Weaving a *New* Tapestry

THE WORLD WE NEED

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ENVIRONMENT & SOCIETY CAPSTONE SEMINAR APRIL 2024

This volume is written by students in the Environment & Society Capstone Seminar at St. Thomas University during the 2023-24 academic year. A capstone course allows students in their final year of study to synthesize their learning and bring it to the next level, positioning them to embark on their next learning journey as citizens of their communities and the world.

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CONTRIBUTORS

MOLLY HANSEN

I am a fourth year student at St. Thomas University completing a double major in Environment and Society and Women and Gender Studies. I am from Quispamsis, New Brunswick, and this is my third year living in Fredericton. Through the course of my studies I have merely scratched the surface of the ever-growing climate crisis and the action that must be taken to minimize its effects on the population. I have come to recognize that the crises we are facing cannot be solved through managerial approaches, and that we must seek the root of the problem if we are to achieve a truly healthy planet. The process of writing this book with my peers has been a great learning experience, both through the content I researched and the skills I have gained.

ERIN HURLEY

I'm from New Hampshire, where my love for nature began, leading me to study Environment & Society and Journalism at St. Thomas University. Writing my contribution to this book has been so meaningful as a culmination of my environmental classes. I have learned so much about the climate crisis, climate injustice, and environmental degradation over the years, but the focus of this course and this book was on solutions and the transition away from the societal systems driving these crises. It has been so empowering to learn about what is going on in the world and even more empowering to have, albeit challenging, important and hopeful conversations about how we can move forward in responsible and caring ways in our communities. I would like to pursue a career in environmental journalism to continue advocating for a better world for all.

ARABELLA LEBLANC

I was born and raised in New Brunswick. I am graduating this spring with a Bachelor of Arts in Philosophy and Environment & Society. Studying at STU has been a rewarding experience, characterized by wonderful opportunities, good friends, and extremely dedicated and supportive professors. I'm grateful for the set of circumstances that led me to STU, and I am grateful for the opportunity to have worked on this capstone class project. Looking ahead, I'm passionate about having a positive impact on the environment wherever possible. My goal is to work locally within the environmental movement. As I move forward, I'm excited to contribute to a better world through my career and by instilling eco-conscious values in my future children.

REBECCA MCCANN

I am twenty-one years old. My family is from the small rural community of Wirral-Enniskillen, New Brunswick, and I was born in Fredericton. I am in my fourth year of study at Saint Thomas University, where I am pursuing a double-major in Catholic Studies and Environment and Society. My educational journey has never been about finding employment or achieving a degree. Rather, I came to STU to deepen my understanding of the two things I care about most: my God and His Creation. I am getting married this June and finishing up my degree in the fall, after which I hope to move back home to build a faithful and sustainable life for my family using the understanding I have gained in school.

QUINTINA NORTHRUP

Though I currently reside in Oromocto, New Brunswick, I was born in Halifax, Nova Scotia. My childhood was spent bouncing from military base to military base, following the careers of my two veteran parents across Canada. In 2016, I moved to the Fredericton area to support my husband's military career. Together, we have two sons and four fur children. As a third-year student, I stumbled upon environmental studies, which has reshaped my approach to social issues. In the future, I plan to pursue further education with a focus on climate migrants and refugees. As of May 2024, I will hold a bachelor's degree from St. Thomas University with a double major in Human Rights and Native Studies and a minor in Environment and Society. I aim to further my knowledge and career in human rights through my work at the New Brunswick Child, Youth and Seniors' Advocate, allowing me to provide direct and hands-on assistance to those in need.

CHRIS RODDIS

I am originally from Shiga prefecture, Japan, but I've called Minto, an old mining town in New Brunswick, Canada my home since moving here in 2011 when I was 11 years old. Currently, I am navigating my way through a double major in Native Studies and Environment & Society at St. Thomas University. This academic path has shaped not just my academic pursuits but my worldview. Writing a chapter for this book has been a significant milestone in my journey. It allowed me to delve into the crucial role of collaboration within our society to forge a path toward sustainability. This topic resonates deeply with me, as it echoes the interdisciplinary approach I've come to appreciate in my studies. The chapter reflects my belief in the power of collective action and diverse perspectives coming together to foster environmental sustainability and societal well-being.

INTRODUCTION

by Janice Harvey, PhD
Assistant Professor, Environment and Society

In their final year of study, Environment and Society students take a Capstone Seminar. A capstone in its literal sense is the final stone placed in a structure, typically at the highest point. In a metaphorical sense, it represents the peak of one's achievement. In an academic program, a capstone course allows students to synthesize their learning and bring it to the next level, positioning them to embark on their next learning journey as citizens of their communities and the world.

I have been teaching environmental studies courses at St. Thomas University since 2009. Over this time in dozens of courses, I and hundreds of students have studied the competing perspectives on our relationship with Nature, the power relations that shape environmental politics, and the environmental justice movements that are struggling against pollution, land degradation and dispossession. Regrettably, we have also taken account, year after year, of the ever-worsening state of the Earth systems that support life on this planet.

My question to the 2023-24 Capstone cohort was this: If we understand sustainability as living well within the Earth's ecological boundaries, what does a sustainable society look like? What new vision, values and ethics might form its foundation? How might unjust social systems be deconstructed and reimagined; what practical applications can we find where progress towards new paradigms and new systems is being made?

This volume contains their responses. It represents an impressive intellectual effort in research and writing, but also a substantive emotional investment. Their work is values-driven, subjective, and purposeful. As such, their learning has meaning beyond the classroom. Rather than the standard academic essay which only I would read, they have chosen to write for a wider audience. They are writing to make a difference.

The students' thought processes were inspired by two sources. The first was a 2023 Post Carbon Institute report authored by Richard Heinberg and Asher Miller provocatively titled, 'Welcome to the Great Unraveling: Navigating the Polycrisis of Environmental and Social Breakdown.' The metaphor of unraveling sparked a lively class discussion, and inspired the purpose and title of this volume, *Weaving a New Tapestry: The World We Need*.

The second source of inspiration was Wampanoag Nation member and teacher gkisedtanamoogk, who joined us for one of our weekly gatherings. Systems change when paradigms change. It is difficult to understand the significance of this without being exposed to a paradigm fundamentally different from one's own. gkisedtanamoogk's unique worldview, informed by personal experience, Indigenous histories, the wisdom of Elders, as well as teachings from other traditions, provided a reference point that we returned to throughout the course to check our assumptions and test ideas. You will see evidence of this in the chapters.

The chapters in this collection are organized around a model of systems change that progresses from vision to values to structures to practice. These are not meant as sequential stages of the change process; across the world, all four of these elements are being engaged simultaneously. Even so, the model provides a logical flow that unifies the individual contributions.

Rebecca McCann starts us off with a reflection on unity itself. Her concern is for the divisiveness within the public sphere, and she articulates an idea around which people might coalesce – a vision of our common home and universal values on which to build relationships. Unfortunately, sudden illness cut Rebecca's work short, but she was far enough along in her thinking to provide a jumping off point for the chapters that follow.

Quintina Northrup explores how new values can reshape structures and institutions in her conception of regenerative governance. Drawing on principles of regenerative systems and modeling the Haudenosaunee Confederacy's Great Law of Peace and the Earth Charter, she reimagines relations of power within communities and between humans and non-human life.

Molly Hansen also focuses on rethinking structures, in this case how we understand health. She explores the concept of planetary health, which recognizes the indivisibility of human health and ecological health. We cannot maintain one without also maintaining the other, with implications for body, mind and spirit.

Arabella LeBlanc applies ecological values to a very concrete, material reality of everyday life – the homes we live in. Her concept of ecologically integrated homes is built around the idea that our homes should connect us with the ecosystems that support us rather than separate us from them.

Erin Hurley also goes to ground, literally. Recognizing the unsustainability of industrial food systems, she explores alternative conceptions of food through the work of three inspirational women, Robin Wall Kimmerer, Winona LaDuke and Vandana Shiva. She highlights the influence of Indigenous knowledge on sustainable agriculture movements.

Chris Roddis is firmly rooted in praxis with his focus on civil society as the agent of change. He looks at the practical reality of how change happens on the ground and argues that collaboration among groups and across sectors enables much broader and deeper impact than groups working in isolation.

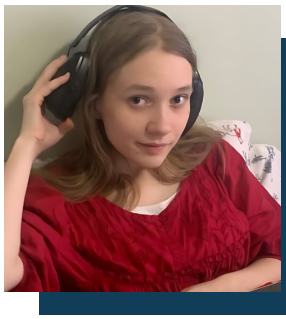
Finally, gkisedtanamoogk returns to offer an epilogue, reflecting on work these students are doing to make sense of their world and to make a difference in it.

For me, this volume is the epitome of a 'capstone' project. Each chapter is an impressive piece of work. Woven together, they represent the collective learning of six young adults embodying 24 accumulated years of university study, not just in Environment and Society, but also in Native Studies, Human Rights, Journalism, Women Studies and Gender Studies, and Philosophy. Their interdisciplinary perspectives shine through their writings.

The breakdown of planetary systems, extreme inequalities in wealth distribution, and increasing militarism and violence – the 'polycrisis' – is the backdrop of their lives. As university graduates, they join the vanguard of knowledgeable, motivated citizens worldwide who are working to make the world a better place. They have proven they have something of value to say, and the voice to say it.

I am honoured to have accompanied these outstanding individuals on some small part of their learning journey. I have learned as much from them as they may have from me.

CHAPTER 1
Confronting the Shared Threat to Humanity: Finding Common Ground on Our Common Home



by Rebecca McCann

INTRODUCTION

One thing made apparent during the 2020 COVID-19 pandemic was the ability of humans to come together to cope with a common crisis. From individual gestures to international responses, humanity could be seen coming together to work towards the common goal of reducing the death and suffering associated with the pandemic. Here in the small province of New Brunswick, Canada, strong preventative measures were implemented early on to reduce future impacts. These changes were not minor – rather, our way of life changed dramatically within a matter of days. Schools closed indefinitely on March 13, 2020, and the provincial government shut down all non-essential governmental services just three days later. By March 26th, the government had closed all non-essential businesses, banned unnecessary travel and instituted self-isolation measures (MacKinnon, 2021). Members of the community were also coming together to combat the disease; for example, more than seven hundred medical students and retired healthcare workers had volunteered to help in hospitals if needed (MacKinnon and Fraser, 2020). Perhaps most shockingly, all of this occurred before a single community transmission had been confirmed.[1]

The environmental crisis is obviously different from the COVID-19 pandemic. For one, pandemic measures were relatively short-lived in comparison to those related to environmental preservation, which could require permanent changes to our ways of life. Even so, having lived through this life-changing experience, I view it as a plain fact that humanity is capable of uniting to work towards a common goal, even when achieving it will require great sacrifices. This is not to dismiss the reality that even with a shared desire to solve a problem, disagreements regarding the best solution are bound to arise. Yet, without a common set of values to guide our debates and decisions, solutions that are both effective and just for all are unlikely to be achieved. This considered, this chapter moves away from the debate surrounding solutions back to a more fundamental question of ethics: what values should be prioritized in the transition to a more sustainable future?

I believe that combatting our shared crises will require a collective understanding that the threat of climate change and environmental degradation is something that we share. Further, because collective action is most effective when participants share a common identity and vision, establishing both of these is a critical step in making change, and one that must

be properly established before solutions can be adequately considered. Because the desire to live with dignity is shared by all of humanity, preserving the dignity of life should be the main concern.

OUR COMMON CRISES

Environmental degradation is problematic for reasons independent of its effects on humanity. This disposition may come from a religious or spiritual place, or simply the belief that our natural world in all of its diversity has inherent value and is a beautiful thing worth preserving. While these beliefs can certainly be helpful in motivating an individual or group to act in an environmentally responsible way, one does not need to recognize the inherent value of nature to prioritize its protection. Rather, our ability to survive and thrive as a species depends on it. As will be outlined in this section, environmental change has contributed to both economic and social crises around the world, impacting human wellbeing. These interconnected issues are what is meant by the phrase "Our Common Crises."

