

humidity, and sunlight. Organisms exposed to climate conditions outside their normal range must adapt or migrate, or they will perish.”⁹¹ Put another way, Gore said “that the earth is now beginning to operate with a fever or a higher temperature, and it will likely get higher.”⁹² The IPCC attributes humanity’s global warming influence primarily to the increase in three key heat-trapping gases in the atmosphere: carbon dioxide, methane, and nitrous oxide. The U.S. climate change Science Program published findings in agreement with the IPCC report, stating that “studies to detect climate change and attribute its causes using patterns of observed temperature change in space and time show clear evidence of human influences on the climate system due to changes in greenhouse gases, aerosols, and stratospheric ozone.”⁹³

Incidents of extreme weather are projected to increase because of climate change. Many locations will see a substantial increase in the number of heat waves they experience each year and a decrease in episodes of severe cold. We are already experiencing precipitation events that are less frequent but more intense in many areas, and droughts will be more frequent and severe in areas where average precipitation is projected. Human health and mortality rates will be affected to different degrees in specific regions of the world because of climate change. Although cold-related deaths are predicted to decrease, other risks are predicted to rise. The incidence and geographical range of climate-sensitive infectious diseases—such as malaria, dengue fever, and tick-borne diseases—will increase. Drought-reduced crop yields, degraded air and water quality, and increased hazards in coastal and low-lying areas will contribute to unhealthy conditions, particularly for the most vulnerable populations.⁹⁴ Tero Mustonen is with the Snowchange Cooperative (Finland), a scientific organisation that works with the Arctic Council, IPCC, Indigenous Peoples Climate Change Assessment and other organisations and universities. In addition to dealing with cultural and historical issues in the north, one of their key issues as the ice fields thaw is how to deal with habitat

91 Climate Literacy, <https://aamboceanservice.blob.core.windows.net/oceanservice-prod/education/liter> (accessed February 5, 2018).

92 Al Gore. Climate Reality Project. Seattle Washington. June 29, 2017.

93 IPCC 2013, *The Physical Science Basis: Working Group I Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2014), 8.

94 The Essential Principles Of Climate Literacy, | NOAA <https://www.climate.gov/teaching/essential-principles-climate-literacy/essential> (accessed August 2, 2017).

changes and trapped methane gasses as well as thousands of years of diseases that are being released into the atmosphere.⁹⁵

Based on the Paris Agreement, without significant change, present practices will likely see temperature rises of 3.6 degrees by 2100. Should we do nothing, temperatures are expected to rise by 4.4 degrees. Some believe that it could be as high as 10 degrees by the end of the century. Throughout history, Earth's climate has varied, reflecting the complex interactions and dependencies of the solar, oceanic, terrestrial, atmospheric, and living components that make up Earth's systems. For at least the last million years, our world has experienced cycles of warming and cooling that take approximately 100,000 years to complete.⁹⁶ A one-degree global change is significant because it takes a vast amount of heat to warm all the oceans, atmosphere, and land by that much. In the past, a one to two-degree drop was all it took to plunge the Earth into an Ice Age. A five-degree drop was enough to bury a large part of North America under a mass of ice 20,000 years ago. It seems difficult to fathom how much humans have changed the planet's weather systems and climate.

There are more recent examples to consider as our world continues to change. A recent Citigroup study showed that Saudi Arabia might run out of oil by the year 2030.⁹⁷ According to Reuters, over a quarter of China's land area is turning into desert in which soil loses its fertility, putting crops and water supplies at risk for the world's second-largest economy.⁹⁸ And the Maldives and many parts of the Caribbean are looking at major flooding due to climate change.⁹⁹ New to this conversation is what happens when Capetown and other major cities run out of water? Considering that the U.S and Canada could not meet their carbon emissions commitment, it's no wonder that they pulled out of

95 Mustonen Tero. Interview with Tero Mustonen. Impact, CIRH FM, April 10, 2017.

96 Climate Literacy - Microsoft, <https://aamboceanservice.blob.core.windows.net/oceanservice-prod/education/liter> (accessed January 20, 2018).

97 Emily Gosden, "Saudis May Run Out of Gas." September 2012, <http://www.telegraph.co.uk/finance/newsbysector/energy/oilandgas/9523903/Saudis-may-run-out-of-oil-to-export-by-2030.html>. (accessed May 23, 2017).

98 *Reuters*, China Says It Will Take 300 Years to Turn Back Deserts. <https://www.reuters.com/article/us-china-desertification/china-says-will-take-300-years-to-turn-back-deserts-idUSTRE7031GZ20110104> (accessed March 2, 2017).

99 The Weather Channel, "20 Countries Most At Risk From Sea Level Rise" <https://weather.com/science/environment/news/20-countries-most-risk-sea-level-rise-20140924> (accessed February 15, 2017).

the Kyoto and Paris agreements and left the world scrambling to figure out how to do more faster so as not to overshoot CO₂ emissions. Scientific observations and climate model results prove over and over again that human activities are now the primary cause of most of the ongoing increase in Earth's average surface temperature.

Most of us have seen the picture of the polar bear standing on a small piece of ice as the Arctic melts at record speed. In November 2017 temperatures were once again above historical norms and sea ice was the lowest ever recorded. As the Arctic warms, the permafrost is melting and releasing large quantities of frozen methane, and God only knows what other prehistoric artifacts and diseases. We have already seen increasingly unstable weather patterns, more frequent and stronger storms and hotter summers: the Calgary flood, southwestern BC's snowy winter, severe storms in Atlantic Canada, floods in Québec and Ontario, the Fort McMurray and BC fires. The increase in severe weather events will require more investment in firefighting equipment, flood controls, landslide and avalanche protection, and community infrastructure. These and other costs associated with global warming will be paid for with higher taxes and insurance.

Naomi Oreskes is a professor of Earth and Planetary Sciences at Harvard University. She's written a number of books and is the co-author of *Merchants of Doubt* which is about how a handful of scientists obscured the truth on issues from tobacco to global warming. Her essay, "The Scientific Consensus on Climate Change,"¹⁰⁰ has been cited around the world as a guide to the facts and fiction about climate change. In 2015 she worked with Pope Francis on the introduction of the *Laudato Si Encyclical*. *The New York Times* has called her one of the biggest names in climate science. In our interview, she called herself a historian of science as she works to stabilize knowledge claims and how scientists evaluate evidence and then come to various conclusions:

I never really thought that much about what I now call the uptake questions, whether or not other people accept and believe what scientists think. The work on climate change made me realise that the second part of the uptake is equally, if not even more important because scientists can do the greatest work in the world, but if the public, policymakers or business leaders reject it, then you know

100 Naomi Oreskes, "The Scientific Consensus on Climate Change" Vol. 306, Issue 5702, December 2004. <http://science.sciencemag.org/content/306/5702/1686> (accessed April 20, 2017).

that's a very serious situation. So my more recent work has been about the rejection of climate science, and the reasons why various people have gone to such lengths to discredit the findings of climate scientists.¹⁰¹

It's interesting to follow these discussions about climate change and how we view it from many different perspectives. The discussions range from if its real or not, who is responsible, if humans induced the changes that are occurring or if they are natural occurrences. There are still some that will argue that there is no such thing as climate change and that it's all a hoax. According to a recent study by Ipsos Mori, 47% of people globally say that scientists don't know what they are talking about on environmental issues with North Americans leading the way.¹⁰² Oreskes points out that companies engage in what she calls "purposeful denial":

One of the things that I find most distressing about this whole situation is that fossil fuel companies like Exxon Mobil and coal companies have made huge profits selling oil, gas, and coal, knowing that there would be these very serious climate damages. We came across court documents demonstrating that there had been a group of people who had engaged in purposeful denial of climate change. They were linked to the tobacco industry and part of a network of think tanks that were highly purposeful, well orchestrated and intentional.¹⁰³

James Hogan is the former CEO of the David Suzuki Foundation, author of *Climate Coverup*, and a public relations expert, well versed in spin and fake news. He created the De-Smog Blog in 2005 to go after false science. "The fake science was designed to confuse the public about climate change to convince them it wasn't a problem and that environmentalists like Rachel Carson were just radicals who were exaggerating the problem, and that you can't trust guys like Al Gore."¹⁰⁴ According to Hogan the worst thing that happened was that they were able to message partisan meaning to the science of climate change: "If you wanted to know whether or not someone thought climate change is a serious problem just ask them whether they are a

101 Oreskes, Naomi. Interview with Naomi Oreskes. Impact, CIRH FM, April 17, 2017.

102 Ipsos Mori. Global Trends, <http://www.ipsos.com/ipsos-mori/en-uk/ipsos-mori-global-trends-2017> (accessed January 13 2017).

103 Oreskes, Naomi. Interview with Naomi Oreskes. Impact, CIRH FM, April 17, 2017.

104 Hogan, James. Interview with James Hogan. Impact, CIRH FM, April 28, 2017.

Democrat or a Republican. When they were able to message partisan meaning into science, it became them and us.”¹⁰⁵

One might argue that liberal versus conservative cannot be equally weighted because if you think critically, rationally, and thoroughly, drawing upon broad data and resources, and you think inclusively, that may not support conservative values. Hogan wonders if people “have the capacity to disagree with someone in a way that isn’t designed to shut them down and to push them out of the conversation.”¹⁰⁶ Katherine Hayhoe suggests that “while few disagree with the science, they disagree with the economics or government interference.”¹⁰⁷ She reminds us that “people (conservative or liberal) view their stakes differently, which means that we need to find a common language around values and beliefs and find common ground around climate change.”¹⁰⁸ These are important distinctions to note as the facts, regardless of how convincing the evidence, may not be enough to change a person’s beliefs or values. Better understood as “what is” (fact) and “what ought to be” (value), the fact/value distinction is the thin line between what is truth and what is right. It is the source of conflict between science and ethics.

John Englander writes in *High Tide on Main Street* that it doesn’t matter who is responsible as the planet is heating up regardless and the topic of sea level rise also gets lost in the larger, more complicated discussion of climate change:

There is an obvious connection in that a warmer climate will create higher sea levels. But somehow the discussion has become a debate over whether it is caused by human activity or if it is simply the result of natural cycles, with most people believing it’s one or the other.”¹⁰⁹

As illustrated by Sara Harris and Sara Burch, this discussion has become entangled in our discussions of religion and politics. “It has become a political weapon, a topic of dinner conversation, and a crucial entry point for discussing the multitude of

105 Hogan, James. Interview with James Hogan. Impact, CIRH FM, April 28, 2017.

106 Hogan, James. Interview with James Hogan. Impact, CIRH FM, April 28, 2017.

107 Hayhoe, Katharine. Interview with Katharine Hayhoe. CIRH FM, July 5, 2017.

108 Hayhoe, Katharine. Interview with Katharine Hayhoe. CIRH FM, July 5, 2017.

109 John Englander, *High Tide on Main Street: Rising Sea Levels and the Coming Coastal Crisis* (The Science Bookshelf, 2013), 4.

ways in which many industrialised societies have become fundamentally unsustainable.”¹¹⁰ While the science may seem simple and irrefutable, our tribal inheritance or our cultural, religious, and political backgrounds tend to influence our beliefs and values about climate change and most things that we hold close. Climate change or climate disruption then can be documented at many levels, from comparing history to computer modelling to examining how it impacts humans and ecosystems. We can use the data collected by satellites and other observation systems, or records from a range of physical, chemical, biological, geographical, social, economic, and historical sources to explore the impacts of climate, culture, and potential adaptation and mitigation strategies. But even in the 2017 Ipsos Mori study, with no shortage of scientific data, many people still dispute the science of climate change. Katherine Hayhoe talked about why people are debating whether our climate is changing and if its due to human emissions of carbon dioxide or something else:

The science we use in climate models is the same science we use every day in our stoves, refrigerators and airplanes. People are debating the science because they don't like the solution. ¹¹¹

While we debate climate change issues every day, our world continues to change, and like frogs in boiling water, plant and animal species are having to adapt to changing environments. As species move, they bring diseases with them to farms and human populations. Biodiversity diminishes as some species become extinct due to human-caused climate change or related human activities such as habitat destruction or toxic pollution. Higher temperatures create new risks for wildfires, droughts, and place new pressures on agriculture. As John Englander points out, as sea levels rise, coastal cities are at greater risk of floods.¹¹²

Consider that as this ball of mud hurtles through space, it is made up of billions of interconnected ecosystems. One of those would be our rainforests that once covered approximately 15% of the earth's land surface. They now cover 6%, and experts estimate that the last remaining rainforests could be consumed in less than 40 years.

110 Sarah Burch, Sara Harris, *Understanding Climate Change: Science, Policy, and Practice* (University of Toronto Press, 2014), 33.

111 Hayhoe, Katharine. Interview with Katharine Hayhoe. Impact, CIRH FM, July 5, 2017.

112 Climate Change 101, Ncse, <https://ncse.com/library-resource/climate-change-101> (accessed January 20, 2018).

“Where our indigenous hosts consider these magical places as spiritual and hereditary, industry only sees linear yards of lumber and profit.”¹¹³ Nearly half of the world's species of plants, animals, and microorganisms will be destroyed or severely threatened over the next quarter century. According to David Miller, former CEO of the World Wildlife Federation (WWF), “we are losing approximately one hundred plants, animals, and insect species daily.”¹¹⁴

How much of this loss is a part of natural selection and how much is due to humankind's reckless regard for each other as well as nature? Recognising the seriousness of this and our changing planet, the U.S. Department of Defence released a report in 2015 predicting that in the next fifteen years we will see another thirty-climate change induced wars, like currently in Syria, and over one billion people displaced due to climate change-related causes.¹¹⁵ While there are mixed opinions about whether climate change causes war, a recent article in the *Atlantic* by Robinson Meyer reports that scientists and politicians have endorsed the idea that global warming helped push Syria into civil war. “Climate change did not cause the conflicts we see around the world,” Barack Obama said in 2015. Drought and crop failures and high food prices helped fuel the early unrest in Syria. The following year, Bernie Sanders declared that “climate change is directly related to the growth of terrorism.”¹¹⁶ The OECD predicts that climate change will also “reduce the global economy by approximately five percent or about 6.5 trillion dollars by the end of the century”.¹¹⁷ To provide one way of making sense of this, a BBC news report cites the average world salary is US \$1,480 a month, or just less than \$18,000 a year.¹¹⁸ A 5% loss in the global economy could result in approximately 2.5 billion people being unemployed by the end of the century.

113 David Suzuki. Keynote address Vancouver Mountain Film Festival. February 2017.

114 Miller, David. Interview with David Miller. Impact, CIRH FM, March 23, 2017.

115 Department of Defense Report on Security Implications of Climate Change,” U.S. DEPARTMENT OF DEFENSE. <https://www.defense.gov/News/Article/Article/612710/> (accessed March 11, 2017).

116 Does Climate Change Cause War? <https://www.theatlantic.com/science/archive/2018/02/does-climate-change-cause-more-war/553040/>. (accessed February 12 2018).

117 OECD - OECD. Organization for Economic Co-operation and Development. <http://www.oecd.org/about/> . (accessed February 10, 2017).