ECONOMIC EFFECTS

Climate change and other forms of environmental degradation have been cited as contributing factors to worsening economic problems worldwide (Charlton, 2023). The economic burden of climate change can take many forms, including damage to infrastructure due to extreme weather and losses of industries and jobs (RTI International, 2024). Further, these impacts are felt most heavily in less developed regions, where people's quality of life is more directly tied to the health of the land (United States Global Leadership Coalition, 2021). Countries in Africa are among the most vulnerable to climate change while also having the least means to deal with its effects, despite contributing little to the problem in comparison to industrialized nations (Walker, 2021). A shrinking of agricultural production is of particular concern, as this results in decreased food security (Ray, 2021). These changes are also expected to worsen preexisting problems in the continent, including poverty and refugee crises (Walker, 2021).

While the disadvantaged may be more likely to feel the effects of environmental change sooner and stronger, one does not need to look to the Global South to see the economic costs. According to the World Economic Forum, China lost over forty-two billion dollars to natural disasters in the first nine months 2023 alone (Charlton, 2023). Things are not much better for the United States, where extreme weather events cost one billion dollars every three weeks in the same year. The effects are also being felt here in Canada. From 2010 to 2019, extreme weather cost this country an average of $100 million per weather event, an over 1000 percent increase from the 1970s (Sawyer et al., 2020). Further, a recent report found that climate change is expected to "severe[ly] damage" the Canadian economy, increasing unemployment, taxes and cost of living (Sawyer et al., 2022).

SOCIAL EFFECTS

These economic concerns are social insofar as increased poverty is known to have impacts on people's health and wellbeing (Office of Disease Prevention and Health Promotion, 2024). There are also additional social concerns, one of which is climate migration: the displacement of peoples due to climate related natural disasters. The increase in climate-related migration is expected to contribute to refugee crises worldwide (United Nations, 2024; Greenfield, 2021). The destruction of certain industries by changing environmental conditions is also a threat to human well-being, such as a diminishing agricultural sector leading to food insecurity and loss of income for farmers (Ray, 2021). For the purposes of this chapter, our "current/shared/common crises" refers to these interconnected problems that humanity is battling globally. Figure 1 provides a visual of the interconnected nature of these issues.

Figure 1. *This diagram demonstrates how our environmental, economic and social crises impact each other, creating what this chapter has labelled "our common crises." Another term for it is the polycrisis.*

OUR COMMON HOME

Understanding that environmental damage and climate change are threatening us all is of great importance. Living in a world that divides us into an infinite number of categories and groups, it can be hard to remember that there are some things we still hold in common out of necessity. Two specific needs that we hold in common are our need for personal and environmental health. As humans, we share the need for personal health insofar areas we require sustenance and habitable living conditions – if these needs are not met, we either suffer or perish. And, because these needs become considerably harder to meet when our

environment is damaged, we also share the need for a healthy environment. In addition to understanding that our current crises are shared, the fact that it is directly linked to our deteriorating environment means it is also important to understand that our home is also shared in common.

LAUDATO SI [ON CARE FOR OUR COMMON HOME]

The importance of acknowledging that we share the same common home is emphasized by Pope Francis in his second encyclical letter, *Laudato Si [On Care for Our Common Home]*. It is unique from the outset insofar as it is addressed to "all men and women of good will," not simply believers (Pope Francis, 2015, p. 1).[2] Emphasizing our shared existence as members of planet Earth, he identifies environmental health as a common good. This principle, he explains, is founded on respect for the individual person and their inalienable needs as a human being. To this point, the need for a healthy environment is one of our most fundamental needs because without it, many of our other needs cannot be met.

Pope Francis identifies a global acknowledgement of our shared circumstances as imperative to combating these crises:

> *The urgent challenge to protect our common home includes a concern to bring the whole human family together to seek a sustainable and integral development, for we know that things can change… Humanity still has the ability to work together in building our common home… We need a conversation which includes everyone, since the environmental challenge we are undergoing, and its human roots, concern and affect us all… We require a new and universal solidarity." (Pope Francis, 2015, p. 3).*

This characterization of a healthy environment as being a common good is what I believe to be absolutely imperative to motivating people to act. It brings the somewhat abstract concept of environmental protection into the much more practical realm of human survival. It could also help sustain motivation during times of frustration and disagreement, understanding that we are still a part of one world family, combatting common crises.

A FUTURE NOBODY WANTS

This is not to diminish the reality that not everyone is impacted by the environmental crisis equally. Marginalized groups are often disproportionately impacted by environmental damage. For example, climate change contributes to gender inequality and violence. The UN estimates that eighty percent of climate migrants are women (Office of The High Commissioner, 2022). Also, the International Organization for Migration states that preexisting gender inequalities contribute to the shocking statistic that women are fourteen times more likely to die in extreme weather events (Castiglioni, 2024).

Other marginalized groups, such as Indigenous peoples, also experience disproportionate effects from climate change (United Nations Department of Economic and Social Affairs: Indigenous Peoples, 2024). Further, while some geographic regions have experienced mild environmental and climate changes, other regions have been entirely uprooted. For the small coastal community of El Bosque, Mexico, environmental degradation has meant the complete destruction of their way of life. What was once a thriving community of over seven hundred residents has been diminished to a mere dozen, as rising sea levels and extreme weather events have made conditions uninhabitable (Williams, 2023). One of the few who has remained is Guadalupe Cobos. She describes the community's dependence on the Gulf of Mexico as being like an abusive partner: "I love you when I'm happy... when I'm angry, I take away everything that I gave you...." (Shailer, 2023). The sea that once provided her people with the sustenance needed to survive is now consuming the entire community, taking back what it once had helped build.

We do not all share the level of turmoil that the residents of El Bosque have had to endure, and to suggest otherwise would be to diminish the extent of their circumstances. Yet, in spite of all of our differences, what we share in common is the need for our lives not to be uprooted or otherwise worsened due to environmental change. This is the common front that I propose we assemble behind, in spite of our different circumstances and ideas on how to improve them. The type and extent of the threat may differ from place to place, but the desire for a safe home is something which we all share.

OUR COMMON VISION

The shared nature of our environmental crises can be thought of like a boat navigating through threatening waters. Though her passengers may be different in countless ways, they hold two things in common: a spot on the boat and an interest in keeping it afloat. More importantly, these common interests are not insignificant. If the passengers are able to recognize that all parties share this interest in staying above water, they will be better able to work together to achieve this goal. A certain level of disagreement regarding how to accomplish this is inevitable, as different people will have different ideas and viewpoints. Still, having a common goal ensures that these efforts are at least pointed towards the same direction. What would happen if passengers no longer held this goal in common (or rather, became more focused on their differences instead)? It would mean shifting the focus away from the shared task at hand (not drowning). What was once us-versus-the-storm becomes us-versus-them, and effort that should be going towards finding a common solution is put towards mutual destruction. As the saying goes, if you shoot your enemies' side of the same boat, everyone drowns.

This concept of different (even opposing) parties working together to achieve a common goal is not new - in war, it is sometimes referred to as establishing a common front. A relatively recent example of this is the alliance of the United States and Soviet Union during the

Second World War. After France surrendered to Germany in June of 1940, President Franklin D. Roosevelt became interested in repairing relations with the USSR to encourage them to co-operate to defeat the Nazis (United States Department of State, n.d.). By 1942, the US and the USSR were working together to achieve this goal. While this brief unification between the US and USSR did not come without difficulties (such as when the US and Britain excluded them from negotiations with Germany in 1945), their cooperation has been cited by the US Government as having been "essential" to defeating Nazi Germany (United States Department of State, n.d.).

The US-USSR alliance is an international example of how opposing parties can unite behind a common front to combat an enemy. Yet, the example of the COVID-19 pandemic demonstrated that people and governments at all levels are capable of uniting to fight for the preservation of the common good. I propose that we view the climate and ecological crises in a similar light: as another common threat to be combatted together. Like the passengers of this boat, the desire to have our needs met and dignity maintained is something that is shared by all people. Further, because our ability to meet these needs is largely contingent on the health of our natural world, we also share the need for its preservation.

According to Joanna Macy and Chris Johnstone (2012), there are three steps to moving towards a better future: (1) achieving a clear view of the current situation, (2) pinpointing what future we would like to see and what values it should be founded on, and (3) taking steps to move in the direction we have identified. Our current situation is made apparent by both environmental statistics and stories like the tragedy of El Bosque. Yet, a collective response requires more than an understanding of the current situation - it also requires a clear understanding of where it is we want to go based on shared values. Because the environmental crisis is a threat to both human flourishing and survival, I believe that our responses should be geared towards ensuring that our individual and communal needs are met.

THE EARTH CHARTER

One document that speaks to our need for shared values is the *Earth Charter*. This document consists of four pillars and sixteen principles to guide meaningful and just change. *Both Laudato Si* and the *Earth Charter* propose values and priorities to be embraced by humanity in all of its diversity. Further, both documents encourage readers to recognize each other as one 'human family' with a 'common destiny' (Pope Francis, 2015, pp. 10 & 30; Earth Charter Commission, 2000, p. 1). However, the Charter takes this idea a step further and identifies specific values that should be prioritized in the transition to a more sustainable future, with the goal of fostering just relations between both humans and the wider community of life. A brief overview of the Charter is included here because it comes very close to the kind of synthesis of environmental health and human wellbeing that I have been trying to speak to here – more so than any source I have viewed over the course of my studies.

Human wellbeing is a clear priority in the Earth Charter, being embedded in all four pillars. The first pillar, 'respect and care for the community of life,' calls humanity to respect, love and care for all life on Earth. It also calls on us to build societies that are just and peaceful for all, including future generations. The second pillar, 'ecological integrity,' outlines humanity's responsibility to treat the Earth with respect and live in such a way as to reduce harms committed against it. Such environmental priorities are also human insofar as our health is directly linked to that of the environment. 'Social and economic justice,' the third pillar, emphasizes the importance of pursing equality in the face of change. It seeks to eradicate poverty, ensure that economic activity does not hinder human development and that it encourages equality between peoples of different backgrounds. Lastly, the pillar 'democracy, nonviolence and peace' speaks to the importance of strengthening democratic and educational institutions. It also reiterates the call to treat all living beings with respect and consideration. Together, these four pillars represent a proposed framework for 'bring[ing] forth a sustainable global society' based on the understanding that 'we are one human family and one Earth with a common destiny' (The Earth Charter Commission, 2000, p. 1).

MOVING FORWARD

During my time as an environmental studies student, I have been able to study in depth how the deteriorating state of our planet has (and will continue to) cause great suffering to humanity and other forms of life. I have also been able to spend much time looking at proposed solutions to these crises. However, there has been one question that I have been unable to shake: if this is a problem that we all share, why do we seem unable to work together to make sustain adequate change? It was this question that brought me to pursue an additional major in Catholic Studies where I could focus on ethical matters in more detail, and it is what has brought me to writing this chapter. Because of both my experiences during the pandemic and other historical examples, I know that humanity is capable of uniting towards a common goal. Still, global change will require a global acknowledgement of our shared circumstance as the inhabitants of a deteriorating planet.

UN Secretary General Antonio Guterres has called the relentless demand of the economic growth machine on the Earth's life support systems as waging war against the Earth (Harvey, 2020). In such times, rather than despair, we need clarity about our responsibilities and our source of hope.

> From the problem of war, our gaze naturally turns to another closely related issue: *the question of solidarity.* The lofty and demanding task of peace, deeply rooted in humanity's vocation to be one family and to recognize itself as such, has one of its foundations in the principle of the universal destination of the earth's resources... it broadens the understanding and management of private property to embrace its indispensable social function, to the advantage of the common good and in particular the good of society's weakest members (Saint Pope John Paul II, 2000).

It is this kind of shared identity and drive to preserve the common good for all that I believe can bring us together to make peace with each other and the planet.

ENDNOTES

[1] To learn more about New Brunswick's unique response to COVID, see Natasha Pei et al. (2020) case study on *New Brunswick's COVID Response to Vulnerable Populations*. For a broader view of Atlantic Canada's handling of the COVID pandemic, see Michaela Cavanagh's (2021) article on *The Atlantic Bubble*.

[2] Historically, Church encyclicals are documents written by the Pope to instruct the faithful on matters of faith. For more information on this topic, see Encyclopedia Brittanica (2022).

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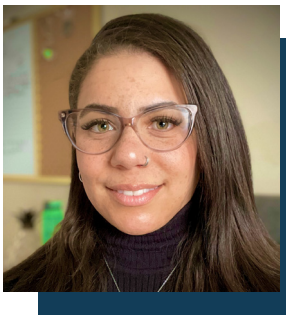
CHAPTER 2
Harmony Unleashed: Shifting Power and Amplifying Voices with Regenerative Governance



by Quintina Northrup

This chapter was written on the traditional unceded and confiscated territory of the Wolastoqiyik, Mi'kmaq and Peskotomuhkati peoples and supported by the love and patience of my family. To my husband Justin and our children, Jaxon and Dylan, from the bottom of my heart, *thank you*.

"Humanity is Nature becoming self-conscious."
-Élisée Reclus (1905)

INTRODUCTION

I would be remiss if I didn't start by saying that I spend most of my time with my head in the clouds, dreaming up means to mend the world around us. What registers as idealist to many is pragmatic to me. With any luck, the seemingly precarious undertaking of an alternative governance model will not only feel practical and exciting, but *familiar* and *necessary* by the end of this chapter. Let's begin with an issue of here and now: domination.

The specter of domination has taken shape in two distinctive forms: *dominium* and *imperium*. In the private realm, dominium emerges as a testament to the unchecked wielding of power by specific individuals, groups, and economic entities. Conversely, imperium casts its imposing shadow across the public sphere, where state authorities exercise unbounded control. Across epochs and civilizations, these manifestations of dominance have been intricately linked with the shackles of slavery — whether it be the bonds of personal servitude to a master or the stifling grip of political oppression (Krause, 2023). Remnants of both dominium and imperium remain in the ways by which human power is exercised over the natural world. These legacies intricately shape the tension between human impact and ecological preservation in our interactions with the natural environment.

No matter from whence we hail, we rely on each other to gather songs, words, stories, tools, and ceremonies. Indeed, by acknowledging these dual legacies and embracing the imperative of overcoming dominance, we pave the way for a more sustainable future that prioritizes harmony and mutual respect between humanity and the natural world. Together, we draw from the wisdom of the past to shape a vision for the future, a worldview that is centered on mutual flourishing (Korten, 2015). Achieving this vision, however, requires more than just policy changes; it necessitates a transformation from deep within, from the heart.

Inevitable shifts across societies, for better or worse, are unfolding amidst the vast panorama of environmental and social transformations, encompassing scale, speed, and depth. Some of these shifts stem from the relentless march of climate change and other biophysical alterations, while others offer the potential for desirable evolution if humanity steers these changes towards restorative and just social-ecological paradigms. At the heart of this discourse lies the concept of sustainability, an oft-espoused aspiration aiming to navigate present existence without jeopardizing the welfare of future generations or the Earth. Yet, humanity's prevailing approaches to sustainability are falling short, only scratching the surface of our ecological predicament. Incremental efficiency improvements, such as 'net-zero' carbon targets, fail to confront the root causes of our crises, including the tenets of capitalism and the entrenched belief that people are separate from rather than a part of nature. Thus arises a pressing need for a fresh introduction to both the earliest conceptions of a sustainable society, and new perspectives on and methodologies of communal governance, to guide more profound societal metamorphosis. The concept of regenerative governance offers a powerful model for reimagining the way we live together in community and with the Earth.

CONTEXTUALIZING REGENERATIVE GOVERNANCE

The Accountability Group (2024) defines regenerative governance as 'a living system perspective grafted onto conventional governance.' In this context, the term regenerative signifies the presence of conditions conducive to life and sustained vitality. This form of governance recognizes the intrinsic connection between humanity, communities, and nature, understanding that they are not separate entities. Within regenerative governance, the concept of our role as guardians of the Earth is contextualized within the framework of the living world, emphasizing the responsibility to safeguard and enhance the vitality of living systems.

Regenerative governance empowers communities by decentralizing decision-making and actively engaging local stakeholders. Unlike traditional top-down decision-making, it fosters bottom-up participation, valuing the knowledge and agency of citizens. This approach allows for diverse voices to be heard, promotes collaboration, and ensures that decisions are focused on local needs. Emphasizing inclusivity, equity, and transparency, participatory planning strengthens community resilience by enabling communities to shape their own development (Accountability Group, 2024). Regenerative governance embodies a capacity for continual renewal, fostering symbiotic relationships between humanity and the broader natural world (Buckton et al. 2023).

The philosophical roots of regenerative systems run deep, drawing from Indigenous, Eastern, and Western traditions. These principles are not just theoretical; they are alive in the practices of many cultures and communities worldwide (Camrass, 2020). While regenerative concepts find resonance across various academic disciplines and grassroots movements, challenges persist. The scattered nature of existing literature and the lack of comprehensive frameworks hinder a cohesive understanding and effective implementation of regenerative systems

(Buckton et al., 2023). Overcoming these hurdles is imperative for catalyzing transitions towards genuinely regenerative governance. Table 1 summarizes the five essential principles requisite for nurturing regenerative dynamics within Earth systems.

Table 1. *Five principles of regenerative governance. From Buckton et al, 2023.*

FIVE PRINCIPLES OF REGENERATIVE GOVERNANCE
An ecological worldview guiding our actions
Mutualistic relationships between people and nature
Presence of high diversity
Agency of both humans and non-humans to foster regeneration
Ongoing reflexivity within the practice of regenerative governance

Applying regenerative principles to governance models for sustainable societies informs both values and practice. It unlocks its utility as a reflective tool and a catalyst for ambitious action, expediting the journey to the future we need. In the following sections, I will explore each of these principles.

HARNESSING AN ECOLOGICAL WORLDVIEW WITHIN GOVERNANCE

At the heart of enabling regenerative systems lies an ecological worldview, an intrinsic understanding that humans are intricately interconnected with all forms of life, constituting a complex web of existence. An ecological worldview involves collaborative efforts to visualize the interconnectedness of internal and external systems, fostering long-term awareness of positive interdependencies. Applied to governance, traditional hierarchies are replaced with self-managing structures within which authority is distributed horizontally. Decisions are made through mutual consent, fostering inclusivity and adaptability, while continuous feedback ensures ongoing refinement. Cooperatives and shared commons management models, for instance in food production, emphasize collaboration and sustainability. However, embodying this perspective requires a profound shift in mindset, acknowledging the intrinsic interconnectedness of all life forms (Buckton et al., 2023).

The ecological worldview dissolves the boundaries between humans and our surrounding environment, nurturing a profound sense of unity with nature. This perspective perceives nature not as an external entity but as an integral part of our own being. Such deep awareness of the interconnectedness of all life forms facilitates a spiritual experience of nature, which in turn can spark introspection, prompting us to contemplate our place in the universe and within the intricate web of life. Through spiritual experiences, we gain insight into our own identity, desires, emotions, and thoughts, ultimately leading to a deeper understanding of our inherent characteristics, values, beliefs, and capabilities (Kunchamboo et al., 2021).

Without embracing this worldview, approaches can easily revert to reductionist and siloed thinking, risking both human and ecological degeneration (Buckton et al. 2023).

MUTUALISM IN COMMUNITY REGENERATIVE GOVERNANCE

The second principle of a regenerative system is mutualism. Mutualism refers to interactions between two or more actors that yield benefits for all (Buckton et al., 2023). Mutualism is manifested both in personal interactions and within broader networks. In the context of ecosystems, the concept extends to 'network mutualism' where positive relationships outweigh negative or neutral ones, fostering a web of beneficial exchanges (Kunchamboo et al., 2021; Buckton et al., 2023). For regenerative governance to thrive, a high level of network mutualism, akin to that observed in healthy natural ecosystems, is essential. Prioritizing mutualism at the societal level entails revaluating our perspectives on organism interactions, moving away from individualism and competition towards mutualistic values such as cooperation and reciprocity (Buckton et al., 2023). Cultivating mutualism involves embracing care for others, including our non-human relations, alongside meeting our own needs.

According to Buckton and colleagues, 'an ideal place to start in inculcating a culture of care is grounding regeneration in local contexts and communities, from which wider responsibility can be developed' (2023, p. 833). Each of us possesses a unique connection to our local environment, often rooted in cultural narratives that honour and celebrate the history, heritage, and nature of our surroundings. For instance, reconnecting with local sources of food, such as through wild food foraging, enhances our bond with nature and promotes stewardship and altruism (Buckton et al, 2023). Education plays a pivotal role in nurturing caring and mutualistic relations by promoting an understanding of how cultural values shape our perception of our relationship with nature. Providing experiential learning in nature and integrating practical regenerative skills into curricula are the building blocks (Armon, 2021; Buckton et al., 2023).

Mutualism between people is also manifest in resource sharing, such as food sharing, which strengthens social networks and community resilience (Davies, 2020; Buckton et al., 2023). Sharing common-pool resources, like crop seeds and agricultural knowledge, not only promotes food diversity and nutritious diets but also challenges corporate control and fosters personal and community agency (Buckton et al., 2023). By encouraging resource sharing and connecting with nature and heritage through experiential learning, we foster mutual respect, help, and cooperation, essential components of regeneratively governed communities.

HIGH DIVERSITY, HIGH SOCIETY

High diversity is the third principle of regenerative systems. This encompasses a wide scope of features, from the physical landscape and conceptual frameworks to ecological and human elements. This variety strengthens the overall health and resilience of the system (Fath, 2021;

Buckton et al., 2023). For instance, diverse ecosystems with high biodiversity can better adapt to environmental stresses, minimizing negative impacts on human and ecological wellbeing. Similarly, a culturally diverse society possesses the capacity to cope with environmental and social challenges while safeguarding knowledge crucial for survival in various environments (Rapport and Maffi, 2011; Buckton et al., 2023).

Creativity flourishes within diverse environments, acting as a key driver of cultural and intellectual growth. This involves encouraging collaboration across different sectors of society and fostering community-level problem-solving that integrates diverse perspectives and knowledge (Hauk, 2014; Buckton et al., 2023). Furthermore, diversity is self-reinforcing. Cultural richness provides fertile ground for greater creative expression. Grounding regenerative systems in local narratives not only promotes overall diversity but also underscores the need for solutions tailored to specific regions, revitalizing the diverse knowledge systems present within each locality (Buckton et al., 2023).

In the journey of understanding vulnerability and resilience, every community's story is unique, shaped by its local context. Sustainable communities must be able to dive deep into the fabric of their socio-economic and environmental landscape. This entails embracing, with intention, diverse perspectives and visions for the community. There are valuable insights to be unleashed by opening the doorways for Indigenous wisdom, traditional knowledge, and community voices. Local elders and knowledge holders can offer direction through the intricate terrain of community needs and aspirations. Actively engaging all community members in the development of local studies and community plans can provide essential glimpses into the community's essence—but genuine understanding goes beyond data collection; it requires meaningful engagement with the community. In the dynamic landscape of regenerative governance, the vision for community resilience should emerge authentically from within, rooted in the essence of the community itself. This vision, shaped by the collective hopes and dreams of its members, holds the promise of a regenerative and thriving future (Dekker, 2020).

AGENCY OF BOTH HUMANS AND NON-HUMANS TO FOSTER REGENERATION

The fourth principle of regenerative systems, agency, is associated with bottom-up organization and emergence within supportive policy environments, rather than relying solely on top-down control driven by markets and governments (Bregman, 2020). For humans, it embodies the freedom to act according to their values, the ability to make choices that align with personal aspirations and access to resources necessary to realize these choices (Wahl, 2023; Buckton et al., 2023). Within communities practicing regenerative governance, having agency empowers people collectively and the broader natural world to engage in regenerative actions. For individuals, agency entails having control over their livelihoods, ensuring they can fulfill our material and immaterial needs while contributing to collective regenerative objectives. This notion extends beyond mere autonomy to encompass freedom from oppression

and the ability to actively participate in shaping one's own future and that of the community. Thus, fostering agency within regenerative systems becomes essential for enabling people to play an active role in creating sustainable, equitable, and thriving environments for ourselves and future generations (Buckton et al., 2023). Agency for non-human beings implies ensuring their capacity to express their innate characteristics and behaviours and to sustain their populations at optimal levels. The essential character of ecosystems emerges through uninterrupted flows of energy through food webs and the cycling of life-giving nutrients, carbon, and water.