118 BBC News. <http://www.bbc.com/news/magazine-17512040>.(accessed January 12, 2018).

There is virtually unanimous scientific agreement around the world about the science of climate change. However, due to the inherent complexity of the topic and the social controversies surrounding it, confusion and doubt persist. The many independent lines of evidence above show that human activity is responsible for most of the changes in the last one hundred years, particularly the warming of the atmosphere and oceans and that these changes will continue into the future. Carbon dioxide is produced when humans burn gasoline, natural gas, and coal to produce electricity and drive cars, trains, ships, and aircraft. So it is not surprising that carbon dioxide is the major factor responsible for warming the atmosphere. Climate change will have many different effects on society and the natural world, and we have already seen a preview with forest fires, unprecedented tropical storms, floods, and drought.

What therefore prompts us to do something rather than nothing when we are confronted with the suffering of another? Are we looking over the edge at our extinction, as Roy Scranton and others suggest, or are we simply being put on notice as we become more conscious of the world around us? How did we get to this crossroad in civilization? What have we learned? What will we have to do differently or, if we continue to ignore what is happening, what will become of us? And does it matter? Zygmunt Bauman and Leonidas Donskis wrote in *Liquid Evil* that while we may talk and write about the dangers that threaten the sustainability of our planet, as well as the prospects for our collective survival, our conduct and our accomplishments do not match the words:

We may talk and think differently from how we did a few decades ago, but our way of daily life and our hierarchy of preferences, in particular, have hardly twitched – if anything, their ominous, doom full proclivities have acquired their own self-reinforcing momentum.¹¹⁹

Our behaviours then directly translate into our results. And when we consciously sabotage ourselves, we cannot have confidence in ourselves. Instead, we move to identity confusion or denial.

¹¹⁹ Zygmunt Bauman and Leonidas Donskis, *Liquid Evil* (Polity Press, 2016), 48-49.

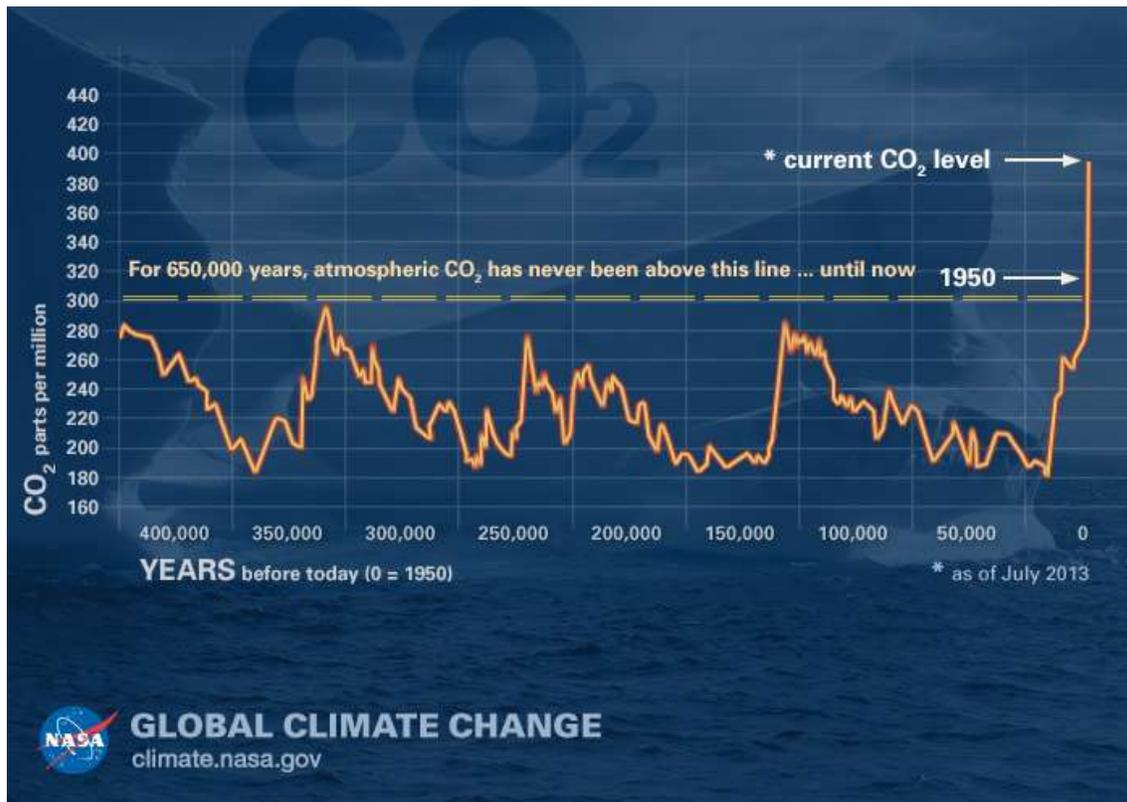


Figure 4 Carbon Dioxide Over the Centuries¹²⁰

Morality binds and blinds. It binds us into ideological teams that fight each other as though the fate of the world depended on our side winning each battle. It blinds us to the fact that each team is composed of good people who have something important to say.¹²¹

Jonathan Haidt

¹²⁰ NASA. <https://climate.nasa.gov/> (accessed November 8, 2017).

¹²¹ Bronwen Dickey, *Pit Bull: The Battle Over an American Icon* (Vintage Books, 2016), 159.

Chapter 3

Self Deception, False Beliefs, and Denial



Figure 5 **Glacier National Park** ¹²²

The science is clear with the growing body of literature and volumes of research regarding the threats to life on our planet. While climate change is not our only issue, it has certainly become a priority in recent years due to its accelerating path of destruction. Global warming is increasing the frequency and intensity of some types of extreme weather and causing more rain to fall in heavy downpours. There are also longer dry periods between rainfalls. This, coupled with more evaporation due to higher temperatures, intensifies drought. Wet places have become wetter, while dry places have become drier. Heat waves have become more frequent and intense, while very cold days have decreased.¹²³ Still, for all the global attention this topic has received, many people aren't convinced that it's real or a problem. Even for the many who recognise that climate change is real, they do very little to stop it. What then is the

¹²² Glacier National Park. Alaska. May 2017. Picture by Don Shafer.

¹²³ Global Warming is Affecting Weather. <https://www.climatecommunication.org/climate/global-warming/> (accessed January 22, 2018).

psychological mechanism that allows us to know something is true but act as if it is not? We have heard various thoughts up to this point that go beyond the science and begin to touch on what some call psychological distancing, a place that is too difficult or painful to get to, or, another place so far away that it's not close enough to want or need to confront it.

Sigmund Freud and Carl Jung wrote volumes about the human psyche and may have led the way initially by pointing out the many ills and remedies of society. To many, Carl Jung and Sigmund Freud defined the world of psychology. Their theories, although differing, have had an impact on our perception of the human mind, and their contributions to theory and practice have led to the development of successful psychological treatments for the wide spectrum of human distress. I was curious if Jung was close to nature and discovered a comment from him: "We all need nourishment for our psyche. It is impossible to find such nourishment in urban tenements without a patch of green or a blossoming tree. We need a relationship with nature."¹²⁴ In *The Earth has a Soul* Jung laments that animals, dragons, and other living creatures are readily replaced in dreams by railways, locomotives, motorcycles, aeroplanes, and suchlike artificial products:

This expresses the remoteness of the modern mind from nature; animals have lost their numinosity; they have become apparently harmless; instead, we people the world with hooting, booming, clattering monsters' that cause infinitely more damage to life and limb than bears and wolves ever did in the past. And where the natural dangers are lacking, man does not rest until he has immediately invented others for himself.¹²⁵

Perhaps this is another affirmation of how we need to be close to nature, or perhaps an illustration of how we try to control nature to create more distractions that prevent us from confronting the real issues in our lives and, perhaps, our denial. The refusal to admit the truth or reality of something or the assertion that an allegation is false,

124 Carl Jung, <http://jungiancenter.org/was-c-g-jung-into-ecology-jung-and-the-world-soul-or-anima-mundil> (accessed November 22, 2017).

125 C. G. Jung, Joseph Henderson M.D, *The Earth Has a Soul: C.G. Jung on Nature, Technology and Modern Life*. Edited by Meredith Sabini (North Atlantic Books, 2002), 87.

is “a defense mechanism in which confrontation with a personal problem or with reality is avoided by denying the existence of the problem or reality.”¹²⁶

Climate change and denial is less of an issue for some anthropocentric philosophers who support a so-called cornucopian point of view, reject claims that Earth’s resources are limited, or that unchecked human population growth will exceed the carrying capacity of the planet and result in wars and famines as resources become scarce. While perhaps hard to believe, these philosophers argue that either the projections of resource limitations and population growth are exaggerated or that technology will be developed as necessary to solve future problems of scarcity. They tout capitalism as an essential feature of human progress and see no moral or practical need for legal controls to protect the natural environment or limit its exploitation.

Other environmental ethicists have suggested that it is possible to value the environment without discarding anthropocentrism. Sometimes called prudential or enlightened anthropocentrism, this view suggests that humans have ethical obligations toward the environment, but they can only be justified regarding obligations toward other humans. For instance, environmental pollution can be seen as wrong because it negatively affects the lives of other people. Similarly, the wasteful use of natural resources is viewed as immoral because it deprives future generations of those resources.

When trying to determine who is responsible, I initially felt that all of humanity is complicit regardless from what tribe we originate or where we live. This opinion was not met with much enthusiasm when first given voice. It has been suggested, and rightly, that not all of us share equally in this responsibility, and that those most affected and living among these changes are likely less culpable than those in other parts of the world less impacted or, in some cases, oblivious to these changes. Gabriel Hecht points out that the “Anthropocene feels different depending on where you are – too often, the ‘we’ of the world is white and Western.”¹²⁷ She believes that it has to include the people of the Pacific Islands who are seeing their homes disappear underwater as well as people

126 Webster, Merriam. <https://www.merriam-webster.com/dictionary/denial> (accessed June 23, 2017).

127 Gabrielle Hecht, “Who is the We in Climate Change.” <https://aeon.co/essays/if-we-talk-about-hurting-our-planet-who-exactly-is-the-we> (accessed February 5, 2018).

sitting at the top of a skyscraper in New York City, London or Toronto. She reminds us that these people don't have the same impact on the planet.

When activists in the global north talk about humanity's impact on the planet and they use the word “we,” they're not differentiating, or distinguishing between the rich and the poor, those with resources and those without. They make it sound like all of humanity is responsible when some people are more responsible than others, and some people are more vulnerable than others. Gabriel Hecht suggests that because we're all on this planet together that we need to find a way to include, listen, and help people in less resourced areas:

We cannot live here in the north and assume that we have all the solutions because we have so much technology. It's all this technology that has gotten us into this pickle to begin with. So it's time that we stop and get humble and listen to what other folks have to say, listen to their ideas and their experiences and their ways of seeing the world which can be very different from ours.¹²⁸

Dan Kahan is a professor of law and psychology at Yale Law School. His research interests are risk perception, science communication, and the application of science to law and policymaking. He founded the Cultural Cognition Project, an interdisciplinary team of scholars who use empirical methods to examine the impact of group values on perceptions of risk and related facts. Put another way, he studies how cultural values shape public perceptions and the risk they may present. Cultural beliefs refer to the tendency of individuals to confirm their beliefs about disputed matters such as values that define their cultural identities with such things as whether humans are causing global warming; whether the death penalty deters murder; or whether gun control makes society more safe or less.¹²⁹ The Cultural Cognition Project offers another way of understanding the disconnect between the science or the facts regarding climate change and some of those things that get in our way like culture, values, and embedded beliefs that have been handed down from one generation to the next.

In a 2014 report published by Ipsos Mori, 16,000 people in 20 countries were asked questions in an online survey about several topics, including climate change. In

128 Hecht, Gabrielle. Interview with Gabrielle Hecht. Impact, CIRH FM, February 16, 2018.

129 Dan Kahan, *The Cultural Cognition Project*. <http://www.culturalcognition.net/> (accessed November 16, 2017).

addition to the United States, respondents came from Britain, Russia, China, India, Brazil, South Africa, Japan, and elsewhere. According to their findings, the United States had more climate change deniers than any other country. Britain and Australia each also had a large percentage of respondents who said they did not agree with the notion of human-caused climate change.¹³⁰ In contrast, China, Argentina, Italy, Spain, Turkey, France, and India had more than 80 percent of their respondents say they agreed with the idea of human-caused climate change. These results supported the findings in a report conducted in 2011 by James Painter from the University of Oxford and the Reuters Institute for the Study of Journalism that suggested that climate scepticism was “predominately an Anglo-Saxon phenomenon.”¹³¹

The Western World, and North America in particular, is more in denial than other parts of the world. Many of the people I spoke to during this project had difficulty believing that the percentage of denial or doubt was so high. Some pointed out its flaws, as it was just a survey. Most were not surprised to learn that the Western World had the highest amount of denial. Naomi Oreskes suggested that one of the reasons denial is so high is because “we don’t want to give up our way of life, and we are not anxious to change.”¹³²

In this era of fake news, it would seem more important than ever to communicate the truth about what’s happening to our planet. But what happens when you present facts to people in your life who don’t understand the crisis? For various reasons ranging from they don’t care about it, or they allow their self-interest to obscure the truth, or because their beliefs and values are so deeply rooted, that they disbelieve the facts and are therefore unlikely to change. There are only so many ways to present the facts or the scientific evidence discussed in the previous chapter. So why then are so many people in denial about climate change? Does this shut the door on hope or are there other ways to move us from one point of view to another safely?

130 Ipsos Mori. Global Trends, <https://www.ipsos.com/sites/default/files/publication/1970-01/ipsos-mori-global-trends-2014.pdf>. (accessed February 5, 2017).

131 Ipsos Mori. Global Trends. <https://www.ipsos.com/sites/default/files/publication/1970-01/ipsos-mori-global-trends-2014.pdf> . (accessed February 5, 2017).

132 Oreskes, Naomi. Interview with Naomi Oreskes. Impact, CIRH FM, April 17, 2017.

If most (97%) of the scientists in the world agree that climate change is real and caused by humans, why then is there controversy about who is responsible and so little being done to address it? The technique of gaslighting seems a contributing factor. A common approach used by abusers, dictators, narcissists, and cult leaders, gaslighting happens slowly and pervasively so that the victim doesn't realise how much they've been brainwashed.¹³³ It is obviously more important than ever to communicate the truth about what's happening to our planet and other important issues. But what happens when we present scientific facts to people who don't understand the urgency of the crisis, or when their beliefs become more deeply rooted and entrenched in response to contradictory information?

Andrew Hoffmann is a professor at the University of Michigan's Ross School of Business and School of Environment and Sustainability (SEAS). His research uses a sociological perspective to understand the cultural and institutional aspects of environmental issues for organisations. At a recent SFU seminar, he discussed the processes by which environmental issues both emerge and evolve as social, political, and managerial issues. In *How Culture Changes the Climate Change Debate* he writes about how the issues remain fiercely polarised regardless of the science. "These conversations have become a rhetorical contest, one where opposing sides try to achieve victory through playing on fear, distrust, and intolerance."¹³⁴ In our interview he explained why how we communicate with each other is so important and suggests that if one can speak to communities that can't speak to each other, there's tremendous power. In organisational theory, it's called filling a structural hole. "If you have a whole community over here, and a whole community over there, and no bridges between them except you, you can be a conduit that information can pass through, but you have to translate it."¹³⁵

When I talk to business audiences I don't talk about carbon loading or radiant forcing, or even CO₂. I talk about operational efficiency, cost of capital, and consumer demand. And when I talk to an environmental group I'll be right out there on the issue of climate change and try to help them see the lens that

133 *Psychology Today*. *Gaslighting*, <https://www.psychologytoday.com/blog/here-there-and-everywhere/201701/11-warning-signs-gaslighting>. (accessed May 5, 2017).