While mainstream economic, political, and organizational structures may offer certain forms of empowerment, such as access to the vast knowledge and social connectivity facilitated by the internet, they often fail to meet the empowerment needs essential for regenerative systems. For instance, these structures frequently contribute to the colonization of land and sea, undermining the livelihoods of local and Indigenous communities. Moreover, the enclosure, colonization, privatization, commodification, and technological control of non-human nature inherent in industrial economies severely limit the agency that nature deserves. Such practices stand in stark contrast to the principles of respect, reciprocity, and coexistence vital for fostering regenerative relationships with the environment (Buckton et al., 2023).

The lack of agency experienced by many communities can be attributed to a Hobbesian perspective, which portrays humans as inherently selfish and violent, necessitating top-down control. Similarly, an anthropocentric view of nature as subordinate to humans perpetuates the belief that it needs to be tamed (Buckton et al., 2023). While centralized policymaking remains important, fostering agency requires a shift towards nurturing the cooperative tendencies inherent in human communities when given opportunities to self-organize, as well as trusting in the self-organizing capacity of ecosystems.

Agency, then, embodies principles of both human and non-human justice, encompassing the pursuit of intergenerational equity and the remedy of historical injustices, particularly those stemming from colonialist practices under capitalism. A system cannot be truly regenerative if it fails to address such injustices, such as operating on stolen land, or if it doesn't facilitate resource sovereignty (Buckton et al., 2023). This demands a restructuring of power dynamics, leveling hierarchies among different groups of people and between humans and the ecological community.

COMPULSORY REFLEXIVITY

The final principle of regenerative systems, reflexivity, transcends mere reflection, delving into a deeper examination of the values and assumptions that underlie our actions. It entails a continual re-evaluation of foundational beliefs, accompanied by iterative experimentation, evaluation, learning, and adaptation. While reflexivity involves post hoc reflection, it extends further to encompass collaborative exploration of envisioned futures and an active aware-

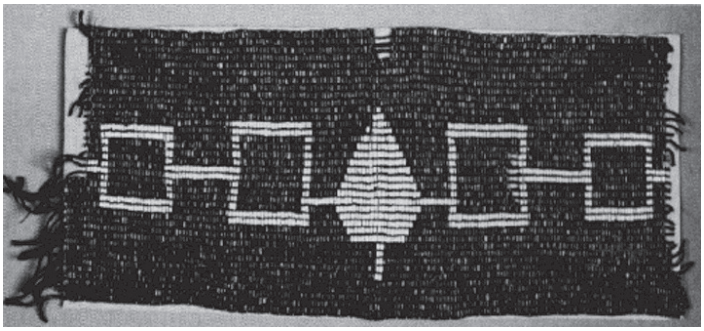
ness of the multifaceted dimensions inherent in participation within regenerative systems, such as ecological worldview, diversity, mutualism, and agency (Camrass, 2023; Buckton et al., 2023). This quality of reflexivity is not solely confined to human learning but also represents a collaborative, co-evolutionary process between humans and non-human nature. For example, in regenerative practice, nature is an indispensable partner, facilitating learning, adaptation, and creativity. In turn, regenerative governance enhances the adaptive and evolutionary capacity of ecosystems. The practice of reflexivity embodies a constructivist approach that emphasizes active engagement and mutual learning (Camrass, 2020; Buckton et al, 2023).

In the dynamic landscape of regenerative systems, both internal and external environments are in a perpetual state of flux, demanding continual reflexive practice to ensure system viability and to sustain focus, ambition, and motivation (Camrass, 2020). This need is especially pronounced in today's context, where profound shifts in values are urgently needed. Reflexivity serves as a cornerstone for embodying the regenerative qualities essential to our actions in the world. By integrating reflexivity into our actions, we enhance the agility and co-evolutionary nature of our systems, fostering adaptable internal-external partnerships that can respond effectively to changing conditions. This approach cultivates a sense of hopeful anticipation for regenerative futures as we actively engage with and contribute to regenerative systems. (Buckton et al., 2023).

KAYANERENKÓ:WA: THE GREAT LAW OF PEACE

What do the principles of regenerative governance look like in practice? The oldest living conceptualization of regenerative governance is Kayanerenkó:wa (gah-nyen-geh-hah-ga). Also known as the Great Law of Peace, Kayanerenkó:wa is the founding constitution of the Haudenosaunee Confederacy. This Confederacy is the oldest living participatory democracy in the world, with roots dating back as far as 500 years (Bedford and Workman, 1997). The story, passed down through centuries of Iroquois oral tradition, is told that among their nations, there was a time of forgetfulness and discord. Greed and jealousy spread like wildfire, leading to constant conflict and sorrow. But amidst this turmoil, a son was born to a Huron woman with a special purpose: to bring a message of peace from the Creator. Crafting a magnificent canoe of white stone, he embarked on a journey eastward, arriving amidst the warring Haudenosaunee. There he became known as the Peacemaker, bravely advocating for peace despite danger and opposition. Slowly but surely his message began to resonate, transforming those who listened. Even in the face of adversity, the Peacemaker and his allies, including the real Hiawatha, persisted in spreading peace. They faced resistance, notably from Tadodaho, a leader consumed by hate. Yet, the power of peace prevailed, eventually reaching even Tadodaho, who was healed and transformed. Gathering leaders from all five Haudenosaunee nations, the Peacemaker united them under the Great Tree of Peace, symbolizing their unity. Together, they cast aside their weapons of war, embraced the Great Law of Peace and formed the Haudenosaunee Confederacy (Six Nations), a beacon of democracy and harmony for all nations (Akwesasne Notes, 1978).

Figure 1. *Hiawatha belt, a symbol which dates back to the original uniting of the five nations of the Haudenosaunee. (Source: Wikimedia Commons).*



This account resonates with the essence of community-driven regenerative governance—forging bonds of harmony, unity, and reverence for all living beings. Table 2 highlights elements of the Great Law that reflect the principles of regenerative governance.

Table 2. *Regenerative principles in the Great Law of Peace.*

UNITY IN DIVERSITY
Article 55: A large bunch of shell strings, in the making of which the Five Nations Confederate Lords have equally contributed, shall symbolize the completeness of the union and certify the pledge of the nations represented by the Confederate Lords of the Mohawk, the Oneida, the Onondaga, the Cayuga and the Seneca, that all are united and formed into one body or union called the Union of the Great Law, which they have established.
PARTICIPATORY DEMOCRACY, ACCOUNTABILITY AND CONSENSUS
Article 52: The Royaneh women, heirs of the Lordship titles, shall, should it be necessary, correct and admonish the holders of their titles. Those only who attend the Council may do this and those who do not shall not object to what has been said nor strive to undo the action.
Article 59: This string of wampum vests the people with the right to correct their erring Lords. In case a part or all the Lords pursue a course not vouched for by the people and heed not the third warning of their women relatives, then the matter shall be taken to the General Council of the women of the Five Nations.
Article 94: The men of every clan of the Five Nations shall have a Council Fire ever burning in readiness for a council of the clan. When it seems necessary for a council to be held to discuss the welfare of the clans, then the men may gather about the fire. This council shall have the same rights as the council of the women.
STEWARDSHIP OF NATURE
Article 73: The soil of the earth from one end of the land to the other is the property of the people who inhabit it. By birthright the Ongwehonweh (Original beings) are the owners of the soil which they own and occupy and none other may hold it. The same law has been held from the oldest times.

Through these excerpts we see themes of unity in diversity, demonstrated by diverse nations uniting under the Great Tree of Peace, as represented by Article 55, underscoring the completeness of union symbolized by a large bunch of shell strings. The transformative leadership committed to peace is further illustrated in Article 52, which empowers Royaneh women, the women heirs of the Confederated Lordship titles with the authority to correct and admonish holders of their titles (Williams, 2018), ensuring accountability and integrity within leadership.

Additionally, the narrative emphasizes healing and reconciliation as essential for societal harmony, aligning with Article 59, which vests the people with the right to correct their leaders, promoting transparency and justice. The participatory democracy reflected in the formation of the Haudenosaunee Confederacy is underscored by Article 94, which grants men of every clan the right to gather around Council Fires, emphasizing inclusive decision-making. Ultimately, the narrative highlights the importance of guardianship of the land, as seen in Article 73, affirming the birthright of Ongwehonweh to steward the land, advocating for governance with reverence for the Earth and its inhabitants (Williams, 2018).

Western governance systems we have all come to accept, which impose the 'tyranny' of the majority, are inherently adversarial. In contrast, a consensus model cultivates an environment where constructive dialogue flourishes, enabling us to navigate complexities with clarity and purpose. This commitment to inclusivity ensures that no perspective is marginalized, and nothing is done behind closed doors, fostering a robust and transparent framework where collaboration and progress thrive.

THE EARTH CHARTER

The Earth Charter (2000), with very different origins and context, was generated through similar processes and articulates very similar values as the Great Law of Peace, providing a contemporary foundation for regenerative governance. In their 1987 report Our Common Future, the World Commission on Environment and Development, popularly known as the Brundtland Commission, advocated for a new charter that would establish global norms to guide the transition toward sustainable development (WCED, 1987). In 1994, Canadian diplomat Maurice Strong and former Soviet Union President Mikhail Gorbachev, through their respective organizations (Earth Council and Green Cross International), spearheaded an initiative, supported by the Dutch Government, to develop an Earth Charter as a civil society endeavor.

An independent Earth Charter Commission comprising sustainability and thought leaders from all regions of the world was established in 1997 to oversee the text development, conduct global consultations, synthesize the outcomes, and ultimately produce a global consensus document.[i] Consultations organized by the Earth Charter Commission took place in many countries between 1995 and 2000. A drafting committee incorporated the feedback from these consultations into a proposed Earth Charter, which was again circulated for comment. After numerous iterations and extensive input from people, groups and institutions worldwide, the Earth Charter Commission reached consensus on the Earth Charter in March 2000 at UNESCO headquarters in Paris. It was formally launched in a special ceremony on June 29 at The Peace Palace in The Hague, Netherlands, at which point the Earth Charter initiative entered a new phase.

Over the ensuing five years, a formal endorsement campaign, the aim of which was to disseminate the Earth Charter widely and encourage its adoption and application across various sectors, garnered support from over 2,000 organizations, including the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the International Union for Conservation of Nature (IUCN). The Earth Charter gained recognition as a global consensus statement on sustainability and became influential in peace negotiations, global standards development, governance processes, educational frameworks, and various other contexts. Over the past two decades, the Earth Charter has been promoted as an educational tool, ethical reference, and guide to responsible action in civil society, business, and government. The Earth Charter encompasses four guiding principles that encapsulate its vision for a sustainable and just world. These principles serve as pillars upon which individuals, communities, and nations can build their actions and policies to achieve a harmonious relationship with each other and the planet (Earth Charter, 2000).

The Earth Charter emphasizes the unity of diverse cultures, reminding us that despite our differences, we share a common destiny as inhabitants of one world. It underscores the sacred trust we hold in protecting the vitality and diversity of Earth's ecosystems, urging us to approach development as a means to foster full human development within a flourishing Earth community (Roerink, 2017). Furthermore, it advocates for a shift in our values and institutions towards a more holistic meaning of development. It emphasizes the importance of psychological and spiritual growth, asserting that true sustainability must provide the conditions necessary for everyone's spiritual evolution by embracing a deeper sense of interconnectedness and compassion for all life fostering a more harmonious and sustainable existence (Roerink, 2017).