134 Andrew Hoffman. SFU Beedie School of Business Lecture. February 15, 2017.

135 Hoffman, Andrew. Interview with Andrew Hoffman. Impact, CIRH FM, February 20, 2018.

business might look at, such as return on investment, net present value, return on assets and so on.¹³⁶

Building the bridges that Hoffman refers to opens a doorway that allows us to tackle what some call confirmation bias, and offers a potential solution to changing how we meet each other. Hoffman does not suggest that this is an easy process, however, it opens the door to a conversation where using a totalitarian approach may end a conversation more quickly with no hope of gaining consensus, changing minds or moving a discussion forward. When people would like a certain idea or concept to be true, they end up believing it to be true. Some consider this wishful thinking. This error leads the individual to stop gathering information as soon as it confirms the views one would like to be true.¹³⁷

Confirmation bias can say much about human behaviour and reasoning. Put simply, we look for or accept information that's in line with our existing beliefs and reject information that contradicts them. Our overall progress as a society is predicated on our learning and how to control these emotions and make decisions based on facts. However, it would appear that fact-based decision-making hasn't made as much progress in our society as it deserves because many decisions are overwhelmed by emotions or other dynamics such as our genes, ideologies, or beliefs which are substituted for facts. Changing our minds or the conversation is simply too much work. It's easier to understand then how some people can rearrange their reality.

David Whyte offers another entry into this discussion suggesting that we often prefer to live in an almost world "where we prefer the story to be more elaborate, our identities safely clouded by a story, where we want the horizon to remain in the distance, the promise never fully and simply made, the essay longer than it needs to be, and the answer safely in the realm of impossibility".¹³⁸ This rearranging of the facts to suit what is most comfortable are just a few of the things that make us complex human beings. Jonathan Haidt is a social psychologist at New York University's Stern School of Business specialising in the psychology of morality and moral emotion. He believes that

136 Hoffman, Andrew. Interview with Andrew Hoffman. Impact, CIRH FM, February 20, 2018.

137 Psychology Today. Confirmation Bias, <https://www.psychologytoday.com/us/blog/science-choice/201504/what-is-confirmation-bias>. (accessed December 22, 2017).

138 David Whyte, *Consolations, The Solace, Nourishment and Underlying Meaning of Everyday Words* (Many Rivers Press, 2015), 18.

people don't adopt their ideologies at random or by soaking up whatever ideas are around them:

People whose genes gave them brains and a special pleasure from novelty, variety, and diversity, while simultaneously being less sensitive to signs of threat, are predisposed (but not predestined) to become liberals. They tend to develop certain characteristic adaptations and life narratives that make them resonate unconsciously and intuitively with the grand narratives told by political movements on the left. People whose genes give them brains with the opposite settings are predisposed, for the same reasons to resonate with the grand narratives of the right.¹³⁹

A few colleagues have suggested that denial may be the secret to humanity's success. It is an interesting perspective when considering some of the horrors humanity has experienced over the centuries, and it would seem possible to consider a role where denial allowed an individual, village, community or country to carry on. There are examples where denial allows individuals to put one foot in front of the other. Some examples might include when a man hears that his wife has been killed and yet refuses to believe it, and still sets the table for her, or when a person having an affair doesn't think about pregnancy or sexually transmitted diseases. People take credit for their successes and find good reason for their failures by blaming the situation or other people. Alcoholics and drug addicts deny that they have a problem. Optimists deny that things may go wrong. Pessimists deny they may succeed. Parents refuse to believe their child has a disability. A wife maintains her husband cannot be cheating and that the late nights he spends with the guys is perfectly reasonable.

To Ajit Varki and Danny Brower, denial, self-deception and flawed beliefs are prerequisites for human intelligence. They believe that humans became aware not only of their own minds but also of others – that they were able to put themselves in someone else's shoes and to imagine what people they had never met might be thinking. Psychologists call this having a full theory of mind. It manifests itself in uniquely human activities such as teaching, torture, romantic infatuation, organised sports, grandmothing, cuisine and even blushing. They believe that denial, in particular, can

139, Jonathan Haidt, *The Righteous Mind: Why Good People Are Divided By Politics And Religion* (Vintage Books, 2012) 365.

help us through the worst of the most unimaginable times by allowing us to move on with our lives perhaps buying us time to revisit trauma another day.¹⁴⁰

While my focus is on exploring why some people are in denial about climate change, it would seem obvious to ask what reluctance, refusal, and denial are based on. Andrew Hoffman suggests that this is such an overwhelming topic that few of us can comprehend its magnitude. He suggests that the issue of climate change asks us to accept the proposition that we as a species have grown to such numbers and our technology to such power that we can alter the global climate. Hoffman says: “This seems a massive shift in our reality as humans and the reality of the environment. We've left the Holocene, and we've entered a new geological epoch where it seems that you can't talk about the environment without including the role of humans.”¹⁴¹

The cultural shift before us is as big as the Reformation, as big as the Scientific Revolution, and as big as the Enlightenment. Those were hundred-year shifts in our conception of ourselves and the world around us, and we're in the midst of one of those right now.¹⁴²

Many insist that to address these new challenges and the Earth's ecological crisis, humans must create a deeper level of understanding concerning our need to learn to live more sensitively and cooperatively with other humans, animals, and nature itself. Naomi Oreskes thinks that “this may be a bit too altruistic.”¹⁴³ She said that it may be that the degree of effort involved in this and the life changes it implies are what is being denied by many people. Similarly, Katharine Hayhoe's believes that being asked to change the way we live may be asking some people too much.

What would it take to move this reluctance and accept that our world is changing around us and that all of us need to do something about it? Is it even possible? This question can take us down many paths. I wondered if words like catastrophic and apocalyptic that are often used with climate change are too dark and overwhelming as they may speak to the end of civilization and death. Many people suggest that we

140 Agit Varki and Danny Brower, *Self-Deception, False Beliefs and the Origins of the Human Mind* (Hatchet Book Group, 2013).

141 Hoffman, Andrew. Interview with Andrew Hoffman. Impact, CIRH FM, February 20, 2018.

142 Hoffman, Andrew. Interview with Andrew Hoffman. Impact, CIRH FM, February 20, 2018.

143 Oreskes, Naomi. Interview with Naomi Oreskes. Impact, CIRH FM, April 17, 2017.

shouldn't use these words as they immediately stop a conversation or any ability to move it forward. This reminds me of that human quality where many of us find talking about death, a terminal illness or something that shows our vulnerability confronting. I can't help but wonder that if we can ask questions differently or perhaps offer a different vision of the future if we might find a different response? For example, if you knew with certainty that you had a limited time left to live, how would that affect you? Would you change anything in and around you? What would you do differently? Does this news change the way you interact with those around you? If you believe in your heart that this thing called climate change is real and that this is a terminal path, what will change in your life? There seems an opportunity in this line of inquiry that asks how to get below the surface of a conversation to a core truth or belief by asking beautiful questions that move away from defensiveness and towards an openness and vulnerability where we are more willing to share feelings of fear, discouragement, and pain, as well as joy.

One common thread that runs through the many different stories of denial, of turning a blind eye to the truth whether individuals, organisations, governments or whole societies, is that when presented with information that is too disturbing, threatening or anomalous to be fully absorbed or openly acknowledged, the information is then somehow repressed, disavowed, pushed aside, or reinterpreted. Our cognitive, emotional and moral issues are evaded, neutralized or rationalised away. There are many examples above where this denial may allow many to live, to get through hardship or monumental heartbreak or disaster. While denial may be necessary to help us over difficult moments it seems apparent that we need to find a way to get unstuck, to move the conversation forward.

While the earth may not necessarily be racing out of control, it does conjure up an impressive image of impending tragedy. It is challenging to comprehend why with similar headlines or humanity possibly facing extinction that many people, including U.S President Trump, are in some form of denial. Why do they ignore the news of the day with detachment and hurry to immerse themselves in varieties of entertainment and distraction, or project their shortcomings in a tweet, seemingly oblivious to this discussion? Are they in purposeful or active denial as Naomi Oreskes mentioned previously?

Acknowledging that climate change is not simply a scientific issue but one that passes through the filter of human psychology raises many issues about denial and how it impacts human life. Anna Freud expanded on her father's work and categorised denial as a mechanism of the immature mind because it conflicts with the ability to learn from and cope with reality. She believed that denial is a defence mechanism in which the existence of unpleasant internal or external realities is denied and kept out of conscious awareness. By keeping the stressors out of consciousness, like death, traumatic religious or political events, war, a cheating partner, greed, environmental disasters, health issues and many others, they are prevented from causing anxiety. While people in denial or cognitive dissonance still have a seed of truth buried within their heads, they generally cannot believe that it is the truth even when confronted with it.

Carl Rogers was an American psychologist and among the founders of the humanistic approach or client-centred approach to psychology. Unlike Sigmund Freud, he believed that it is human nature to do the very best that we can. Similar to Anna and Sigmund Freud he also believed that denial was where one blocks out a threatening situation altogether. Denial for Rogers includes what Freud called repression or keeping a memory or an impulse out of your awareness. It's the belief that if you refuse to perceive something that you may be able to avoid a threatening situation. Another expression of Rogers was "perceptual distortion" and a matter of reinterpreting the situation so that it appears less threatening.¹⁴⁴

Rogers established the Seven Stages of Rogerian Functioning to help us understand person-centred therapy. Similarly, other psychologists shared their research over the years to help us understand the complexity of being human. For example, Elisabeth Kubler-Ross pioneered near-death studies, and first discussed her theory on the five stages of grief in *On Death and Dying*.¹⁴⁵ She identified these stages as denial, then anger, followed by bargaining, depression, and acceptance. Ezra Markowitz and Azim Shariff while working in the Department of Psychology at the University of Oregon studied how climate change posed significant challenges to our perceptual, cognitive, and affective processing systems and added to the work of Freud, Rogers, and Kubler-

144 Carl Rogers, <http://homepages.rpi.edu/~verwyc/ROGERSOH.html> (accessed February 13, 2018).

145 Elisabeth Kübler-Ross, *On Death and Dying* (Scribner, 1997).

Ross. They noted that media and many governments have framed climate change as an issue of national security, public and personal health, economic well-being, and environmental sustainability. A Yale University study shows that all of us fit on a scale of alarmed, concerned, cautious, disengaged, doubtful or dismissive.¹⁴⁶ These stages or categories seem to make it easier to identify where alignment and denial exist and where each of us might fit on one of these methods of measurement.

Stanley Cohen was a sociology professor at the London School of Economics and known for breaking academic ground on "emotional management" including the mismanagement of emotions in the form of sentimentality, overreaction, and emotional denial. Cohen attempted to define the various types of denial. An *explicit denial*, for example, is saying climate change isn't happening. An *interpretive denial* is when people say that climate change may be happening but maybe it's not human-caused. And *implicatory denial* is when people ignore what's going on and do gymnastics not to notice the elephant in the room, especially as more information becomes available.

Kari Norgaard specializes in Cohen's work. She is an author and teaches at the University of Oregon in the areas of sociology, gender, environment, climate change, and race. She tries to understand denial from both a compassionate and critical angle. She believes that it is a huge collective problem that so many people in privileged democracies, who presumably have some ability to effect change are not doing so. Much of her work focuses on disturbing emotions and the sense of fear about the future, helplessness, and guilt. Norgaard reiterates that since the magnitude of the problem appears too big to consider or deal with, most people just get on with their busy lives:

I don't know how many of your listeners have had that middle of the night, oh my god experience of wow, we are really in for very serious times. Or what is this going to mean for my life, for my children's lives, and for my community in the next ten years?¹⁴⁷

Jonathan Haidt examines the intuitive foundations of morality and how morality varies across cultures—including the cultures of American progressives, conservatives, and libertarians. Haidt is the author of *The Righteous Mind: Why Good People are*

146 Yale, *Global Warnings Six Americas* <http://climatecommunication.yale.edu/about/projects>. (accessed June 16, 2017).

147 Norgaard, Kari. Interview with Kari Norgaard. Impact, CIRH FM, January 15, 2018.

Divided by Politics and Religion.¹⁴⁸ He discusses how we come to personal beliefs and values and where we are in alignment or not. While some organisations and authors have attempted to frame climate change as a moral issue, some consider it a personal responsibility for the stewardship of Earth and the disadvantaged. Haidt zeros into the conflict between intuition and reason. Trusting our instincts may conflict with our institutional or even tribal beliefs.¹⁴⁹ He argues that our moral integrity comes from a combination of evaluating the risk of someone getting hurt and the social norms and taboos that vary widely in cultures. He believes that we lead with our moral intuition, tempered by our reason. When contextualised in social norms driven by centuries of culture and religion, we can begin to understand why it is so hard for us to change our minds. When we experience dissonance between our moral intuition and our reason, we scramble to find a justification that matches our intuition. The emerging notion is that if we want to change hearts and minds, we will have to begin with the heart first.

When discussing climate change and denial anxiety, John Englander uses the Titanic as a metaphor and suggests that “we are emerging from the fog bank and that we now know what lies ahead.”¹⁵⁰ In our interview he suggests that like passengers on the Titanic, we are heading for a collision.

Many will just party until catastrophe, effectively wanting to ignore the bad news; the news will immobilise a large number; others will focus anger on the cause; some will work to minimise impact, and others will plan for the aftermath of the inevitable.¹⁵¹

This is a complicated discussion as this issue has profound moral and ethical implications since it affects many innocent others, including our heirs. Englander said “our grandchildren will not likely look back kindly on our era if we do not quickly begin to expand the scope of our response beyond what is politically and financially expedient.”¹⁵²

148 Jonathan Haidt, *The Righteous Mind: Why Good People are Divided by Politics and Religion* (Penguin Books, 2012).

149 Culture in organizations and tribes are formed by shared institutional beliefs, values, and assumptions that guide behavior. New members learn the culture of their organization/tribe and their role in it during a period known as organizational socialization.

150 Englander, John. Interview with John Englander. Impact, CIRH FM, November 8, 2017.

151 Englander, John. Interview with John Englander. Impact, CIRH FM, November 8, 2017.

152 Englander, John. Interview with John Englander. Impact, CIRH FM, November 8, 2017.

In *A Theory of Cognitive Dissonance*, Leon Festinger proposed that human beings strive for internal psychological consistency in order to mentally function in the real world. He believes that a person who experiences internal inconsistency tends to become psychologically uncomfortable and is motivated to reduce the cognitive dissonance. This is done by changing parts of the cognition or the story to justify the stressful behaviour. This is achieved by adding new parts to the cognition that cause the psychological dissonance or by actively avoiding social situations and contradictory information that is likely to increase the magnitude of the dissonance.¹⁵³ This is a coping mechanism which allows one to function in a dysfunctional situation.

A federal judge is currently presiding over lawsuits from two California Cities that accuse big oil companies of lying about global warming to protect their profits.¹⁵⁴ This seems a growing trend as the courts work through what may be deliberate, organized, and purposeful denial. Whether it's corporate propaganda or something deeply personal, we now have a better understanding of what denial is and how pervasive it is. We also can see how it helps and hinders us. Yet there appear to be darker places that we may not be aware of in our unconscious that may influence our denial. Jonah Lehrer says "the only way to counteract the bias for certainty is to encourage some inner dissonance. We must force ourselves to think about the information we don't want to think about, to pay attention to the data that disturbs our entrenched beliefs."¹⁵⁵ This observation may be our invitation to a darker place where climate change - and many other personal, social, cultural and political issues - live in the shadows.