Table 3. *Principles of the Earth Charter.*

RESPECT AND CARE FOR THE COMMUNITY OF LIFE
Respect Earth and life in all its diversity; care for the community of life with understanding, compassion, and love; build democratic societies that are just, participatory, sustainable, and peaceful; secure Earth's bounty and beauty for present and future generations.
ECOLOGICAL INTEGRITY
Protect and restore the integrity of Earth's ecological systems, with special concern for biological diversity and the natural processes that sustain life; prevent harm as the best method of environmental protection and, when knowledge is limited, apply a precautionary approach; adopt patterns of production, consumption, and reproduction that safeguard Earth's regenerative capacities, human rights, and community well-being; advance the study of ecological sustainability and promote the open exchange and wide application of the knowledge acquired.
SOCIAL AND ECONOMIC JUSTICE
Eradicate poverty as an ethical, social, and environmental imperative; ensure that economic activities and institutions at all levels promote human development in an equitable and sustainable manner; affirm gender equality and equity as prerequisites to sustainable development and ensure universal access to education, health care, and economic opportunity; uphold the right of all, without discrimination, to a natural and social environment supportive of human dignity, bodily health, and spiritual well-being, with special attention to the rights of Indigenous peoples and minorities.
DEMOCRACY, NONVIOLENCE AND PEACE
Strengthen democratic institutions at all levels, and provide transparency and accountability in governance; inclusive participation in decision making, and access to justice; integrate into formal education and life-long learning the knowledge, values, and skills needed for a sustainable way of life; treat all living beings with respect and consideration; promote a culture of tolerance, nonviolence, and peace. [ii]

HARMONIZING WITH REGENERATIVE GOVERNANCE

Aligning the principles of regenerative governance with both the Great Law of Peace and the Earth Charter highlights a holistic approach to societal organization and environmental stewardship. Within the context of the Great Law of Peace, principles of regenerative governance such as mutual respect, collaboration, and consensus-building is ever present among member nations of the Haudenosaunee Confederacy. This emphasizes a shared commitment to resilience, equity, and sustainability, fostering agency and reflexivity in decision-making processes, prioritizing the preservation of ecological balance and harmony with nature, while honouring the interconnectedness of all life forms and the diverse perspectives and wisdom of each nation.

Similarly, the Earth Charter embodies regenerative governance in the principles of sustainability, equity, and environmental justice. It promotes mutualistic relationships between human societies and the natural world, emphasizing the importance of nurturing biodiversity and ecosystem health. High diversity is celebrated, both in human cultures and in ecological systems and is viewed as essential for resilience and adaptive capacity. The Earth Charter empowers communities to actively participate in shaping their futures while fostering a continuous process of reflection and learning to adapt to changing circumstances.

Kayanerenkó:wa and the Earth Charter provide concrete examples of how the principles of regenerative systems can be translated into foundational values for governance that societies can use to work towards building resilient, equitable, and sustainable communities.

Table 4. *Aligning regenerative governance principles with the Great Law of Peace and the Earth Charter.*

5 PRINCIPLES OF REGENERATIVE GOVERNANCE	REGENERATIVE ARTICLES OF KAYANERENKÓ:WA	5 PRINCIPLES OF THE EARTH CHARTER
Ecological Worldview	Article 73	Ecological integrity
Mutualism	Article 59	Respect and are for the community of life
High Diversity	Article 55	Social and economic justice
Agency	Article 94	Democracy, nonviolence and peace
Reflexivity	Article 52	Global consensus-building in Charter creation

REGENERATIVE GOVERNANCE IN ACTION

My inspiration for this chapter came from the Occupy Movement that formed in the wake of the 2008 global financial collapse to give voice to the 99 percent left behind by the bail-outs that protected the wealth and power of financial elites. Initially addressing socioeconomic disparities and corporate influence, its core tenets of grassroots mobilization, participatory democracy, and environmental equity resonate deeply with regenerative principles (Gamson and Sifry, 2013). The goal of the Occupy Movement was community empowerment. Like regenerative governance, it championed local engagement and acknowledged the invaluable perspectives communities offer in crafting sustainable solutions (Buckton et al., 2023). Environmental sustainability was a focal point for many Occupy activists, underscoring the urgent need for ecological stewardship and policies to mitigate climate change—a sentiment echoed by regenerative approaches that prioritize ecosystem restoration and resilience. The Occupy Movement critiqued traditional economic systems, and advocated for alternative models that prioritize social and environmental well-being over profit maximization (Klein,

2014). With a strong emphasis on social justice, it aligned itself with regenerative principles, recognizing the relationship of social and environmental issues and striving to address systemic inequalities.

Bhutan's Gross National Happiness (GNH) metric of national progress provides yet another example of regenerative governance. This innovative approach, as demonstrated in the annual World Happiness Report, goes beyond conventional economic metrics to prioritize the holistic well-being of its citizens (Ura, 2015). Coined by Bhutan's fourth king, King Jigme Singye Wangchuck, in 1971, the concept of 'gross national happiness' challenges the conventional wisdom that equates happiness solely with material consumption. While industrialized nations often correlate happiness with financial wealth, the limitations of this approach are increasingly recognized. As Heinberg and Miller (2023) argue, economic growth alone cannot ensure overall well-being and it exacerbates ecological degradation. Consequently, there is a growing consensus on the need for more inclusive measures of progress, extending beyond traditional economic indicators like gross domestic product (GDP) (Sithey et al. 2015). Bhutan's GNH model serves as a compelling example of governance that prioritizes the well-being of both its citizens and the environment, aligning closely with the principles of regenerative governance.

Bolivia, Ecuador, Brazil, and Canada have all taken significant steps in acknowledging the rights of nature. In 2008, Ecuador was the first country to recognize the rights of nature in its constitution, granting legal rights to ecosystems to exist, flourish, and evolve (Government of Ecuador, 2008). This recognition was a groundbreaking move toward environmental protection and sustainability. Bolivia's constitution also enshrines protection of the environment and the well-being of its citizens (La Asamblea Legislativa Plurinacional, 2012). Similarly, in Brazil, there have been initiatives at the local level to recognize the rights of nature, particularly in the Amazon region, where Indigenous communities and environmental activists have advocated for legal recognition of the rights of the rainforest and its ecosystems. While these efforts may not be as comprehensive as Ecuador's constitutional recognition, they signify a growing awareness of the importance of protecting nature and the need for legal frameworks to support environmental conservation (Dias et al., 2021).

Here in Canada, Nunavut and the Northwest Territories have embraced Inuit governance models, bridging the gap between Indigenous First Nations and territorial authorities and challenging the traditional Westminster Parliamentary Model. In these territories, shared decision-making processes not only foster inclusivity and respect for diverse perspectives but also fundamentally reshape the governance landscape. Here, the absence of political parties eliminates the traditional 'government-opposition' structure, promoting a collaborative ethos that transcends adversarial politics. Decision-making, guided by consensus rather than majority vote, embodies a spirit of cooperation and collective responsibility, ensuring that governance reflects the needs, values, and aspirations of all local stakeholders. This unique

approach emphasizes unity over division, enabling the creation of more cohesive and resilient communities rooted in shared purpose and mutual respect (Hicks and White, 2000).

Sustainability efforts often rely heavily on technology, data, and specialists. While valuable, these alone can't address the unique needs of communities. Rigid, one-size-fits-all plans imposed from above can even backfire. Regenerative processes take a different approach, drawing on ecological principles to understand the specific energy flows within a specific context. Imagine a complex web of knowledge – deep and layered. Uncovering this knowledge requires collaboration. Local residents and the environment itself become crucial sources of information, democratizing the design process for long-term impact. Regenerative projects go beyond just achieving results; they emphasize how things are done. This challenges traditional thinking and fosters a shift in understanding and ultimately, what we value. The process itself becomes a learning environment, promoting adaptability and interconnectedness. It's a chance to solve problems creatively and move away from business as usual, embracing the unknown (Camrass, 2020).

MOVING FORWARD AS NATURE'S CONSCIOUSNESS

Working towards planetary restoration and societal harmony informed by Kayanerenkó:wa and the Earth Charter makes it possible for societies to prioritize community well-being and environmental guardianship. The Great Law of Peace of the Haudenosaunee Confederacy speaks to interconnection, regeneration, and reverence for the natural world. It speaks of peace, righteousness, and power, intricately intertwined with ecological values. Likewise, the Earth Charter emerges as a global consensus of ethical principles, calling for a world where nature's integrity is honoured and where all beings are embraced with equity and respect, its principles resounding with the cadence of universal human rights and economic justice. Together, these consensus agreements echo a shared melody of regenerative principles offering us a counter-narrative to the dominant governance models.

Most hesitation in fostering the world we need stems from not knowing what will come of the decisions we make today. But we can find comfort in recognizing that these principles are not foreign concepts but rather, reflections of our collective heritage, deeply ingrained in the fabric of our existence. Weaving a new tapestry with the principles of regenerative governance should be approached with an open heart and mind, without hesitation or fear. These principles resonate with the essence of humanity's innate wisdom.
Let us commit from this point forward to a journey of optimism. One bountiful with gratitude and hope. Of love and respect. And most of all, of understanding and connection. I challenge you to open your heart to what's possible and recognize that what we must strive for on an individual level now are functions of our conscience based on values that are intrinsic to each and every one of us.

ENDNOTES

i Members of the Earth Charter were:
Africa and the Middle East: Amadou Toumani Touré, Mali (Co-chair), HRH Princess Basma Bint Talal, Jordan, Mohamed Sahnoun, Algeria,

Asia and the Pacific: A.T. Ariyaratne, Sri Lanka, Kamla Chowdhry, India (Co-chair), Wakako Hironaka, Japan, Pauline Tangiora, New Zealand/Aotearoa, Erna Witoelar, Indonesia

Europe: Mikhail Gorbachev, Russia (Co-chair), Pierre Calame, France, Ruud Lubbers, The Netherlands, Federico Mayor, Spain, Henriette Rasmussen, Greenland, Awraham Soetendorp, The Netherlands

Latin America and the Caribbean: Mercedes Sosa, Argentina, (Co-chair), Leonardo Boff, Brazil, Yolanda Kakabadse, Ecuador, Shridath Ramphal, Guyana
North America: Maurice F. Strong, Canada, (Co-chair), John Hoyt, United States of America, Elizabeth May, Canada, Steven C. Rockefeller, United States of America, Severn Cullis Suzuki, Canada

ii For a comprehensive exploration of the principles outlined in the Earth Charter, the full document includes commentary on each principle, offering detailed elaboration on the underlying assumptions and implications. This commentary provides valuable insights into the guiding principles of the Earth Charter. The complete Earth Charter document, along with its commentary, can be accessed on the official website of the Earth Charter Initiative: https://earthcharter.org/read-the-earth-charter/

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CHAPTER 3
Planetary Health: Connecting Human and Environmental Wellbeing

by Molly Hansen

INTRODUCTION

There is a large maple tree in the front yard of my parents' house. Fifteen or so years ago, my siblings and I named it Steve. Steve was a large part of my relationship with the outdoors while growing up. He provided us with endless hours of play, standing stoically as we climbed his branches as high as he would allow, or providing us a jumping off point for the autumn leaves piled up carefully with child-sized rakes. As the seasons passed, Steve remained constant, no matter how much we changed. His changes were minor and predictable, altering only his leaves to indicate the time of year. Our changes, however, were less small. We stopped going outside to play. We got our first cell phones, laptops, and tablets. We saw playing video games as a more attractive option than playing outside. In short, we lost our relationship with the outdoors, and it only became more strained as time passed. Still, Steve remained.

In my early adulthood, my relationship with the environment remains present but is faltering, leaving me clinging to what I once had as a child. I seek that relationship through countless avenues, but as the haze of academia and late-stage capitalism thickens, the threads tying me to such a relationship are wearing thin. I no longer have a yard, let alone a tree that postures the passing time with a strong reassurance. My time outdoors is largely characterized by walks to the bus stop and rushing indoors to return to my plugged-in world. Only in the summers do I feel as though the relationship is not wholly lost. When I am not bogged down by deadlines and the impending doom of the climate crisis, I am simply a girl who has time to spend in nature. That is when I feel the most connected to the world around me, that is when I can think clearly. I worry that the fraction of the year that I spend in nature is all I will get as I enter my adult life, but I know that I am not alone in my concerns. I, like many others, yearn for connection to the natural world and to community.