153 Leon Festinger, *A Theory of Cognitive Dissonance* (Stanford University Press, 1957).

154 *The Financial Post*. Sudhin Thanawala, Climate Change; Big Oil Accused of Lying About Global Warming. *Financial Post*. March 22, 2018.

155 Jonah Lehrer, *How We Decide* (Houghton Mifflin Harcourt, 2009), 217.

The Shadow

Russian writer Aleksandr Solzhenitsyn writes beautifully about that darker place that some call our shadow:

If only there were evil people somewhere insidiously committing evil deeds, and it were necessary only to separate them from the rest of us and destroy them. But the line dividing good and evil cuts through the heart of every human being. And who is willing to destroy a piece of their own heart?"¹⁵⁶

He suggests that during the life of any heart the line between good and evil keeps changing: "One and the same human being is, at various ages, under various circumstances, a totally different human being. At times he is close to being a devil, at times he is close to sainthood. But his name doesn't change, and to that name, we ascribe the whole lot, good and evil."¹⁵⁷ Refusing to acknowledge this good and evil, that something is wrong, is a way of coping with emotional conflict, stress, painful thoughts, and threatening information. An individual can be in denial about anything that makes one feel vulnerable, threaten one's sense of control, such as illness, addiction, eating disorder, personal violence, financial problems, trauma, and relationship conflicts. When humans are in denial, we often won't acknowledge that we are in a difficult situation or a dark place. Many try not to face the facts of a problem or downplay its possible consequences. It's easy to understand the shadow side of denial. It would seem that in some cases this can be a good thing.

As an example, some of us may need several days or weeks to process what's happened and come to grips with the challenges ahead from a traumatic experience. Imagine what might happen if you discover a lump in your throat. Perhaps your daughter discovers a lump in her breast. You might feel a rush of fear and adrenaline as you

156 Aleksandr Solzhenitsyn, *The Gulag Archipelago* (Harper Perennial, Modern Classics, 2007), 442.

157 Aleksandr Solzhenitsyn, *The Gulag Archipelago* (Harper Perennial, Modern Classics, 2007), 442.

imagine it's cancer. So you hope that your daughter will be fine. But when your doctor confirms your worst fears, what do you do? This type of denial seems a helpful response to stressful information. But as your mind absorbs the possibility, you open to a new world of possibilities and outcomes. New conversations emerge that may never have entered your consciousness. It would appear that climate change has become one of those lumps as the prognosis settles into our consciousness.

In psychology, the shadow refers to an unconscious aspect of the personality which the conscious ego does not identify in itself, or the entirety of the unconscious or those things that we are not aware of. It seems unlikely many people are willing to acknowledge that evil may lurk within. Shadow expert Connie Zweig has made this her life's work. She is a Jungian psychologist, author, student of Hinduism, Buddhism, and Sufism, former columnist for *Esquire* and contributor to *The Los Angeles Times*. In her book, *Meeting the Shadow*, she writes about how living with one's shadow requires understanding and that it rests outside of awareness, often concealed in a bad mood or sarcastic remark. She writes that it is often camouflaged in addictive behaviour and that we need to look for it:

We need to learn how to catch a glimpse of it when it appears. We need to sharpen our senses to be awake enough when it erupts. Then we can learn to romance it, to coax it out, to seduce it into awareness. Like a coy lover, it will recede once more behind the curtain. And again, with patience, we can invite it out to dance. This slow process of bringing the shadow to consciousness, forgetting, and recognising it again is the nature of shadow-work.¹⁵⁸

Perhaps it is the growing awareness of our own edges or our shadow that will allow us to have those difficult conversations, the ones we would rather not have. When speaking to Zweig about the differences between denial and shadow she referred to Carl Jung who coined the term to mean that part of our unconscious mind that is outside of awareness and that contains the residue of our personal history. We can't see it and we can't look at because it is denied or repressed by the ego, or suppressed or projected out onto other people. She suggests that it is a defense mechanism by which we get rid of the material that we don't want to see:

158 Connie Zweig, *Meeting the Shadow: The Hidden Power of the Dark Side of Human Nature* (Penguin Books, 1991), 5.

Denial as a defence mechanism can sometimes be a conscious process. I don't want to look at that. I don't want to see what Trump did today. I don't want to expose myself to the climate change information. Sometimes it can be an unconscious process whereby we're denying feelings. We deny our anger because it's too uncomfortable. So, there are many ways in which the material gets banished into the unconscious of the personal shadow.¹⁵⁹

Because one tends to reject or remain ignorant of the least desirable aspects of our individual personalities, the shadow is largely negative. There are, however, positive aspects which may also remain hidden in one's shadow especially in people with low self-esteem, anxieties, and false beliefs. To know oneself, one must accept one's dark side. Zweig speaks of this in her book: "At midlife, I met my devils. Much of what I had counted as blessings became a curse. The wide road narrowed, the light grew dark. And in the darkness, the saint in me, so well nurtured and well-coiffed met the sinner."¹⁶⁰ Zweig is not alone as many authors over the centuries have written about the need to know our selves. Carl Jung wrote:

Unfortunately, there can be no doubt that man is, on the whole, less good than he imagines himself or wants to be. Everyone carries a shadow, and the less it is embodied in the individual's conscious life, the blacker and denser it is. If an inferiority is conscious, one always has a chance to correct it. Furthermore, it is constantly in contact with other interests, so that it is continually subjected to modifications. But if it is repressed and isolated from consciousness, it never gets corrected."¹⁶¹

This trajectory invites us to explore the dark side and our individualism as well as our beliefs, values, and perhaps the alienation in certain cultures as well as those with stronger community or collective cultures. As we consider those human things that get in the way of logic or truth, Joseph Campbell writes about myth: "One thing that comes out of myths is that at the bottom of the abyss comes the voice of salvation. The black moment is the moment where the real message of transformation is going to come. At the darkest moment comes the light."¹⁶²

159 Zweig, Connie. Interview with Connie Zweig. Impact, CIRH FM, January 29, 2018.

160 Connie Zweig, *Meeting the Shadow: The Hidden Power of the Dark Side of Human Nature* (Penguin Books, 1991), 5.

161 Carl Jung, *Psychology and Religion: West and East* (Princeton University Press, 1938), 131.

162, Joseph Campbell, Bill Moyers, *The Power of Myth* (First Anchor Books, 1991), 46.

The range of what we think and do
Is limited by what we fail to notice.
And because we fail to notice that we fail to notice
There is little we can do
To change
Until we notice
How failing to notice
Shapes our thoughts and deeds.

R. D Laing.¹⁶³

163 Jack Seymour, Margaret Crain and Joseph Crockett, *Educating Christians* (Abingdon Press, 1993), 53.

Chapter 4

In Search of God



Figure 6 Monks in Luang Prabang¹⁶⁴

Perhaps religion offers us a transition or escape from our shadow or those darker moments where we are reluctant to have those difficult conversations about those messy bits about ourselves. Yuval Noah Harari writes in *Homo Deus*: “Generations of humans have prayed to every god, angel and saint, and have invented countless tools, institutions and social systems, but they continued to die in their millions from starvation, epidemics and violence.”¹⁶⁵ For people of faith, it would seem challenging wondering where God went when contemplating these frailties and the shadow side of humanity. Or how God and religion fit in at this chaotic time in history. In one of George Carlin’s more memorable monologues, he discusses God from a Judeo-Christian perspective:

When it comes to bullshit, big-time, major league bullshit, you have to stand in awe of the all-time champion of false promises and exaggerated claims, religion! No contest. Religion easily has the greatest bullshit story ever told. Think about it. Religion has actually convinced people that there's an invisible man living in the sky who watches everything you do, every minute of every day. And the

¹⁶⁴ Figure 6, Monks in Luang Prabang, Laos, Picture with permission by Peter Diemer. 2016.

¹⁶⁵ Harari, Yuval N. *Homo Deus, A Brief History of Tomorrow* (Signal Books, 2016), 1.

invisible man has a special list of ten things he does not want you to do. And if you do any of these ten things, he has a special place, full of fire and smoke and burning and torture and anguish, where he will send you to live and suffer and burn and choke and scream and cry forever and ever 'til the end of time! But He loves you, and he needs money! He always needs money! He's all-powerful, all-perfect, all-knowing, and all-wise, somehow, he just can't handle money! Religion takes in billions of dollars, they pay no taxes, and they always need a little more. Now, you talk about a good bullshit story. Holy Shit!¹⁶⁶

While it is easy to find humour in almost anything including the frailties or inconsistencies in religion, it changes around the world as different religions have different beliefs and customs for their believers to find solitude and peace. All religious communities have been impacted by pestilence, famine, plague, and war and, in some cases, they may have influenced some of them. While not all religions follow the same practices, there are similarities. Many have their own rituals. Some incorporate myth or commonly held beliefs and misconceptions, and stories about the history of a people that often explains a phenomenon about supernatural beings or events. These myths often have extraordinary characters or stories that only seem possible because they explain the growth and development of civilisation. Myths are passed down from one generation to the next and tend to be expressed through rituals, storytelling, and faith.

One of the most well-known are creation myths, which describe how the world began, where we came from, and often where we fit into this world. Perhaps it's what we learn from our religion and our faith in our community or tribe that guides us through life and helps us to understand the edges of life and death and everything in between. Colin Grant writes in *Myths We Live By*: "While religion provides a perspective on living myth, it is not without liabilities of its own. As the direct approach of the issue of totality, religion may be the most pretentious myth of all."¹⁶⁷ He believes that a religious myth, taken seriously in its own right, is even more tragic than allowing other living myths to take on religious proportions. "In exposing the pretentiousness of living myths, religion must include itself in that group, in spite of its distinctiveness, precisely to protect that

166 George Carlin on God. <https://www.youtube.com/watch?v=iouZYzQEjU> (accessed June 2017).

167 Colin Grant, *Myths We Live By* (University of Ottawa Press, 1998), XI.

distinctiveness. The transcendent references of religion demand that religion be critical of itself as well as of the religious pretensions of other living myths.”¹⁶⁸

Joseph Campbell was an American mythologist, celebrated author and teacher who worked in comparative mythology and comparative religion. His work covers many aspects of the human experience. Before his death, he completed filming a series of interviews with journalist and political commentator, Bill Moyers. Moyers asked Campbell why myths speak to him to which he compared Cro-Magnon man to those living today. He believed that we all go through the same stages of maturity and that we have the same body, the same bodily experiences, and that we respond to the same images:

A constant image is that of the conflict of the eagle and the serpent. The serpent bound to the earth, the eagle in spiritual flight – isn't that conflict something we all experience? And then, when the two amalgamate, we get a wonderful dragon, a serpent with wings. ¹⁶⁹

Campbell points out that people recognize these images all over the earth: “Whether I'm reading Polynesian, Iroquois or Egyptian myths, the images are the same, and they are talking about the same problems. It's as though the same play were taken from one place to another, and at each place the local players put on local costumes and enact the same old play.”¹⁷⁰ With Moyers reading select passages from the Bible, Campbell points out similar texts from other Holy books such as *The Song of the World* from the Pima Indians of Arizona, the *Hindu Upanishads* from the eighth century, and legends from the Bassari people of West Africa. All similar tales and myth originating as far back as early Egyptian texts compete with the story of Horus who was born in 3000 BC on December 25th. Some think he was born of a virgin with a star in the East and adorned by 3 Kings. Some say he was a teacher at twelve, baptized at 30, had 12 disciples, performed miracles, was called the lamb of God. Some say he was crucified, dead for three days, resurrected, and ascended to heaven.¹⁷¹ It is perhaps coincidental that many of the stories Campbell cites have a similar theme, and some Christians suggest that comparisons like these are the work of atheists to make Horus look as

¹⁶⁸ Colin Grant, *Myths We Live By* (University of Ottawa Press, 1998), XI.

¹⁶⁹ Joseph Campbell, Bill Moyers, *The Power of Myth* (First Anchor Books, 1991), 53.

¹⁷⁰ Joseph Campbell, Bill Moyers, *The Power of Myth* (First Anchor Books, 1991), 53.

¹⁷¹ Zeitgeist, The Greatest Story Ever Told, <https://www.youtube.com/watch?v=8r-e2NDSTuE> (accessed May 4, 2017).

much like Jesus as possible. While early civilisations personified nature, the sun and the stars, and the twelve signs of the zodiac, Campbell held that numerous saviours like Attis, Horus, Krishna, Dionysus, Mithra, and Jesus show up with similar characteristics as religions are born around the world and myth evolves.

When I started this project I wondered if we couldn't treat each other well, how could we treat animals and our planet well? It seemed obvious that our behaviour and beliefs, as well as the many issues concerning climate change and other social ills, are entwined with culture and religion. Culture is usually defined as a combination of symbols, language, beliefs, values, and artifacts that are part of any society. This may beg the question of whether religion influences culture or if culture influences religion. It would seem that more often than not, changes in one cause a reaction in the other. When people in a culture believe strongly in a religion, it can have a huge impact on their culture and impact how they interact with others. Another path, therefore, that may help us to understand why there are so many opinions about climate change may be influenced by religious perspectives.

Most experts agreed for years that agriculture created civilisation and that religion came along with it. The assumption was that as we gave up hunting and gathering and settled down to farming and established villages and cities, humans began to create art, establish commerce, and make up organised religions. Charles C. Mann observes, however, that there is new evidence to suggest that religion came first.¹⁷² It doesn't seem that much of a stretch to consider that our indigenous beginnings and supernatural reverence for the elements and the zodiac prompted early spiritual connections to nature and the natural world. It's curious perhaps to know when our awe of nature, natural beliefs and instincts became urbanized and politicized for the benefit of the tribe and commerce. Jonathan Haidt suggests that religion had both negative and positive evolutionary functions: "It was a survival advantage to attribute random events, like trees rustling, to animal agency because it is safer to be over paranoid about danger from predators. The religious notion of supernatural forces that could be responsible for certain natural signs does not necessarily pose such an advantage."¹⁷³ Haidt believes

¹⁷² *National Geographic*, <http://ngm.nationalgeographic.com/2011/06/gobekli-tepe/mann-text>. (accessed June 12, 2017).

¹⁷³ Jonathan Haidt, *Summary Analysis and Review of The Righteous Mind* (Vintage Books, 2017), 25-26.

that religion does aid in group formation and helps to form a moral community in which people feel they are united together to serve a greater cause.

It is irresistible not to look for those things that might shed some light on the way we are, and what we can interpret from the many different holy books regarding the intersections between climate change and religion. In James Frazer's ethnology of religion, *The Golden Bough*,¹⁷⁴ he offered a review of the cross-cultural variation in ideas related to magic, myth, and religion that were known to Europeans at the time. Taking an evolutionary approach to spirituality, he proposed that human belief progressed through three stages: primitive magic, which was displaced by religion, which in turn was replaced by science. It is interesting to note that we seem to like science when it supports our beliefs. However, when it comes to climate change, many doubt or dislike science and the changes it is asking us to make, and religion in many cases allows another path around this discussion. Jonathan Haidt believes that there are three principals of moral psychology. The first is that moral intuitions precede moral reasoning. The second is that morality not only describes opinions about harm and fairness, but also includes communal aid, group taboos, and commitments to shared beliefs. Third, morality binds communities together and the moral impetus to community and beliefs can cause moral blind spots.

The science of climate change threatens followers of all faiths whether Hindu, Muslim, Jew, Christian or Sikh. In the 2004 *Interfaith Declaration on Climate Change*, more than 100 religious and non-religious groups called on world leaders to come to an agreement on fighting climate change.¹⁷⁵ The organisations appealed to the morals of their supporters, hoping to convince them that the planet's resources are limited. Some of the groups committed to taking on concrete projects. For instance, the Chinese Buddhists and Taoists wanted to limit the number of incense sticks to three per person to cut air pollution, and the Anglicans and Sikhs committed to installing more solar panels on their prayer buildings. In 2010 a group of African religious leaders signed a declaration vowing to regularly touch on climate change themes in their sermons, emphasising relevant verses in the holy texts that speak to the relationship between humans and nature. While they also aimed to teach their believers to lead more eco-

¹⁷⁴ Robert Frazer, *The Golden Bough* (Oxford University Press, 2009).

¹⁷⁵ Interfaith Declaration, <http://www.interfaithdeclaration.org/> (accessed January 3, 2018).

friendly lives, Pope Francis was likely the most influential of the group and the most outspoken with his *Laudato si encyclical* that caught the attention of the world in 2015. Until then, much of God's word about climate change and religion had gone unheard, and Pope Francis prompted an onslaught of activity and writings from various religious organisations around the world.

Naomi Oreskes is one of the world's most respected climate scientists and was invited to write the introduction to the *Encyclical on Climate Change and Inequality; On Care for Our Common Home*. In her introduction, Oreskes deconstructs a prevalent myth regarding Judaeo-Christian myth in Genesis, which grants humans "dominion" over the earth.¹⁷⁶ This verse has encouraged the unbridled exploitation of nature by painting the human creature as domineering and destructive by nature. She points out that this and other passages are not correct interpretations of the Bible:

Although it is true that we Christians have at times incorrectly interpreted the Scriptures, nowadays, we must forcefully reject the notion that our being created in God's image and given dominion over the earth justifies absolute domination over other creatures.¹⁷⁷

One could argue that many of God's followers got it wrong for centuries but that's likely a discussion for another day. For now, Pope Francis has the difficult task of moving the Roman Catholic Church through its most challenging transition in centuries. He is reaching out to all faiths and all people that share this planet with an urgent plea to take care of it. No matter what one may think of the Roman Catholic Church, it is difficult not to applaud his writing:

A sober look at our world shows that the degree of human interventions, often in the service of business interests and consumerism, is actually making our earth less rich and beautiful, ever more limited and grey, even as technological advances, and consumer goods continue to abound limitlessly. We seem to think that we can substitute an irreplaceable and irretrievable beauty with something which we have created ourselves.¹⁷⁸

¹⁷⁶ *Bible*, St James Translation, Genesis 2:15.

¹⁷⁷ Naomi Oreskes, *Encyclical on Climate Change and Inequality: On Care for Our Common Home* (Brooklyn: Melville House, 2015), xi.

¹⁷⁸ Pope John Paul Francis, *Encyclical on Climate Change & Inequality* (Melville House, 2015), 34.

Katharine Hayhoe is a scientist and evangelical Christian. She has written with her husband, Andrew Farley, a number of fact books about climate change for faith-based decisions. They strive to unravel the complex science and many long-held misconceptions about global warming. Like Naomi Oreskes, Hayhoe has had her challenges deconstructing biblical passages to help congregations understand their meaning:

I grew up with the idea that the Bible is God's written word and that nature is God's created word, and how could they be incompatible with each other? If they seem so, at times, it's because of our limited understanding. Either we've misinterpreted the Bible, or we don't fully understand the science, or possibly both.¹⁷⁹

Hayhoe grew up in rural Ontario where her father was a minister and still teaches at Tyndale University College and Seminary. As her concern for God's creation grew, so did her investigation into how it is talked about. In the United States, she was alarmed to learn that many Christians did not share her sense of responsibility for climate change. Based on political rhetoric rather than biblical text, Hayhoe was surprised by the partisan rhetoric surrounding climate conversations particularly within her own evangelical community. "Over time," Hayhoe recalls, "I've become increasingly convinced that the barriers to acting on climate are not scientific, nor are they theological. They are ideological and political."¹⁸⁰

Hayhoe's research focuses on assessing the impacts of climate change and its solutions. Part of that work includes studying the language used when talking about climate change. According to Hayhoe, terms such as 'climate denial,' which equates those rejecting climate sciences with those who also reject the reality of the Holocaust and asking people if they 'believe' in climate change, as if it were a religion, are serious impediments to building consensus on climate solutions. She opts instead for the term 'dismissive,' using the final category of Yale's study, *The Six Americas of Global Warming*.¹⁸¹ She says that she does not believe in climate change because belief (as it says in the book of Hebrews) is the evidence of "what is not seen," while science is

179 Hayhoe, Katharine. Interview with Katharine Hayhoe. Impact, CIRH FM, July 5, 2017.

180 Hayhoe, Katharine. Interview with Katharine Hayhoe. Impact, CIRH FM, July 5, 2017.

181 Yale University, <http://climatecommunication.yale.edu/about/projects/global-warnings-six-americas/> (accessed November 12, 2017).

exactly the opposite.¹⁸² True dismissives are “those who’d reject the reality of human-induced climate change even if it were written on tablets of stone presented by angels” account for a small percentage of the population.¹⁸³ She says “while outreach to dismissives is important, her goal is to build bridges rather than deepen the trenches that divide people, so she focuses on those who are cautious, disengaged, or doubtful about climate change. It’s not easy as Hayhoe gets between a hundred to a thousand mean comments a day from people challenging her faith, beliefs or worse: “The vitriol is real. It happens every day on my Facebook page though I certainly have a long list of blocked words to get rid of most of it.”¹⁸⁴ So why is this so politicised? Why is religion part of the discussion around climate change?

It’s because in the United States religion is political. For many people their statement of faith is written first by their political party and only second by the actual Bible. And so for many social groups and churches say that they don’t believe in climate change and its part of what you have to agree to, to be part of that cultural community.¹⁸⁵

Hayhoe says that her challenge is to find a bridge that will allow her to speak to these types of communities: “And when I do, sometimes the first thing out of my mouth is that I don’t believe in climate change and that takes them aback.”¹⁸⁶ The bridge then becomes her statement of faith about our amazing universe and the reasons why she knows that climate change is real as she cites local changes that a particular congregation can understand. She is often challenged on passages in scripture about God’s word and how the earth began or how it will end. Perhaps the debate about how the world will end, or for that matter how any of us will end, offers another path to denial.

On Death and Dying

Poet and philosopher David Whyte says that as “human beings we are inescapably vulnerable to care for the things and people that move us in a particular and different way. The great task for us is finding out what we care about and to risk

¹⁸² *Bible*, St James Translation, Hebrews 11:1.

¹⁸³ Hayhoe, Katharine. Interview with Katharine Hayhoe. Impact, CIRH FM, July 5, 2017.

¹⁸⁴ Hayhoe, Katharine. Interview with Katharine Hayhoe. Impact, CIRH FM, July 5, 2017.

¹⁸⁵ Hayhoe, Katharine. Interview with Katharine Hayhoe. Impact, CIRH FM, July 5, 2017.

¹⁸⁶ Hayhoe, Katharine. Interview with Katharine Hayhoe. Impact, CIRH FM, July 5, 2017.

ourselves on behalf of that caring and the people we love with the bright light of that caring.”¹⁸⁷ Is religion the vehicle that provides that transition between life and death and teaches us how to deal with all of those things in-between that we care about or is it something else? If indeed the climate change discussion borders on catastrophic, many humans seem determined to avoid these grim discussions or acknowledge that we will eventually say goodbye to everyone we love on this planet or that we will be said goodbye to. This may provide some insight into exploring how God and various religious or spiritual concepts bump into climate change, denial, and the complexities of our human condition confronting the worst news possible, our demise. Whether because of its poetic nature, the great mystery it presents, or both, many cultures still glorify death. Mary Wood writes:

Blood is thicker than water – or so the saying goes. Like a miniature, a complete worldview is illuminated in just five words. The bond of family or tribe, whether formed through birth, marriage or intense shared experience such as war or disaster is evident when we speak of blood brothers, bloodlines, and blood oaths.¹⁸⁸

Some will argue that humans may be one of a few species aware of our inevitable death. We may then be well practised in accepting annihilation or inventing the means of transcending it or denying it. Roy Scranton offers an interesting perspective on all three in *Learning to Die in the Anthropocene* as he responds to the existential problems of global warming by arguing that to survive we must come to terms with our own mortality. Scranton believes that we “face the imminent collapse of the agriculture, shipping and energy networks upon which the global economy depends, a large-scale biospheric collapse that’s already underway and our possible extinction.”¹⁸⁹ He encourages us to learn to “walk with death.”¹⁹⁰ Scranton’s perspective led me to an overwhelming feeling of hopelessness that lasted for months as he is convinced that “we’re screwed,” that “no one is driving this car,” and that “it’s too late!”¹⁹¹ This

¹⁸⁷ Whyte, David. Interview with David Whyte. Impact, CIRH FM, February 12, 2016.

¹⁸⁸ Mary A. Wood, *Only Blood Can Change: The Artist as Activist and Alchemist*. <http://www.pacificapost.com/only-blood-can-change-the-artist-as-activist-and-alchemist> (accessed January 11, 2018).

¹⁸⁹ Scranton, Roy. Interview with Roy Scranton. Impact, CIRH FM, February 14, 2017.

¹⁹⁰ Scranton, Roy. Interview with Roy Scranton. Impact, CIRH FM, February 14, 2017.

¹⁹¹ Scranton, Roy. Interview with Roy Scranton. Impact, CIRH FM, February 14, 2017.

awareness was formed while he was in the U.S. military driving his commander's Humvee in Baghdad and the closeness of death that was all around him. *The Hagakure: The Secret Wisdom of the Samurai* became his guide of how to live consciously and ethically with the awareness in life of a warrior:

One of the key chapters for me is where Tsunetomo advocates that the Samurai should meditate on death every day. That one should imagine oneself being ripped apart by dogs, pierced by arrows, dying of disease, falling from a thousand-foot cliff, and committing Seppuku at the death of one's master. And that by meditating on one's death, by acting as if one is already dead, by accepting that death and moving into it, then you can act with freedom. And you gain freedom in your choices and in what you do because you're no longer beholden to fear.¹⁹²

It is interesting that the samurai's presumed affinity for death seems to set him aside from other warriors and certainly captures our imagination. Of course, there can be little doubt that the way he viewed his death was considered most important. This kind of religious or spiritual transcendence perhaps offers another path. The notion from Scranton - that we should be comfortable confronting death - is familiar in many cultures and immortalised by Lucius Annaeus Seneca, a Roman Stoic philosopher, statesman, and dramatist. *On the Shortness of Life*, he writes that while we preoccupy ourselves with life, death will come:

No one will bring back the years; no one will restore you to yourself. Life will follow the path it began to take and will neither reverse nor check its course. It will cause no commotion to remind you of its swiftness, but glide on quietly. It will not lengthen itself for a king's command or a people's favour. As it started out on its first day, so it will run on, nowhere pausing or turning aside. What will be the outcome? You have been preoccupied while life hastens on. Meanwhile, death will arrive, and you have no choice in making yourself available for it.¹⁹³

Seneca offers a sobering account of death and what it means to live a full, enriched life allowing every moment to count. All of earth's major philosophers have their own beliefs about the world and how we should walk in it, the triumph of good over evil and Judgment Day. In Christianity, the Book of Revelation, the last text in the Bible's New Testament, mentions Armageddon, the final battle on Earth between the forces of

¹⁹² Scranton, Roy. Interview with Roy Scranton. Impact, CIRH FM, February 14, 2017.

¹⁹³ Seneca, *Letters from a Stoic* (Penguin Books, 1969), 13.

God and Satan. In Islam, the end of the world is referred to as the Hour and involves Jesus returning to Damascus to slay an anti-Christ who has put the planet in peril. In Judaism, there is no term for Armageddon, but there are references in the Hebrew Bible to events that could be compared with Armageddon, including the Day of the Lord (in which God causes death and destruction to people who deserve to be punished) and the War of Gog and Magog (in which Israel and its god fight their enemies, rather than an anti-Christ). In Hinduism, there is the story of the god Vishnu coming back in the last cycle of time as a figure called Kulki, who rides a white horse, carries a sword that looks like a comet and destroys the forces of evil. In some Buddhist prophecies, the equivalent of Armageddon is Shambhala, in which good triumphs over evil; however, the planet is restored rather than destroyed so people can pursue enlightenment. Despite the many theories and religious interpretations, the only thing that's certain about the end of the world is that no one can know for sure what will happen. And until that day arrives, if it arrives, people will no doubt continue to speculate endlessly about when it will all be over. Scranton suggests the need of "accepting death and moving into it so that it frees us."¹⁹⁴

I find this path intriguing as religion has a profound impact on civilisation, beliefs, and values and how we treat each other, animals, and other. Do we deny death and other unpleasant things purposefully or simply as a way to avoid having those difficult conversations? Perhaps this is another bridge that allows for deeper discussions about what matters most and those things that we can't control.

Even in the darkest periods of social history, outer events would be changed if we had a centre. It is only in the private world that we can learn to alchemise the ugly, the terrible, the horrors of war, the evils and cruelties of man, into a new kind of human being. I do not say turn away or escape...It is necessary to maintain our responsibilities to society, but we need to create a centre of strength and resistance to disappointment and failures in outward events.¹⁹⁵

Anis Nin

194 Scranton, Roy. Interview with Roy Scranton. Impact, CIRH FM, February 14, 2017.

195 Anis Nin, *In Favor of The Sensitive Man and Other Essay's* (Harvest Books, 1976), 60.

Chapter 5

Adaptation and Mitigation



Figure 7 Globe Forum ¹⁹⁶

It would be difficult to find anyone who doesn't recognise Al Gore as the climate change guy. He developed the 2006 award-winning documentary, *An Inconvenient Truth*, and his work for the environment through the Climate Reality Project (CRP) is recognized globally. Gore admits to being overwhelmed at times, and in his opening remarks at a CRP event in Seattle used words like "catastrophic," "fight", and "desperate" over thirty times in two hours.¹⁹⁷ The anxiety in the room was palpable! Gore and his CRP team are committed to doing what they can to change public opinions and engage communities, as well as work with local government to change. Gore is convincing that this is a desperate fight for social justice and transformation. As pointed out by the CRP, defining sustainable infrastructure as the interconnected system of the physical, natural, and social components that societies need to survive and function is

¹⁹⁶ Globe Forum Sustainability Workshop, Vancouver March 2018, Photo by Don Shafer.