This chapter concerns the pursuit of that very relationship. The idea of prioritizing and restructuring systems to foster well-being is central to this book, but this chapter delves specifically into how these restructured systems must work to promote both human and ecological well-being. The well-being of all, including Nature and its systems, are interconnected. Just as we take from the Earth to serve our own well-being, we must give back. This reciprocity connects us to the Earth as a part of its systems rather than separate beings. Recognizing the

importance of a reciprocal relationship with the Earth creates the opportunity to shift cultural values and promote a healthier planet for all.

PLANETARY HEALTH

In recent years, the concept of planetary health has gained traction as a framework to counteract the ever-mutating global crises we are facing (Dunk & Anderson, 2020). With an emphasis on how society's disruption of natural systems affects human health, planetary health aims to redefine our core values and the very idea of health. This concept and its recognition of the interaction between systems and the outcomes they produce frame my research and this chapter. Ecosystems provide us with countless services needed to sustain life, including provisioning, regulating, cultural, and habitat services (Whitmee et al., 2015). The degradation of natural systems threatens the provision of these services which are critical to our survival. Historically, human advancement has been made at the expense of ecological health, but the concept of planetary health recognizes that the continuation of these trends is no longer an option. Planetary health aims to shift cultural values in order to achieve human prosperity without damaging the systems that sustain our lives.

Health cannot simply be defined as the absence of illness; it runs far deeper than that. Defining health in a way that values individual and community well-being inherently moves us away from a growth-oriented society and towards a society that values and cares about the natural world rather than seeing it as something to conquer. This goes beyond individual efforts to reduce our ecological footprints, though this is certainly a vital step in the process. In order to achieve true planetary health, that is the health of the Earth and all living beings, we must reorient our culture and economy to build resilience and health, collectively valuing the Earth as provider of life rather than a storehouse of resources and dumping ground for waste and pollution.

Systems thinking is critical to this approach, as the interconnectedness of all aspects of life ensures that fragmented responses to a given concern will never solve the underlying problem. This interconnectedness is the core of planetary health. Climate change has been identified as the single biggest threat to public health (Romanello et al., 2023). As extreme weather conditions such as heat waves, droughts, and wildfires increase, public health faces bigger and bigger threats. Solving these public health concerns requires attention to the source of the problem. Providing treatment to the affected individuals, while necessary, does not solve the issue at the root. The drastic increase in wildfires in recent years, for example, is a byproduct of the climate crisis and must be addressed as such. Warmer and drier conditions caused by our current energy systems exacerbate these fires and threaten the cardiorespiratory health of those in proximity (Wehner et al., 2017; Sastry, 2002). As unconnected as it may seem, creating conditions that are less hospitable for wildfires, and thus healthier for people, requires a transition away from the fossil fuel-based energy systems that power our society. Through this example, the complexities and nuances of planetary health become clear.

As we work to foster healthy people, our relationship with nature strengthens. Our health is encompassed by three dimensions: the body, mind, and soul. As environmental degradation worsens and our relationship with the natural world weakens, the health of our bodies, minds, and souls worsens. The body, of course, has the most tangible connection to the state of the Earth— environmental disruption can make people sick. Yet the effect that the state of the environment can have on the human mind is jarring. For instance, the phenomenon of eco-anxiety is leaving young people feeling hopeless, overwhelmed, and paralyzed (Hickman et al., 2021). While a deeper relationship with the environment is key to improved mental health, with studies showing the benefits to be reaped from spending time outdoors and connecting with the natural world, this issue also points to a deeper problem. Our world is structured around a never-ending stream of products to buy and industries to expand, creating a culture where we are always searching for the next big thing. This leaves people feeling like they never have enough, enabling growing production and consumption (Fergie, 2019). This is where the mind meets the soul, as we must connect with our spirit to feel truly grateful and satisfied. Building a spiritual relationship with the Earth is the foundation to the cultural value shift needed to create positive ecological change.

BODY: PUBLIC HEALTH AND ENVIRONMENTAL THREATS

The relationship between people and the environment is deeply reciprocal. When environmental well-being weakens, so does public health. Modern society poses several public health threats arising from the near universal pursuit of economic growth. Here I consider four health threats directly tied to environmental conditions produced by industrial expansion and urbanization.

Climate Change

By far, the biggest ecological threat to public health is climate change (Romanello et al., 2023). As climate change intensifies, so do the associated health concerns. Water and vector-borne diseases are adapting to the changing climate and threatening public health. Extreme weather such as heatwaves, droughts, and storms pose deadly risks, as do the wildfires they exacerbate. As climate change intensifies, the associated health risks will intensify as well.

Waterborne illnesses have been an issue prior to the recognition of the climate crisis, but in a changing climate, the spread, severity, and frequency of these illnesses worsen. Waterborne diarrheal pathogens are the second leading cause of death in children under five (Levy et al., 2018). Climate change is linked to increases in diarrheal disease rates, associated largely with flooding, droughts, heavy rainfall, and higher ambient temperatures. As a warming world increases the temperatures of water bodies, disease-carrying pathogens adapt and strengthen, as well as travel and spread through heavy rainfall. Hotter summers and milder winters are providing disease-carrying vectors a more hospitable environment, allowing them to thrive and infect humans easier. Other vector-borne diseases such as West Nile virus,

Zika virus, dengue, and malaria are transmitted through biting insects such as ticks and mosquitoes, which thrive in warmer conditions (Romanello et al., 2023). As these vectors are able to survive longer and spread further, the associated health risks intensify (Klobucista & Mainland, 2022).

In addition to allowing disease-carrying pathogens to adapt and intensify, rising temperatures directly threaten physical well-being. Heat waves expose many people to temperatures that interfere with the body's natural ability to regulate its temperature, causing heat exhaustion, heatstroke, and organ failure, which can lead to death (National Institute of Environmental Health Services, 2023). These heat-caused illnesses are exacerbated by existing health conditions to create a more severe health threat. The heat dome that settled over British Columbia in 2021 was responsible for 619 deaths (Beugin et al, 2023). Globally, heat waves are associated with five million deaths per year (Zhao et al, 2021).

Heat waves are not the only extreme weather conditions that directly and indirectly affect public health. Droughts create conditions that limit food production and water access, cause stagnation in reduced river streams which increase pollutants and exposure to waterborne illnesses and create dry conditions that allow wildfires to ignite and spread more easily (Centers for Disease Control and Prevention, n.d.). Wildfires cause myriad health issues, largely affecting the cardiorespiratory system. While the immediate danger of these fires poses obvious health risks, the smoke they cause will has long-lasting health effects. Smoke from wildfires contains soot particles which cause ailments that range from short-term respiratory infections and asthma to death by pulmonary blockages (Sastry, 2002). We do not yet know the extent of this damage, as it is still revealing itself, but in 2023 Canada was home to 14 of the top 15 North American cities with the poorest air quality due to wildfire smoke (Omstead, 2024).

Air Pollution

Other sources of air pollution are also deadly. In 2019, the World Health Organization reported that 99 percent of the world's population is living in conditions below WHO guidelines. Outdoor air pollution consisting of fine particulate matter such as soot, dust, micro and nanoplastics, and aerosols such as sulphur dioxide and nitrous oxides get drawn deep into the lungs and cause ailments such as strokes, heart disease, and even some cancers. Each year, as many as seven million premature deaths occur due to air pollution (World Health Organization, 2019). Sources of particulate pollution include factories and other industrial operations, coal and oil-fired power plants, vehicle exhaust, furnaces and other burners, fires, and wear-down of materials such as tires. Even though many countries have laws to control air pollution, this is still one of the biggest concerns when it comes to environmental impacts on human health, and though policies have been put in place to regulate and reduce these risks, the root of the problem lies in the rampant industrialization that degrades air quality.

In Canada, an estimated 15,300 premature deaths are caused by poor air quality each year (Health Canada, 2021). The largest sources of Canadian pollutant emissions come from home firewood burning (38.38 percent), ores and mineral industry (16.87 percent), and transportation and mobile equipment (16.47 percent) (CCME, n.d.). As many as one in 50 Canadian homes burn wood, including 88 percent of homes outside of big cities (Statistics Canada, 2023). Burning firewood is highly polluting, releasing particulate matter, carbon monoxide, volatile organic compounds, and other toxic compounds. Breathing in these compounds can irritate the eyes, nose, and throat, as well as cause or worsen respiratory issues such as asthma (Health Canada, n.d.). In urban areas, the greatest source of pollution is vehicles.

We inhale dangerous chemicals every day, and at every turn, there is a polluter. Whether it be from something as innocent as heating your home or driving to work, or something more obviously destructive such as mining, air pollution is an unavoidable byproduct of modern society. In order to solve the issue at its root to protect the health of the population and the planet, there must be a transition to renewable energy to greatly reduce air pollution.

Environmental Toxins

Through industrialization and mass production of consumer products, toxic chemicals and heavy metals have contaminated our environment so heavily that they have become unavoidable and live within us. Synthetic chemicals are entering our bodies through inhalation of fine particulate matter, consumption of contaminated food and water, and absorption through the skin. We are exposed to both persistent and non-persistent chemicals. Persistent "forever chemicals" such as DDT and PCBs get stored in body fat and will remain for years, even if only exposed once. Water-soluble non-persistent chemicals, such as phthalates and phenols, degrade and leave the body quickly, yet they still have long-lasting effects due to continual exposure through countless consumer products (Swan, 2020). Toxic heavy metals, such as mercury, cadmium and arsenic are mobilized through industrial and mining operations, urban development, and unsustainable agricultural practices, causing cardiovascular impacts, organ toxicity and failure, various cancers, and neurological problems (Mitra et al., 2022).

A class of chemicals called PFAS (per- and polyfluroalkyl substances) are now widespread throughout the environment. Called 'forever chemicals' because of their persistence, they are found in textiles including clothing, non-stick cookware, drugs, cosmetics, food packaging, electronics and fire-fighting foams. Virtually everyone now has PFAS chemicals in their bodies. Health effects of PFAS chemicals include damage to immune and nervous systems, reproductive system, and the liver, kidney, and thyroid (Gov't of Canada, 2023, May 19).
One of the health concerns that most threatens the resilience of the human race is the effects that some environmental toxins have on reproductive health and fertility rates. In addition to low sperm counts, declining reproductive health includes the viability of the pregnancy and the health of the baby, such as increased miscarriages and birth defects. A class of chemicals

called phthalates is found in a vast number of consumer products including plastics and self-care products, making it near impossible to avoid them. Effects from phthalates on male reproductive health include reduced testosterone levels, testicular function, and semen quality. In females, phthalate exposure causes ovarian issues such as anovulation and primary ovarian insufficiency, as well as earlier menopause (Swan, 2020). Heavy metals like mercury, cadmium, and lead are also contributing to the overall decline in fertility rates through endocrine disruption and higher risk of preterm delivery and miscarriage (Pizzorno, 2018).

Modern society makes it so that even our small, seemingly benign choices, such as living in an urban area or buying a certain shampoo, will expose us to toxic chemicals and damage our health. The unavoidability of these toxins and the effects that they have on our health reveals the interconnected nature of the problem.

Policy Responses

In the 1970s, as the environmental movement became a political force in Western countries, governments passed several new laws to control industrial and urban pollution, including clean air and clean water acts. These made measurable improvements in local air and water quality. Rapid economic growth in the ensuing decades, however, has outstripped the capacity of end-of-the-pipe pollution controls as environmental threats went global. Climate change, widespread dispersal of plastics and other consumer products, and the expansion of industrial agriculture are not amenable to this type of environmental regulation.

A fundamental tenet of public health and planetary health frameworks is prevention. Preventative approaches that go to the root of the problem are the policy responses that align with a planetary health approach. Improving air quality through policies that avoid emissions altogether is critical to both the well-being of the population and the environment. For example, 70 percent of air pollution in Bogota, Columbia, is due to vehicle emissions. The city is taking strides to electrify public transport, encourage cycling and walking, and reduce diesel emissions (World Economic Forum, 2022). Another example of a preventative approach is to ban certain classes of toxic chemicals. In Canada, the Prohibition of Certain Toxic Substances Regulations under the Canadian Environmental Protection Act (CEPA) regulates the use of 26 toxic substances (including groups of substances (Canada Gazette, n.d.). This is a drop in the bucket, however, given that as many as 350,000 chemicals and chemical mixtures are in commercial use globally (Pelley, 2020). Some "forever chemicals" such as DDT and PCBs are banned under CEPA, but others are simply regulated, which may slow but not prevent exposure to dangerous substances. Global implementation of bans is important to stop the problem at its source, rather than attempting to retroactively solve a problem that could have been avoided. In fact, most chemicals are only proven to be dangerous to health once they are in widespread use over time.