¹⁹⁷ Al Gore. Climate Reality Project Training, Seattle, Washington. June 17, 2017.

the first step. To make infrastructure sustainable, it must not only provide these services but it must also consider the risks and how we can adapt to them, and the opportunities it generates to mitigate and change outcomes. Anticipating further changes to our environment is critical as we learn how to work with them through innovation and advancements in technology, architecture, agriculture, education, and training to ensure we are ready for the new world ahead of us.¹⁹⁸

Roy Scranton reminds us that climate change or global warming is “not the latest version of a hoary fable of annihilation. It is not hysteria. It is a fact.”¹⁹⁹ In contrast to the CRP, he is convinced - like many others - that we have likely already passed the point where we could have done anything about it. Paul Gilding is an Australian environmentalist and convinced that “the earth is full of our stuff, full of our waste, and full of our demands”.²⁰⁰ From the perspective of many policy experts, climate scientists, and national security officials the “concern is not whether global warming exists or how we might prevent it, but how are we going to adapt to life in the hot, volatile world we’ve created.”²⁰¹ Even if we stopped emitting all greenhouse gases today, global warming and climate change will continue to affect future generations. In this way, humanity is committed to some level of climate change and finding ways to adapt to it. As Gilding points out “we need 50% more earth to keep up with our current demands.”²⁰²

It is expected that Earth’s population will reach ten billion in forty years. Can our planet support that population? And what kind of world will it be? 2057 isn’t that far away and I am feeling a kinship with Aldo Leopold, as I too do not want to live in a world without wilderness. Assuming my kids who are currently alive make it to 2057, who knows what they will have inherited. They will be 88 (Paisley), 84 (Heath), 69 (Monique) and 66 (Ally & Evan). My grand kids will be 48 (Oliver) and 44 (Ester). I find it confronting to realise how close this time frame is with those that are closest to me. It is painful to recognize the

198 Climate literacy lowres, https://downloads.globalchange.gov/Literacy/climate_literacy_lowres_english.pdf. (accessed August 20, 2017).

199 Scranton, Roy. Interview with Roy Scranton. Impact, CIRH FM, February 14, 2017.

200 Paul Gilding, *The Earth Is Full*. <https://www.youtube.com/watch?v=DZT6YpCsapg> (accessed January 20, 2017).

201 Scranton, Roy. Interview with Roy Scranton. Impact, CIRH FM, February 14, 2017.

202 Paul Gilding, *The Earth Is Full*. <https://www.youtube.com/watch?v=DZT6YpCsapg> (accessed January 20, 2017).

part I played in what they might face. As we look forward, it is hard not to be disheartened by the news that 25 years after the United Nations report on the seriousness of climate change, that not much has changed:

That by failing to adequately limit population growth, reassess the role of an economy rooted in growth, reduce greenhouse gases, incentivize renewable energy, protect habitat, restore ecosystems, curb pollution, halt deforestation, and constrain invasive alien species, humanity is not taking the urgent steps needed to safeguard our imperilled biosphere.²⁰³

What is the chance that we will change in the next 20 or 40 years? How will our kids and grandkids live with the hand that we have dealt them? It seems ironic that our movies of the altered parched nuclear summers in *Mad Max*, *Beyond Thunder Dome*, or the fiction of *Resident Evil's* genetically engineered viruses infecting the hive and thereby creating a new race may be our future generations reality. Naomi Klein elaborates on the smoke-filled air in BC during the summer of 2017. She asks if we are all guilty, in one way or another of sleepwalking toward the apocalypse:

Here in British Columbia in August, we all look like sleepwalkers, stumbling around doing our work and errands, having vacations in a thick cloud of smoke, pretending we don't hear the alarm clanging in the background. Smoke, after all, is not fire. It's not a flood. It doesn't command your immediate attention or force you to flee. You can live with it, if less well. You get used to it. And that's what we do. We paddleboard in the smoke and act like it's mist. We bring beers and ciders to the beach and remark that, on the upside, you barely need sunscreen at all.²⁰⁴

Klein talks about how struck she was by the images of families sunning themselves on oil-soaked beaches from the BP Deepwater Horizon disaster realizing that they are us as we refuse to allow a wildfire interfere with vacations plans. It shouldn't be surprising that the 2018 Auditor's Report from British Columbia on climate change shows that our province won't make its climate change objectives, and that the battle between municipal, provincial, and federal governments creates more delay and

203 *Bioscience*, Volume 67, Issue 12, "World Scientists' Warning to Humanity: A Second Notice". <https://academic.oup.com/bioscience/issue/67/12> (accessed December 18, 2017).

204 Naomi Klein, "My Summer with the World in Flames." *The Tyee*, <https://thetyee.ca/Opinion/2017/09/22/Summer-With-World-Flames/>. September 22, 2017.

inaction.²⁰⁵ As Katharine Hayhoe states “we are like “frogs in boiling water.” It would seem that we have little choice but to adapt to what humankind has done and yet we can’t comprehend what adapting or getting ready for the worst case scenario could look like except perhaps from science fiction movies or books. In *The Collapse of Western Civilization*, a science-based fiction book written by Naomi Oreskes and Erik Conway, the point is made that current inaction will result in future disaster:

As the devastating effects of the Great Collapse began to appear, the nation - states with democratic governments, both parliamentary and republican, were at first unwilling, and then unable to deal with the unfolding crisis. As food shortages and disease outbreaks spread and sea level rose, these governments found themselves without the infrastructure and organisational ability to quarantine and relocate people.²⁰⁶

Martha Nussbaum, Naomi Oreskes, and others predict a future where the northern hemisphere becomes the new home for migrating populations and governments merge to adapt to our changing world. Adapting to life in a changing climate involves adjusting to actual or expected future climate changes. Short term, the goal is to reduce human vulnerability to the harmful effects of climate change, like sea-level rise, more intense and extreme weather events, or food insecurity. It also encompasses making the most of any potential opportunities associated with climate change, such as longer growing seasons or increased yields in regions like Canada. Other regions will be uninhabitable due to pestilence, drought, famine, and floods that will likely bring more wars. According to the U.S. Department of Defense report, one billion people will be on the move whereas a 2010 study in Canada suggests that the number of dislocated people may be in the hundreds of millions.²⁰⁷ The Environmental Protection Agency (EPA) and other groups around the world offer volumes of advice on how we can adapt to these changes in climate. Steps to resilience include things like exploring the hazards, assessing vulnerability and risks, investigating options, prioritising

205 BC Auditors Report, <http://www.bcauditor.com/pubs/2018/managing-climate-change-risks-independent-audit> (accessed February 23, 2018).

206 Naomi Oreskes, Erik Conway, *The Collapse of the Western Civilization, A View from the Future* (Columbia University Press, 2014), 51.

207 Canadian Adaptation Policy, <https://lop.parl.ca/Content/LOP/ResearchPublications/2010-04-e.pdf> (accessed February 12, 2018).

and planning, and taking action.²⁰⁸ It is believed that we can adapt to climate change by reducing our vulnerability to its impacts. Actions such as moving to higher ground to avoid rising sea levels (unless you have bought beachfront property, and then you might be in denial), planting new crops that will thrive under new climate conditions, or using new building technologies represent common sense adaptation strategies. Humans have been doing this for centuries. While much adapting is reactive and personal, as pointed out by the CRP, future adaptation of any scale will require investment in new research, technology, education, and infrastructure. Actions taken by individuals, communities, governments, and countries near and far all have a role to play.

What is likely to change with our understanding of science, or our own personal or tribal behaviour? Sarah Burch and Sara Harris suggest in *Understanding Climate Change* that communicating the need to address climate change requires an understanding of the fundamental stakeholders at play: the public, government, industry, and scientists. “Tackling the climate change challenge requires the creation of a compelling vision of a desirable future, not just recapturing a mythical past or “tinkering around the edges” of our current development path.”²⁰⁹ Harris believes that humans can respond to climate change either through mitigation (dealing with the causes) or adaptation (dealing with the effects).²¹⁰ She suggests that more data or science alone will not minimise an apocalyptic framing that suggests human behaviour needs to be constrained and managed to do slightly less harm:

But what if we want more than just to recapture the “healthier” planet of two hundred years ago, but instead want to improve well-being, health, equity, community, and a host of other factors? The framing that currently dominates the climate change discourse, reduces the likelihood of a focus on a creative, positive, nuanced vision of the future – one that is rooted in a deep scientific understanding of Earth systems but that also captures (or at least begins a conversation about) core human values such as equity, compassion, innovation,

208 Environmental Protection Agency, <https://toolkit.climate.gov/steps-to-resilience/explore-hazards> (accessed June 3, 2017).

209 Sarah Burch and Sara Harris, *Understanding Climate Change: Science, Policy, and Practice* (University of Toronto Press, 2014), 4.

210 Sarah Burch and Sara Harris, *Understanding Climate Change, Science, Policy and Practice excerpt. Pdf.* Accessed August 20, 2017.

and connection which change individual behaviour, which is crucial for evidence-based decision-making.²¹¹

It is unlikely that we will turn back the clock to another time. There are no signs that the fossil fuel industry will go quietly, that governments will abandon their business partners, discontinue building pipelines, and that humans will make a significant social change to disrupt the status quo. At this writing the federal government and some provincial governments argue that the best way to confront climate change is to continue expanding the fossil fuel industry and its infrastructure, with increased oil sands, liquefied natural gas development, and more pipelines. It is disheartening that population growth is a millstone around our necks, that women's health is taboo in too many countries, and that oligarchs own, control, dis-inform, and indoctrinate much of the world's population. All of these things obstruct the path to finding a way through this mess. I doubt that they have any concept of what is ahead or, perhaps, they simply don't care. With any luck, the young ones are rewriting the paradigm and see through all of our cumulative nonsense and know where it must go. Soon they may collectively rise up, push us aside, and do what is needed. I hope so because it is difficult to adapt when we are never sure what to adapt to, such as spring temperatures in the middle of winter in New York City, or the North and South Poles being 25 degrees warmer this year than last year. Then there is something in Harris's invitation to redefine what the good life could look like as we strive to improve our overall well-being, health, equity, community, and a host of other factors. Carl Rogers wrote "that the good life is a process, not a state of being. It is a direction not a destination."²¹²

People and societies have adjusted and coped with changes in climate with varying success throughout history, so we should be well practiced at this task. The Netherlands is a good example. Two-thirds of the country is below sea level, and an anxious world is now studying their flood control and dyke systems as our oceans continue to rise.²¹³ While a global issue, it is naturally felt on a local scale. Canadian cities and municipalities should therefore be at the frontline of adaptation. Consider that

211 Burch, Sara. Interview with Sara Burch. Impact, CIRH FM, September 23, 2017.

212 Carl Rogers, *On Becoming a Person: A Therapist's View of Psychotherapy* (Houghton Mifflin Company, 2002), 186.

213 NASA, <https://climate.nasa.gov/news/1010/climate-change-and-the-rise-and-fall-of-civilizations/>. (accessed October 5, 2017).

of the 3,608 local governments in Canada, 4.2% have set greenhouse gas reduction targets, 0.6% signed the UN Compact of Mayors with the United Nations, and 0.08% have committed to 100% renewable energy by 2050. International accords, though essential are insufficient to achieve reduction targets. Citizens, businesses, and civil society are being asked to step up to support implementation.²¹⁴ Yet most governments in Canada are not on track to meet their commitments to reducing greenhouse gas emissions and are not ready for the impacts of a changing climate. Only two provinces, New Brunswick and Nova Scotia, are on track to meet their emissions reduction targets, and federal, provincial, and territorial governments are using a range of approaches, targets, and measurements with little getting done. “As a result, it was unclear how the federal, provincial, and territorial governments would measure, monitor, and report on their individual contributions to meeting Canada’s national 2030 target.”²¹⁵

With U.S. President Trump closing borders and dismantling environmental policies it is interesting to observe the call to action around the world as more communities and more businesses get off the couch and focus on solving their own local climate problems. The City of Vancouver, for example, is working to build flood defences, plan for heatwaves and higher temperatures, install water-permeable pavements to better deal with floods and stormwater, ensure water safety and improve water storage. In British Columbia, municipal and provincial governments are taking on the federal government in the protection of their sovereignty and jurisdictional issues that support a healthy environmental plan.

According to the 2014 report on Climate Change Impacts, Adaptation, and Vulnerability from the United Nations Intergovernmental Panel on Climate Change, governments at various levels are getting better at adaptation.²¹⁶ Climate change is starting to be factored into a variety of development plans in order to manage increasingly extreme disasters and their associated risks, including how to protect coastlines and deal with sea-level encroachment, manage land and forests, deal with

214 Climate Reality Project, www.climaterealityhub.ca (accessed June 30, 2017).

215 Auditors Report, http://www.oag-bvg.gc.ca/internet/English/parl_otp_201803_e_42883.html (accessed February 20, 2018).

216 IPCC Report: Climate Change Impact. <http://www.ipcc.ch/report/ar5/wg2/> (8) (accessed March 4, 2017).

and plan for reduced water availability, develop resilient crop varieties, protect energy and public infrastructure, and ensure human rights and social justice.

Vancouver and the rest of the world may or may not be capable of solving the many issues of adaptation and mitigation. Feeding ten billion people will require huge social and economic changes as infrastructures collapse around the world. What happens when many parts of the world are too hot to inhabit, and the only places in the world to live are in the northern shield and boreal forests? Dr. Jason Ur at Harvard University has a sobering message when we consider our future. “When we excavate the remains of past civilizations, we rarely find any evidence that they made any attempts to adapt in the face of a changing climate. I view this inflexibility as the real reason for collapse.”²¹⁷

For those that don't want to adapt but escape, Katharine Hayhoe points out the vulnerability of humans. “Long before we could ever colonize anything else, climate change will have overwhelmed our society. We, humans, are one of the most vulnerable to climate change.”²¹⁸ We need to figure out how we can prolong and sustain life on this planet as there is apparently no way off this ride. Mitigation, or reducing climate change, involves reducing the flow of heat-trapping greenhouse gases into the atmosphere either by reducing the sources of these gases or enhancing the “sinks” that accumulate and store these gases, such as the oceans, forests, and soil. The goal of mitigation is to avoid significant human interference with the climate system and “stabilize greenhouse gas levels in a timeframe sufficient to allow ecosystems to adapt naturally to climate change, ensure that food production is not threatened and to enable economic development to proceed sustainably.”²¹⁹ Naomi Oreskes believes that this has to start by eliminating the subsidies that keep fossil fuels cheap:

For every dollar that the United States government subsidises renewables, we spend about eight dollars subsidising fossil fuels. That doesn't include indirect subsidies. An obvious solution is to eliminate the perverse subsidies that keep

217 NASA, <https://climate.nasa.gov/news/1010/climate-change-and-the-rise-and-fall-of-civilizations/> (accessed February 23, 2017).

218 Hayhoe, Katharine. Interview with Katharine Hayhoe. Impact, CIRH FM, July 5, 2017.

219 IPCC http://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap14_FINAL.pdf (accessed February 12, 2018).

fossil fuels cheap and to let renewables compete in the marketplace on a level playing field.²²⁰

Naomi Oreskes believes that one of the most important things to be done in the U.S. and Canada, is to modernise the electricity grid. She spoke about a number of studies that show that North America could be 80 to 90 percent supplied in its energy needs by renewable energy with existing hydroelectric and existing nuclear but no new nuclear power plants. “We could integrate the electricity grid across North America so that Quebec Hydro could easily get to Boston and Arizona or could easily get to Oregon, and Oklahoma wind could easily get to Texas.”²²¹ Oreskes believes that if we built an integrated modernised electricity grid, that we could ensure that virtually everyone in North America would have the energy they need at all times with mostly renewables. She pointed out that it will take political will to reinvest in the infrastructure that will make the transition to renewables technologically feasible and economically affordable.

Project Drawdown is a multi-disciplinary network of 200 researchers who studied and proposed solutions to climate change, like some of the ones Naomi Oreskes suggested. Project Drawdown developed one of the most comprehensive plans ever proposed to mitigate and help reverse global warming. Executive director Paul Hawken and his organisation highlight solutions already known to humans. Hawken’s book provides a blueprint for how climate change can roll back global warming within thirty years. It shows that humanity has the means at hand and that nothing new needs to be invented.

Project Drawdown is the work of a growing coalition of geologists, engineers, agronomists, researchers, fellows, writers, climatologists, biologists, botanists, economists, financial analysts, architects, companies, agencies, NGOs, activists, and other experts who draft, model, fact check, review, and validate all text, inputs, sources, and calculations.²²² Their purpose is to provide helpful information and tools to a wide variety of sectors who are dedicated to change. These include students, teachers, researchers, philanthropists, investors, entrepreneurs, business people, farmers, policymakers, engaged citizens, and anyone interested understanding what they can do

220 Oreskes, Naomi. Interview with Naomi Oreskes. Impact, CIRH FM, April 17, 2017.

221 Oreskes, Naomi. Interview with Naomi Oreskes. Impact, CIRH FM, April 17, 2017.

222 Project Drawdown, <http://www.drawdown.org/coalition> (accessed February 17, 2018).

to make a difference. Project Drawdown currently offers 106 solutions. The Top 10 solutions to climate change include: refrigerant management, (onshore) wind turbines, reduced food waste, plant-rich diet, tropical forests, education of girls, family planning, solar farms, silvopasture, and rooftop solar.

Chad Frischmann is the vice president and research director at Project Drawdown. He is the lead researcher and principal architect of the methodology and models used in Drawdown and all its related publications. When discussing the Top 10 solutions he pointed out that three of the top ten were related to plant-rich diet, reduced food waste, and silvopasture. “The way we look at this, an increase in consumption in low-income countries and decreased consumption in high-income countries just makes sense.”²²³ Frischmann noted that he is beginning to see people around the world change, albeit slowly. He believes that Project Drawdown connects the dots and helps people understand what the issues are and how to change. Sarah Burch and Sara Harris write about how we communicate these issues:

Tackling the climate change challenge requires the creation of a compelling vision of a desirable future, not just recapturing a mythical past or tinkering around the edges of our current development path. Humans can respond to climate change either through mitigation or adaptation (dealing with the effects). More data or science alone will not change individual behaviour, but they are crucial for evidence-based decision-making.²²⁴

Scientists expect climate change to have an increasing impact on human and natural systems in the coming decades. It is already changing the way we live in a warmer world. Human health, biodiversity, economic stability, and national security are being affected by climate change. Climate modelling projections suggest that the negative effects of climate change will significantly outweigh positive ones. Therefore, our ability to prepare for and adapt to new conditions may be exceeded as the rate of climate change increases. A way must be found for science and business to work together to help humanity.

223 Frischmann, Chad. Interview with Chad Frischmann. Impact, CIRH FM, June 13, 2017.

224 Sarah Burch and Sara Harris, “*Understanding Climate Change, Science, Policy and Practice* excerpt. Pdf.” (Accessed August 20, 2017), 4.

Addressing climate change is much more complex than just reducing CO₂ emissions. Our vulnerability to the impact of this climate disruption and social upheaval depends on our ability to understand human behaviour, science, and the implications of climate change. As well, we need to integrate and use that knowledge effectively in how we live together on this planet. Changes in our economy and infrastructure, as well as individual attitudes, societal values, and government policies, will be required to alter the current trajectory of climate's impact on human lives as our world becomes smaller and our neighbours become closer. Issues like food security, income generation, health, reducing the vulnerability of marginalised groups, and greater awareness of cultural and spiritual values are intrinsic building blocks.

Vanessa Timmer is the co-founder and executive director of One Earth, a Vancouver based not-for-profit “think and do tank” focused on creating and imagining sustainable ways of living in cities around the world. As a senior research fellow at Utrecht University, she works with NGOs, the United Nations and, in 2005, co-authored an article called “Biodiversity Conservation, and Poverty Reduction Come Together in the Tropics and Lessons learned from the Equator Initiative.” The article links biodiversity and the alleviation of poverty and points out how they have often been portrayed as opposing goals with one objective frequently being accomplished only at the cost of the other. Finding synergistic solutions has been on local, national, and international agendas for decades. The hope is that human development and biodiversity conservation can be less of a zero-sum game of trade-offs and more a set of mutually reinforcing goals as we adapt and create more sustainable and compatible systems for all people.²²⁵ Addressing human rights is intrinsically linked to this “five-alarm fire.”²²⁶ We need to learn to live more cooperatively together on this planet as we find a new way of being.

While it is easy to get lost in what is not being done, we often forget to mention what is being done. Rebecca Solnit writes in *Grounds For Hope* that change has already happened in the U.S. and in various parts of the world.

225 Timmer, Vanessa-Juma, *Calestous, Roots*
https://www.belfercenter.org/sites/default/files/files/publication/timmer_juma.pdf. (accessed February 25, 2018).

226 Klein, Naomi, Interview with Naomi Klein. *Impact*, CIRH FM, June 26, 2017.

As of 2014 Iowa received 28% of its electricity from wind alone, not because someone in this conservative state declared death to all fossil fuel corporations, but because it was a sensible and affordable option. Denmark achieved 140 percent of its electricity needs through wind generation and sold the surplus to neighbouring countries. Scotland has achieved renewable energy generation of 50 percent and set a goal of 100 percent by 2020. Thirty percent more solar was installed in 2016 in the United States than the year before, and in some places in the world, renewables are becoming more affordable than fossil fuels. ²²⁷

Much is being done than ever before to develop renewable energy in countries and cities large and small. Science, Technology, Engineering and Mathematics (STEM) programs are being created for marginalised and underrepresented groups, and activism of all types in every community, state, and province around the world are moving this conversation from being exclusive to tribes to becoming spacious, inviting, and collaborative with a new heartfulness and language to help initiate positive social change.

227 Rebecca Solnit. *Grounds For Hope* (Haymarket Books, 2016).

Chapter 6

This is The End

This project has explored climate change and denial through the lenses of history, science, psychology, religion, and politics. Growing homelessness, disconnectedness, racism, aloneness, and isolation are just symptoms that indicate something is very wrong and getting worse as our planet heats up and more people around the world are thrown into uncertainty. It doesn't help when people like Paul Gilding say that it's time to stop worrying about climate change and that we need to brace ourselves for impact or when David Attenborough and Jane Goodall tell us that the earth would be better off with less than a billion people or the U.S. Department of Defense predicting confidently that there will be more climate change induced wars in the next 15 years. Is there any wonder why so many people are anxious and in denial?

There is clear evidence that we have a growing list of global problems and one of the largest is that we require about fifty percent more earth to sustain our current way of life. Distribution is only part of the problem. While we talk a good story about how we can gently transition to a highly efficient, knowledge-based economy transformed by science and technology this is likely magical thinking. It seems more likely that when the carbon bubble bursts, financial markets will spiral out of control, there will be more wars, collapsing governments, shortages of food and water, and huge unemployment around the world. While Project Drawdown may provide the blueprint, significant change is not likely to occur until something awful happens.

While climate changes become more severe the instability of our world is no longer out of sight and out of mind as we run out of resources and one billion people come looking for a new home. We shake our heads and wring our hands over growing homelessness around the world, refugee camps and children in cages, but we tolerate them to the degree that they become normalized. The path ahead is indeed a daunting one. Perhaps David Whyte is correct when he says:

Denial is underestimated as a state of being. Denial is an ever present and even a splendid thing when seen in the light of its merciful and elemental powers to cradle and hold an identity until it is ready to move on. Faced with the depth of loss and disappearance in the average life, a measure of denial is creative, necessary and self-compassionate: children are not meant to know they will one day die and older adults are never meant to tell them. Refusing to face what we are not yet ripe and ready to face can help us to live in the present.²²⁸

Through the process of completing this project, I have come to better understand why many people embrace denial rather than give into fear and hopelessness. That denial comes in many shapes and sizes or “faces” is not surprising. Whyte believes that most human beings are at war with reality at least fifty percent of the time. He speaks of walking into our lives fully, and that when we do so we start to realise that we have manufactured three abiding illusions; that we can somehow construct a life where we are not vulnerable; that we can somehow be immune to all the difficulties of ill health and losses of the natural world; and that some how we can plan our way to the end. These illusions can be for ourselves as well our community, whether locally or globally as denial is pervasive. I remain struck with Jonah Lehrer’s comment: “The only way to counteract the bias for certainty is to encourage some inner dissonance. We must force ourselves to think about the information that we don’t want to think about, and to pay attention to the data that disturbs our entrenched beliefs.”²²⁹

Climate change is only one pathway that invites us into vulnerable conversations. Climate change, colonialism, capitalism, racism, poverty, hunger, overconsumption, and other issues are all part of this “five-alarm fire.” The anxiety and stress that comes with how to fight these fires and my own inner dissonance and denial can be overwhelming. As I sit in my old Jeep in Vancouver’s rush hour traffic contemplating this argument on an unusually hot summer day, thinking about my consumption habits, wondering where my groceries came from, and if car sales are up or down - I don’t see how we can save ourselves without something disruptive happening that forces us to change. I also wonder if change has to occur within each of us first before we turn our attention outward. Is there a peace that comes with preparing for a conscious death, as Roy Scranton suggests? If life is a journey should it not be about how well we live it, and to

²²⁸ David Whyte, *Denial in Consolations: The Solace, Nourishment and Underlying Meaning of Everyday Words* (Many Rivers Press, 2015), 49.

²²⁹ Jonah Lehrer, *How We Decide* (Houghton Mifflin Harcourt, 2009), 217.

be certain to make every day count rather than live in fear of how and when we will meet death, whether from climate change, illness, or natural causes? If we can learn to do this and confront those messy parts, I believe that it opens up a better way to meet each other and allows for different conversations to begin.

While disheartening, it seems that the public needs to be presented with a different message to be moved to action. All of these conversations with so many different thinkers and activists speak to an urgency, as well as a need, to change our divisive discourse from liberal or conservative, right or wrong, good or bad, and broaden the edges of these dialogues. Meg Wheatly urges people to get more involved in their communities and get to know their neighbours. While the doing is important, finding entry points into a conversation that open hearts and then minds is an essential part of this process. Paul Graham suggests in *The Hierarchy of Disagreement* that while divisiveness has spread throughout our society there is a way to move public debate forward without invoking anger and shutting down conversations.²³⁰ His *Hierarchy of Disagreement* provides an outline of understanding in what happens in conversation's and how to recognize new entry points.

American Journalist and author, Krista Tippett, suggests that there is an art in starting new kinds of conversations that create new departure points and outcomes. She urges that we let go of old habits that are ingrained in establishing winners and losers. This may have its place and value in civil society, but it can get in the way of caring about each other. Alternately, exploring the world with generous listening and asking better questions to start new kinds of conversations can change hearts and minds. As I have learned from years of interviewing, asking beautiful questions that open the conversation and reach beyond veils of doubt and defenses is an art.

The silver lining in the irrationality that has descended on the U.S. has sparked a growing movement to promote scientific evidence and science-based solutions through thousands of daily conversations and initiatives around the world. As technologies change, fossil fuels, mining exploration, government corruption, social justice, and human rights are coming under more scrutiny. Nuclear power costs more to build and operate than to decommission while renewable energy sources are gaining

230 Paul Graham, <http://www.relativelyinteresting.com/grahams-hierarchy-disagreement/> (accessed February 12, 2018).

momentum.²³¹ As humans become more self aware it seems more important than ever to get off the couch and join movements large and small, to march, walk, talk, and get busy changing conversations in homes, workplaces, schools, houses of worship, and perhaps most importantly, our hearts. These conversations are not just about climate change but about how we treat each other, animals, and our planet. This is an opportunity to confront our denial or shadow and these complex issues as we stand in the light. Regardless of what the face of denial may look like it would seem that the way to reach it is not just with facts and figures or more information, but with a genuine curiosity and caring through deeper conversations. Jonathan Haidt, Andrew Hoffman, and others suggest that asking beautiful questions that open conversations may allow us to move from denial to action changing each other and our world

I am reminded that there are unsuspecting movements, acts of bravery, activism, and love that may carry the day. The chaos theory deals with complex systems whose behaviour is highly sensitive to slight changes in conditions so that the smallest alterations can give rise to strikingly great consequences. Similarly, we know from history that social, cultural, or political change does not work in predictable ways or on predictable schedules. Humans don't know what is going to happen, or how, or when, and in that uncertainty there must be room for hope. Rebecca Solnit believes that "critical thinking without hope is cynicism but hope without critical thinking is naivety."²³² There have been great moral causes that have advanced humanity's prospects that have all been based on hope and fundamental truths that were resisted and denied and fought against. Examples include the abolition movement, the women's suffrage movement and the broader women's rights movement, the anti-apartheid movement in South Africa, the effort to stop the toxic phase of the renewed nuclear arms race, gay and trans rights, and more recently, the gun control demonstrations that started in Florida.

Al Gore spoke to these events and their tipping point at a Climate Reality Project training session in Seattle: "I would not have been able to believe that so much progress on gay rights could be made so quickly. But that happened because of people winning

231 Nuclear Scrap Yard, V.C. Summer Site 2&3. <https://foe.org/news/9-billion-nuclear-scrapyard-new-aerial-photos-scegs-abandoned-v-c-summer-nuclear-project-reveal-disarray/> (accessed January 21, 2018).

²³² Rebecca Solnit, *Grounds For Hope* (Haymarket Books, 2016),12.

conversations and asserting an undeniable truth, and if the truth is inconvenient, it needs to be reasserted firmly.”²³³ Gore spoke to how these events like climate change can come about:

I believe that we have reserves of conscience and courage and character that we often do not tap into, but when necessary we can call upon. This is such a moment. It is a moment in time that will not last for all that long. But it will last for long enough for us to make the right choice. The change that is now essential for our children, future generations, and for ourselves, is a change that is perfectly within our grasp. We are capable of making this transition but it is a change that still does face ferocious resistance.²³⁴

Gore suggests that reserves of power are rooted in conscience and hope and a determination to not only survive but to thrive, flourish and prosper, so that we can say to the next generation that we did what was necessary.²³⁵ While it would be easy to ignore or deny the challenges ahead as they appear overwhelming, surprises show up every day that warm our hearts and renew our spirit due to human generosity and random acts of kindness: Children are reaching out to help others around the world, citizens, communities, municipalities and provincial governments are fighting for clean air and a sustainable future; young women like Emma Gonzalez are shaking up lawmakers and gun advocates to make schools and streets safer; people such as Berta Caceres give up their lives to resist corporate abuse and protect human rights and the land. Canada’s Prime Minister gets us into the oil business and the country is reacting. It’s this activism, these acts of kindness, caring, and social disruption that move each of us in different ways and allow me to hope and to want to do more.

Many of the world’s population are in denial whether disengaged, doubtful, or dismissive, because the information is too painful and alarming and they are being asked to change their way of life. Therefore, it seems likely that it will take something significant and closer to home like a natural disaster to begin dealing with this crisis. Perhaps what connects all of this, and holds each of us together, is human impermanence and the preciousness of life. Perhaps it’s not so much about how it ends

233 Al Gore. Climate Reality Project, Seattle Washington. June 2017.

234 Al Gore. Climate Reality Project, Seattle Washington. June 2017.

235 Al Gore. Climate Reality Project, Seattle Washington. June 2017.

but how well we live with each other. Zen Master Thich Nhat Hanh says that only love can save us from climate change. He may be right!