As we aim to achieve planetary health and fight against complete ecological degradation, economic interest seems to always prevail above the health needs of people and planet. There is hope to be found, however, in organizations like the Canadian Association of Physicians for the Environment (CAPE). CAPE has seen successes advocating for environmental justice since their founding in 1993, including advocacy campaigns and programs that aim to limit toxic exposures, banning the advertising of fossil fuels, and reform to the Canadian Environmental Protection Act (CEPA) (Canadian Association of Physicians for the Environment, 2022). In June of 2023, CEPA was amended for the first time since 1999 to include the right to a healthy environment to all Canadians (Bill S-5, 2023). CAPE was highly involved in this process, testifying, meeting with officials, and lobbying for these important changes (Canadian Association of Physicians for the Environment, 2024). The legal right to a healthy environment is critical to achieving true planetary health, as it is the foundation for all subsequent environmental policies. By enshrining the right to a healthy environment, planetary health interests are rightfully given more weight than economic interests.

MIND: MENTAL HEALTH AND ENVIRONMENTAL THREATS

Public health, which includes mental health, is weakening in response to the ever-growing climate crisis and causing trends of unhappiness in people. As young people begin grasping the severity of the ecological pollution and climate crises that we are being handed, trends of poor mental health are rising. Eco-anxiety, while not the only issue where environmental and mental health concerns intersect, is certainly the term that has gained the most traction in recent years. This phenomenon includes feelings of helplessness and betrayal that many feel about the entirely avoidable situation. Loneliness and dissatisfaction are also becoming commonplace in modern society (Chang & Durante, 2023).

Eco-Anxiety

Eco-anxiety, a chronic fear of environmental doom, is being experienced by more and more people since the term's coining in 2011 by Australian environmental philosopher Glenn Albrecht (Clayton et al., 2017). Many are feeling hopeless when it comes to the climate crisis. In my own experiences, eco-anxiety has left me feeling paralyzed by the sheer scale of destruction. Even if I were to change every aspect of my lifestyle to live sustainably, it would only be a drop in the bucket. It can feel overwhelming to watch as governments approve pipelines and allow industries to pollute, while the rest of us worry about single-use plastics. This phenomenon is becoming more and more widespread as ecological conditions worsen, with 75 percent of Canadians experiencing climate anxiety (Unite for Change, 2023).

Other so-called eco-emotions are triggered by climate change. Research shows that the mind as well as the body adapt to their climate system and are sensitive to any changes that may occur. Climate change threatens the stability of those systems, and in turn affects the mind and body's ability to self-regulate. Meteoropathy, a syndrome in which weather changes create new or worsen existing symptoms, shows the links between our environment

and our mental health. Meteoropathic patients experience a range of symptoms when the weather changes such as physical weakness, increased blood pressure, and joint pain, but the symptoms are not just physical. Interaction with the Earth's electromagnetic field during changes in barometric pressure has been observed to decrease endorphins and increases adrenocorticotropic (ACTH) hormones[1] (Hoxha & Zappacosta, 2023). The stress that comes from meteoropathic interactions with the weather can manifest itself through anxiety, depression, and irritability, as well as psychophysical symptoms such as headaches, hypertension, fatigue, and physical weakness (Cianconi et al., 2023).

Improving Mental Health

Lifestyles that are disconnected from the ecosystems that support us have us trapped in these feelings. Modern society has disconnected us further from Nature than ever before. We spend most of our time indoors looking at screens, rather than interacting with the natural world. We can make small changes in our lives that will not make a large dent in the grand scheme of things but will have tangible effects and improvements on the individual level. For instance, we can consume less, reduce the waste we produce, and our dependence on fossil fuels. The greatest effect on mental health, however, may come through creating a stronger connection to Nature. There have been many studies showing the positive association between mental health and "earthing". Earthing is a process by which people make direct contact with the soil. This can be done through walking barefoot, sitting outside on the ground, or any other way of channeling the energy from the ground directly to the human body to interact with the Earth's electromagnetic fields. Studies on earthing show that depression, anxiety, and irritability rates can be reduced with the practice, due to the regulatory effects that earthing has on cortisol secretion (Chevalier et al., 2012). There has also been reported improvements in sleep, chronic pain, blood pressure, and autoimmune conditions (Ober et al., 2010).

Many doctors are now prescribing time in Nature to improve mental health. The healing properties that Nature provides are impressive, being shown to improve mood, reduce risk of psychiatric disorders, and even increase empathy (Weir, 2020). PaRx, an initiative from the BC Parks Foundation, is an excellent example of nature prescriptions and the good they bring. PaRx cites a study arguing that spending two hours a week in nature significantly increases health and well-being (White et al., 2019). Dr. Melissa Lim, director of PaRx and member of CAPE, believes that nature is the fourth pillar of health, alongside sleep, nutrition, and exercise. Her journey to issuing nature prescriptions was highly personal, going from working as a doctor in rural BC to downtown Toronto. She found that though her work in the city was objectively less stressful, she felt more stressed than before, and connected it to the recent lack of nature in her life. This led her down a research path and ultimately to the creation of PaRx (Vaes, 2024). Her work emphasizes the mental health benefits to be reaped from time spent in Nature.

Policy Responses

While efforts to improve mental health typically occur on an individual level, some policy responses by various levels of government can create a culture that encourages a strengthened relationship with the environment. Creating opportunities for the public to engage meaningfully with the environment will allow for more people to better their mental health through time spent outdoors. A study on the links between mental health and walkability in Hankow, China demonstrates that increased walkability is positively associated with mental health as it fosters a sense of community, social cohesion, mitigation of environmental stressors, and walking behaviours (Li et al., 2021). Alongside increased time spent outdoors, increased walkability is also beneficial from a planetary health perspective as it aims to reduce the number of cars on the road, which will improve air quality and reduce emissions.

Another way of improving mental health through connection with Nature involves learning outdoors. Forest schooling is a type of childhood education that brings children into nature for learning experiences. Forest schools are beneficial to children by increasing their confidence, and well as their knowledge and understanding of Nature, including an increased respect for the environment (O'Brien & Murray, 2006). Integrating outdoor learning into public school curricula would allow children to spend more time in nature while simultaneously preparing them to interact meaningfully with the environment as adults. In Sooke, British Columbia, Sangster Elementary School and Saseenos Elementary School offer grant-funded Nature Kindergarten programs (Sooke Schools 62, n.d; Bailie, 2014). There are currently no policies in place to fund forest school teachings in public school curriculums, despite the proven benefits of increased ecological literacy and resilience to face the struggles of the climate crisis as adults.

SOUL: POSITIONING AND RECIPROCITY

Though planetary health is intimately connected to human physical and mental health, we must also acknowledge the spiritual connection to the Earth. This will look different for each individual, but at the heart of spiritual wellbeing is recognizing our position on the planet. The Earth is the source of all life, including our own. We can draw from Indigenous worldviews to inspire values of gratitude and reciprocity, caring and compassion, as well as ways of using the land respectfully. The driving forces of environmental degradation are based in values that are incompatible with planetary health. This section demonstrates the cultural context that has created a disconnect with Nature, the importance of connecting with the natural world in a respectful manner, creating a strong spiritual connection between the self and the natural world, and engaging meaningfully with community, all of which contribute to the overall well-being of people and the planet.

Cultural Context

With the post-war rise of consumerism as the driver of economic growth, Western cultural values shifted from community-centric to individualistic mindsets. Interdependent community relationships were replaced by manufactured goods that introduced unimagined convenience into people's increasingly separate lives. This was framed as a good thing, one that simplified our lives, but it fostered an environment where people became overwhelmed with choice, and status became associated with having more. Consumer society has convinced people that thriving means having all our arbitrary desires met at any given time. This culture leaves people always wanting more, ultimately creating a feeling of dissatisfaction and loneliness. As much as the relationship between people and the environment is reciprocal, so is the relationship between consumerism and unhappiness. The human mind was never meant to live in the society we have created, and it is causing measurable damage to our collective well-being. If there is always a new product to improve lives, then people will always feel as though their lives can be improved upon (Chang & Durante, 2022).

Restoring and maintaining mental health depends on nurturing values of sufficiency – that at some point we have enough. This is what Aristotle meant with his idea of virtue as a "golden mean," a balance between deficiency and excess (Aristotle, 1926). Defined in this way, health means to have our needs met while avoiding gluttonous lives. This balance can feel impossible to achieve in our consumer society. Achieving this balance requires a shift in values on the individual level as well as the collective. We must foster a culture of sufficiency, in which citizens do not feel the need to consume at the level we do now. It is far easier to engage in consumerism than it is to reject it. People are likely to follow the path of least resistance, and that path is currently leading us to excess and instability. We must reject consumerism and embrace a lifestyle that aligns more with values gratitude and reciprocity to repair our spiritual relationship with Nature.

Indigenous Worldviews

Indigenous worldviews can guide us when attempting to repair our spiritual relationship with Nature. Indigenous ethics are grounded in respect and gratitude for the Earth. There is a recognition that we all come from the Earth and that we must return the gifts she gives us. In the epilogue of Braiding Sweetgrass, Robin Wall Kimmerer states. "A gift is different than something you buy, possessed of meaning outside its material boundaries. You never dishonour the gift. A gift asks something of you. To take care of it." (Kimmerer, 2013, p. 382). Embracing the gift of nature means treating it with respect and to give back. We must be grateful for the gifts that Nature gives us each day and return the love in our daily actions. Recognizing the sanctity of the spiritual relationship we have with the Earth allows us to fully understand the weight of the gift we are receiving.

The term ‘waiora’ comes from the Māori people of New Zealand. Waiora embodies the relationship between the health of the self and the Earth. One of the defining characteristics of waiora is the recognition of Mother Earth as a living being (Tu’itahi et al., 2021). Viewing Mother Earth as a living being encourages a more compassion-driven approach to interacting with nature. We can use her gifts, only in a way that leaves her with her dignity. The Māori term, ‘hauora’, represents the wellness of life (Severinson & Reweti, 2020). Hauora encompasses mental and physical well-being, as well as spirituality, social connections, community, and cultural identity. We cannot achieve waiora without first strengthening hauora. Our time spent engaging with the world around us in a meaningful way can greatly improve quality of life. Themes of community and collectivism are central to these concepts. Individualism contributes to poor mental health. Hauora and its emphasis on community and connection are key to the achievement of spiritual and planetary health. To be healthy in body, mind, and soul, we must connect with each other and connect with the Earth.

Positioning Ourselves

Western society has been built on the idea that humans are the pinnacle of the great chain of being, that the Earth exists for our good alone, and that progress is measured by human technological domination of nature. Positioning ourselves as superior to the rest of the Earth’s biodiversity implies a certain moral justification of human over-exploitation of nature. Yet, humans exist alongside an incomprehensibly vast network of life that does not exist to serve us. Creation myths aside, even at a scientific level, how homo sapiens are seen within this network can be misleading. The widely accepted five kingdom classification of species model (Figure 1) has animals, including us, as their own kingdom. The three-domain model (Figure 2), first put forth in 1977, categorizes biodiversity differently, showing that single-celled bacteria and archea make up two thirds of all life, while eukaryotes, including animals and plants, make up the rest (Bernstein, 2014). When establishing a spiritual connection to Nature, this positionality is key to contextualizing our place in the web of life. We exist as a part of a system, rather than our own ruling kingdom. Wampanoag teacher gkisedtanamoogk invokes cosmocentrism as the recognition that the needs of all beings of Creation are equal (2023). We are in relationship with all Nature and we must act with respect towards all our relations. By positioning ourselves in this way, we can strengthen our spiritual relationship with the Earth.