Is it possible to prepare for climate change and avert the worst effects of it? Perhaps, but to do so, we need to understand why climate change is happening and to make informed choices as individuals and communities based on the scientific evidence and our ability to reframe a new definition of the good life. We need to be able to confront our frailties and be open to challenge our beliefs. As we have learned, information alone is not enough for us to choose appropriate policies and strategies to prepare our society for the changes that are well underway. Without understanding the basic causes and various complexities of climate change and ourselves, we will be unable to make informed decisions that will affect generations to come. This crisis is about much more than just about the science. Humans are being asked to go deeper, to find that existential part we play in change and how all of us can make a difference.

One of my first and, ironically, last interviews for this project was with Tzeporah Berman. She is a Canadian activist known for her work in Clayoquot Sound and Burnaby Mountain, former Greenpeace director, and author of *This Crazy Time*.²³⁶ She shared a story with me about returning from the Climate Change Conference in Copenhagen in 2009 which was a “disaster” as countries could not reach a global agreement, and scientists and experts from around the world were crying as the latest reports about the earth’s climate were devastating. She pointed out that the UN Secretary-General opened the conference by saying that “we either do a deal here, or we are sentencing humanity to oblivion!” Returning home depressed and thinking we are doomed, she wound up spending time with her ninety-year-old grandmother and shared her disappointment. Her grandmother smiled warmly and reminded her of how much the world had changed in her lifetime and that she was confident that the world will change even more in hers and that these issues can be addressed. Tzeporah admitted that when she gets overwhelmed, she is reminded of this loving moment with her grandmother. She is now certain that when she speaks to her grandchildren “about this crazy time in history,” she is convinced that “they won’t believe her, as the world will be such a different place from when we dug in the ground to get oil, chopped down the last old growth forest to make

236 Berman, Tzeporah. Interview with Tzeporah Berman. Impact, CIRH FM, March 13, 2017.

catalogues, or that we actually filled our cars with gas.”²³⁷ Prior to turning the microphone off as our second interview came to an end, I asked Berman if she was still as optimistic as her grandmother while demonstrating against the Kinder Morgan pipeline and she replied, “more than ever!”²³⁸

I think people resist freedom because they're afraid of the unknown.

But it's ironic ... that unknown was once very well known. It's where our souls belong ...

The only solution is to confront them -- confront yourself -- with the greatest fear imaginable. Expose yourself to yourself to your deepest fear. After that, fear has no power, and fear of freedom shrinks and vanishes.

You are free.

Jim Morrison

²³⁷ Berman, Tzaporah. Interview with Tzaporah Berman. Impact, CIRH FM, March 13, 2017.

²³⁸ Berman, Tzaporah. Interview with Tzaporah Berman. Impact, CIRH FM, March 18, 2018.

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Appendix A.

The following is a list of guests from On-Air Interviews & Podcasts that were invited to join this project between January 2017 and March 2018. All interviews were recorded live to air or pre-recorded and archived at: <http://www.donshafer.com>.

Due to the length of the transcripts for this research project they are available upon request. Impact transcripts are produced by a third-party transcription service and may contain errors. Please be aware that the official record for Impact is the audio. MP3 copies of these interviewees are also available. All the interviews cited in this project are in the public domain and have been used with permission.

Ethics Approval - January 8, 2017, SFU

Don Shafer <https://www.donshafer.com>

Guest list:

David Whyte (February 12, 2017). Professor, author, poet, lecturer and associate fellow at Said Business School at the University of Oxford. He is one of the few poets to take his perspectives into business as well as the public stage as he shares stories of grief, loss, and joy.

Lynne Quarmby (Feb 8, 2017). Professor at SFU, activist and former Green Party candidate. She talks about how we can limit the impact of climate change, her activism and arrests, and her current research involving algae that may impact climate change.

Roy Scranton (Feb 14, 2017). Author of *War Porn* as well as *Learning to Die in the Anthropocene*. Roy talks about his life growing into the reality of climate change. He discusses his early years of learning to become a writer, his tour in Iraq with U.S. Forces and what he learned, and why he believes that we have passed the point of no return with climate change.

Deborah Harford (Feb 20, 2017). Executive director of SFU's Adaptation to Climate Change Team (ACT). She talks about everything from fossil fuels and low carbon emissions to Kinder Morgan and Trump.

Elizabeth Mcsheffrey (Feb 27, 2017). An investigative reporter for *The National Observer*. She talks about where we should get our news from in the wake of "fake news" articles, and issues including Kinder Morgan, DAPL, and how indigenous leaders are being left out of climate discussions in Canada.

Torrance Coste (Mar 1, 2017). Campaign organizer for the Wilderness Committee, He talks about what the BC budget means for the environment, and what issues in BC and Canada the Wilderness Committee is concerned about and currently involved in.

Jiaying Zhao (Mar 6, 2017). Assistant professor of psychology and in the Institute for Resources, Environment and Sustainability at UBC. She talks about her research in what shapes behaviours around climate change.

Tzeporah Berman (Mar 13, 2017). A Canadian activist, organiser, and adjunct professor of Environmental Studies at York University. She discusses whether we have moved any further in fighting climate change since her time as an organiser with Greenpeace and other organisations.

Christine Persaud and Joanne Abshire (March 16, 2017). Persaud is the security advisor with the Canadian Red Cross and joins a panel discussion "Humanitarian Aid in Conflict Zones," along with Joanne Abshire, as part of the Faces of Humanity Fair.

David Miller (Mar 23, 2017). Former Toronto mayor and past president and CEO of the World Wildlife Fund. He talks about why organisations like Coca-Cola are getting into the business of climate change by partnering with the WWF.

David Suzuki Foundation's Blue Dot team (Mar 30, 2017). Peter Wood and Alaya Boisvert, members of the team, talk about the Blue Dot Movement and Law and Order: A Forum on Environmental rights.

Vancouver Board of Trade Emergency Preparedness Forum (Apr 5, 2017). Becky Denlinger, deputy minister Emergency Management Ministry of Transportation and Infrastructure for B.C. Kimberly Nemrava, vice president, Red Cross for BC & Yukon. Jeremy Stone, executive director of Recovery and Relief Services. Each talk about how we can prepare for climate change as well as "the big earthquake," and what the role of Vancouver's first chief resilience officer might look like.

Tero Mustonen (April 10, 2017). Director of the Snow Change Collective and co-author of a new study published in *Science Magazine* talks about what climate change looks like in the Arctic and how indigenous knowledge can help us track it.

Naomi Oreskes (April 17, 2017). A professor of the history of science and affiliated professor of Earth and Planetary Sciences at Harvard University. She is the author of six books and wrote the introduction to the *Encyclical* by Pope Francis. This conversation wanders through her career, books, and thoughts about our climate.

Eric Peterson (Apr 19, 2017). From the Hakai Institute. He discusses their research in climate change and the recent discovery of a 14,000- year-old village on the BC coast.

Guhyapati (April 24, 2017). Director of the Eco-Dharma Centre in the Catalan Pyrenees of Spain. He talks about the principles of Eco-dharma, Buddhism, climate change, and activism.

Charles Hatt (Apr 21, 2017). A lawyer with ECO-JUSTICE, Canada's only national environmental law charity. He talks about the work they do fighting for environmental rights on behalf of our communities.

James Hogan (April 28, 2017). Public relations expert, past chair of the David Suzuki Foundation, lawyer and founder of De Smog Blog to expose misinformation campaigns polluting the public debate around climate change and the environment. The author of *I'm Right, And You're an Idiot: The Toxic State of Public Discourse and How to Clean It Up*. He talks about climate change, fake news and deception, Jonathan Haidt, Marshall Gantz, public discourse, Buddhism and other interesting topics.

Olena Alec (May 18, 2017). Director of the Climate Reality Projects Leadership Training. She talks about what brought her to working with Al Gore's team, Climate Reality Project training, and what trainers and leaders can accomplish.

Eliza Olson (June 2nd, 2017). President of the Burns Bog Conservation Society. She talks about the importance of supporting conservation and educational lands around Vancouver and Seattle.

Alejandro Frid (June 8, 2017). Adjunct professor at the University of Victoria's Environmental Studies and the science coordinator for the Central Coast Indigenous

Resource Alliance. He is the author of *A World for My Daughter, An Ecologist Research for Optimism*.

Chad Frischmann (June 13, 2017). *Project Drawdown's* vice president and research director. Frischmann talks about what it was like to bring together thousands of scientists to find out where we need to focus on handling climate change and the top 10 things we can do to make a difference.

Ann Mortifee (June 15, 2017). Singer, storyteller, and composer. She discusses her career and her new musical *The Mysteries*, which is about the ancient myth of Persephone. She trusts that if we can revision the myth, the impact could change the world.

Kelly Oliver (June 18, 2017). American philosopher and novelist whose work contributes to the fields of feminism, film theory, media studies, political philosophy, and ethics. Professor of philosophy at Vanderbilt University and author of *Animal Lessons*. She discusses philosophy and discusses that it is the animal that teaches us to be human.

Michael Mann (June 22, 2017). American climatologist and geophysicist and the director of the Earth System Science Center at Pennsylvania State University. He is the author of several books including *The Madhouse Effect*. We discuss how climate change denial is threatening our planet and what can be done about it.

Naomi Klein (June 26, 2017). Canadian author, social activist, and filmmaker known for her political analyses and criticism of corporate globalisation and capitalism. She discusses her views of the world, and her new book *No Is Not Enough, Resisting the Shock Politics and Winning the World We Need*. She talks about why we need history, politics, strategy, optimism, and that another world is possible.

Ken Berlin (June 28, 2017). President and CEO of the Climate Reality Project inspired initially and created by Al Gore, American politician and environmentalist. He talks about the mission and values of his organisation and the challenges and opportunities' that face our planet.

Al Gore (June 29, 2017). American politician and environmentalist who served as the 45th Vice President of the U.S. from 1993 to 2001 under President Bill Clinton. At the

end of Clinton's second term. After leaving office, Gore remained prominent as an author and environmental activist, whose work in climate change activism earned him (jointly with the IPCC) the Nobel Peace Prize in 2007. He talks about activism, denial and hope.

Katharine Hayhoe (July 5th 2017). Atmospheric scientist and associate professor of political science at Texas Tech University, where she is director of the Climate Science Center. She has written over 120 peer-reviewed papers, abstracts, and other publications. Together with her husband, Andrew Farley, they have written eight books including *The Naked Gospel* and most recently *A Climate for Change: Global Warming Facts for Faith-Based Decisions*, a book that untangles the complex science and tackles many long-held misconceptions about global warming.

Captain Philip Renaud and Sam Purkis (July 6th, 2017). Renaud is the executive director of the Khaled bin Sultan Living Oceans Foundation and Purkis is a professor, and head of the Department of Marine Geosciences at the University of Miami. They discuss their mission and how one of the largest ocean-going scientific research vessels is offering scientists the ability to find out what is happening to our oceans.

Kimberly Nemrava (Aug 16, 2017). Vice president of the Canadian Red Cross in British Columbia and Yukon. She discusses the worst fire season in BC's history, the history of the Red Cross and how they operate in natural disasters around the world.

Jason W. Moore (Aug 25, 2017). Author and professor in the Department of Sociology, Binghamton University. He talks about his two most recent books, *Capitalism in the Web of Life: ecology and The Accumulation of Capital* and *A History of the World in Seven Cheap Things*.

Geoff Dembicki, (Aug 29, 2017). Author of *Are We Screwed?* A nuanced and powerful examination of millennial values, their impact on politics, and how both are connected to their fight to survive climate change.

Chief Robert Joseph and David Patterson (September 23, 2017). Hereditary Chief of the Gwawaenuk First Nation and a Vancouver lawyer practising in the field of Aboriginal rights discuss the Walk for Reconciliation and what reconciliation can mean to our community, Canada, and the World.

Sara Harris (September 30, 2017). Author and professor at UBC. Her fields of interest include the art of teaching, climate science, climate change, oceanography, environmental science, paleoceanography, paleoclimate, and science education. She discusses climate change, her book, *Understanding Climate Change*, as well as climate change education, and a course that all of us can take.

David Suzuki (October 1, 2017). The first recipients of the newly created David Suzuki Foundation Fellowship features conversations with Brett Dolter, Jerome Laviolette and Melina Laboucan-Massimo. We are joined by Harpreet Johal, the DSF Senior Fellowship Specialist, who shares more information about this program. This is an engaging conversation as we learn what this opportunity means to each fellow as they dig into their interests in finance, transportation, and sustainability around climate change.

Andrew Gregg (Nov 18, 2017). Director, writer, and producer of *Secrets from the Ice*. He tells us about what got him into film-making and what enticed him about this project which offers a look at some never seen artefacts that recently 'released themselves' from the melting ice in the Yukon.

Michael Challenger (Nov 12, 2017). Best selling author, award-winning producer and director talks about understanding how working with our fears can open many more doors in our lives so we can live more truthfully with ourselves. His new book *Don't Let Fear Paralyze You; A Guide to Your Own Personal Freedom*, was launched in October 2017.

John Englander (November 8, 2017). Author of *High Tide on Main Street: Rising Sea Level* and *The Coming Coastal Crisis*. Former executive director of the Jacques Cousteau Foundation, he talks about sea levels rising and what Vancouver is doing to get prepared.

Dr. Stephen Shepard, Steven Zhang, Dr. Jiaying Zhao and Miguel Roza (Dec 9, 2017). What do psychology and climate change have in common? Organisers of a local social innovation hub, IdeasXchange and thought leaders from UBC connect the dots for us.

Hanna Morris (December 17 2017). PhD candidate at the University of Pennsylvania discusses how "we can recognise and visualise Global Warming" by investigating the absence of what we cannot see and experience.

Kelly Oliver (Jan 6, 2018). Award-winning novelist and professor at Vanderbilt University. She is talking about feminism, ethics, animal rights, and climate change.

Kari Norgaard (January 15, 2018). An associate professor of sociology at the University of Oregon. She is known for her research into climate change denial and the politics of global warming.

Joy Cramer (January 22, 2018). Former deputy minister with the Province of Manitoba and the new director of Indigenous Programs at SFU. We discussed the importance of Indigenous studies in post-secondary institutions and their impact on nature and our world.

Brian Stafford (January 25, 2018). Psychiatrist and wilderness guide. He speaks about why it's important to connect with nature to better understand ourselves and our spirituality.

Connie Zweig (January 29, 2018). Author, therapist, and former journalist. She talks about psychology, spirituality, and what it means to confront one's shadow.

Colette Wabnitz (February 8, 2018). Marine scientist and research associate at UBC. She talks about a new study that has highlighted the decline in financial aid to fisheries in developing countries and the impact that it is having.

Gabrielle Hecht (February 16, 2018). The Frank Stanton Foundation Professor of Nuclear Security at Stanford University and celebrated author. We discuss various aspects of the anthropocene, how we are hurting our planet. and who is the "we" in this discussion.

Andrew Hoffman (February 20th, 2018). Professor of sustainable enterprise at the University of Michigan's Ross School of Business and School of Environment and Sustainability (SEAS). He uses a sociological perspective to understand the cultural and institutional aspects of environmental issues for organisations. We discuss the

processes by which environmental issues both emerge and evolve as social, political, and managerial issues.

Margaret Wheatley (March 1, 2018). American writer and management consultant who studies organisational behaviour. Her approach includes systems thinking, theories of change, chaos theory, and leadership. We discuss U.S. politics, climate change, and her new book, *Who Do We Choose to Be?*

Vanessa Timmer (March 2, 2018). Co-founder of One Earth and senior research fellow at Utrecht University in the Netherlands. We discuss the work of One Earth, Climate Change and “the good life.”