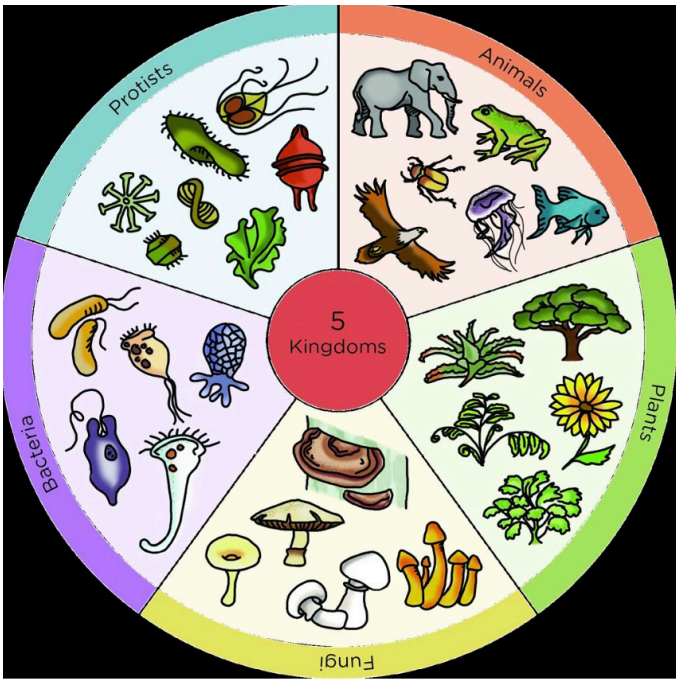

Figure 1: *The five domain model (Siyavula Education)*

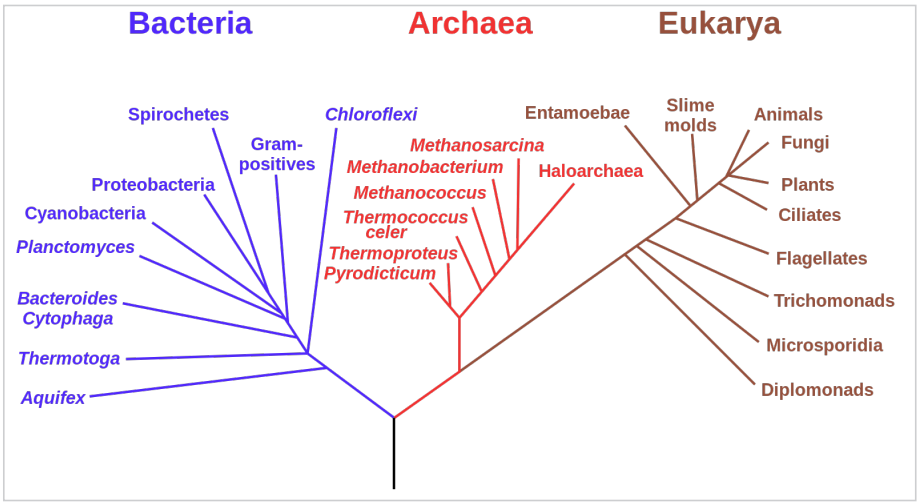

Figure 2: *The three domain phylogenic tree (NASA Astrobiology)*

MOVING FORWARD

Steve is still standing tall today. He watches over my parents as they learn to live in an empty nest. He will probably outlive me, keeping a part of me alive forever. The next family that lives in my parents' house will receive Steve's gift. He will stand tall for them as he did for us. He will provide countless hours of play. Maybe they will name him something different, maybe they name him nothing at all. His name is not as important as the gift he brings. I hope, by then, that things will be different, that we will have created a world that encourages us to value a strong relationship with the environment, and to stop treating it as an infinite resource pool and dumping ground for our wastes. I know that it is possible, and I find comfort in the efforts of many people to reject ecological degradation and to shift cultural values towards collective planetary health.

Through examining overlapping and interconnected ecological crises and their effects on physical, mental and spiritual well-being, we can begin to reposition ourselves for the next steps. Business as usual is not an option. The true root of the problems lies in an economic system that pursues growth at all costs on a finite Earth. We are currently living through the consequences of infinite economic growth and consumption. If things continue as they are, the situation will only worsen. Our responses must be preventative and radical, tackling the source of the problems. We need to break the addiction to growth and transition to an economic system that operates within the Earth's boundaries.

Alongside systems change, we must restore our relationship with the natural world if we are to achieve planetary health. The concept seems so far away because consumer capitalism works at all angles to ensure that people feel unfulfilled. Remedying this involves personal action and individual and communal efforts to connect with Nature. Alongside this relationship, we must understand the intricacies and nuances of social systems that have brought us into this state. The negative health impacts described in this chapter cannot be looked at as mere illness. There are so many factors working together to create these issues, which, when considering the future and the reweaving of our world's tapestry, must be considered alongside each other to solve the issues at their root, rather than applying acute fixes to seemingly isolated problems. To conclude, planetary health – the wellbeing of people and planet – depends on a relationship of gratitude and reciprocity between the self and Nature. The more people who choose to begin this journey, the easier the societal paradigm shift will be. Be radical and revolutionary— engage with Nature meaningfully! The improvements that will be made on your mind, body, and soul will be wonderful, and Nature will thank you for your kindness.

END NOTES

1. Adrenocorticotropic hormones (ACTH) are released upon stress and trigger cortisol secretion. Elevated ACTH and cortisol levels can lead to Cushing disease (Endocrine Society, 2022).

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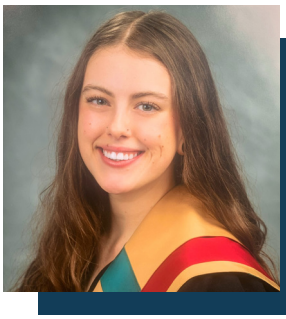
CHAPTER 4
Beyond Four Walls: Rethinking the Home for a Sustainable Future

by Arabella LeBlanc



INTRODUCTION

Our homes play a significant role in our everyday lives and our aspirations for the future. When I was young, I spent a lot of time in the woods near my house, so much so that I dreamed of living in a tree house. I remember the disappointment my neighbourhood friends and I felt when the sun started to set on a summer evening because that meant it was time to go back inside the house. These are experiences I suspect many nature enthusiasts share from their own childhoods. Later, when I got my first apartment, it quickly became adorned with tropical plants, reflecting my need to bring nature into my downtown living space. Now my dream is to raise a family in a sustainable rural Earthship.[1] I am not the only one; many of us with a connection to nature share the experience of feeling profoundly uncomfortable with the artificial and ecologically disconnected homes in which we live. I believe these shared experiences indicate something significant about the relationship between humans, nature, and the home as a mediator.

The housing dimension of society represents an opportunity for impactful sustainable transformation. I believe this to be the case for two main reasons. First, as they are currently understood, the home and the yard are sterile environments that are physically and psychologically separate from the outside. Housing seems not only to reflect our detachment from the natural world but also acts as a reinforcer of the detachment. A particular image comes to mind when I think of the typical North American home: A plastic-sided house surrounded by some non-native plants and a uniform grass lawn. The modern home resembles nothing found in nature. A study of 1,000 urban residents demonstrated that nature contact and connection are positively associated with psychological well-being, pro-environmental behaviour, and conservation volunteering (Liu, et al, 2022). Therefore, striving toward increased nature connection through home design could potentially increase individual well-being, pro-environmental behaviour, and conservation volunteering within communities. Second, instead of existing in harmony with the surrounding environment, housing contributes greatly to its destruction. For instance, when accounting for construction, heating, cooling, lighting, and appliances, buildings produce 18 percent of Canada's greenhouse gas emissions. With approximately 15 million residential buildings compared to 480 thousand commercial buildings, houses contribute the lion's share of these climate-changing pollutants (Government of Canada, 2021, February 12). Making homes more sustainable would make a substantial contribution to meeting national climate change goals.

RETHINKING OUR UNDERSTANDING OF THE HOME

Advocating for sustainable communities is often motivated by not only a profound reverence for the interconnectedness of Earth systems but also the need to live good lives within the bounds of these systems. An alternative understanding of the home would recognize that our relationship with the natural world extends beyond mere concern, aspiration, or aesthetics—it is ingrained in our very essence. Nature has always been the interactive home that shapes our physical, emotional, and spiritual development. However, it seems like the more developed a community becomes, the more artificial and disconnected becomes daily life. To be disconnected from nature through our homes is a recent phenomenon. Embracing the mindset that humans belong in nature would lead to more ecologically connected home designs. I envision sustainable communities that embrace the mindset of the home (and the yard) as a productive and active components of the ecosystem in which it is located, instead of a mere artificial structure constructed on a building site.

ECOLOGICALLY INTEGRATED HOMES

My concept of ecologically integrated homes understands the home as an active contributor to the well-being of its inhabitants and the surrounding environment. By ecologically integrated homes, I mean homes that are integrated into the ecosystem *by design*. They exist in harmony with the landscape by capturing solar energy flows, maintaining water flows, enhancing soil health, and protecting and restoring biodiversity. Ecologically integrated homes reconnect people and communities with the particular ecosystem in which they are embedded. They actively participate in cycles of regeneration, minimizing waste, maximizing space efficiency, and provisioning certain needs of its residents. Such homes engage with local ecological features and climate conditions and utilize local resources.

GUIDING FRAMEWORKS: DESIGN VS TECHNOLOGY

Shifting our understanding of what a home can be does not require a downgrade in quality of life. The comfort and sanctuary that the home provides needn't be sacrificed for the greater good of the ecosystem. Quite the contrary, an active and sustainable home can improve lives by embracing regenerative design and increasing connection to nature. A diverse and vibrant sustainable shelter movement provides various approaches to moving from theory to practice. Frameworks for eco-conscious alternative housing include Eco-homes, Earthship Biotecture, Positive Energy Homes, Tiny Homes, and the Revillaging Movement, among others. Broadly, these approaches can be categorized as either design-centred or technology-centred.

Technological approaches focus primarily on reducing greenhouse gas emissions from home energy systems while neglecting other aspects of sustainability. Harnessing renewable energy and smart home integration technologies certainly have their place, and design-centred homes will often use these strategies.[2] However, high-tech solutions are financially out of reach for many and focus solely on single dimension impact reduction instead of positive ecological interaction.

Jenny Pickrell[3] warns against falling into the trap of technocentric dominance as the only viable path forward. In her critical interrogation of sustainable homes, she notes that an emissions-focused approach operates on a very narrow conception of sustainability that ignores the environmental impacts of the home's water use, land use, biodiversity impact, pollution, scarcity of materials, and waste (Pickerill, 2017, p.356). Furthermore, an overreliance on technological solutions risks overshadowing the necessity of a shift in mindset described in the previous section.

A design-centred appropach is grounded in nature connection. It starts by understanding the function and interdependent parts of the building site. The home is then designed to function with the landscape, optimizing and enhancing its features, while minimizing the building's overall footprint and contributing to restoration where possible. This approach prioritizes low-tech approaches such as passive solar design, home gardens, natural building techniques, good windows and efficient insulation which can offer more accessible pathways to ecologically integrated homes.

Biomimicry and regenerative design principles are guiding frameworks for designing sustainable homes. Biomimicry in this context refers to design choices that draw inspiration from nature to creatively address sustainable design challenges. The biophilic design framework seeks to improve built environments through the simple incorporation of natural elements. Biophilic design principles in ecologically integrated homes actively reconnect people to nature on the aesthetic front through direct and indirect nature integration into the experience of the space (Mang & Reed, 2012, p.1). Elements of direct nature integration include natural light, flowing air, water features, plants, animals, and views of natural landscapes. Indirect experiences of nature in the home may include images of nature, natural materials, natural colours, and naturalistic shapes and forms. Studies have shown a correlation between nature experiences in the home through biophilic design and increased overall health and well-being (Gillis & Gatersleben, 2015).

Biomimicry design solutions can be seen in action in Zimbabwe, for example, where buildings need to be cooled year-round. The design challenge was to create a self-regulating ventilation system for a shopping center and office building in Harare that would keep indoor temperatures reliably comfortable. Instead of cooling the buildings with traditional air conditioning, architects mimicked the natural design of termite mounds which maintain stable internal temperatures through passive internal airflow. The shopping centre successfully achieved a similar climate control mechanism by utilizing open space, fans and high thermal capacity building materials paired with strategically placed openings in the building (Pearce, 1996).

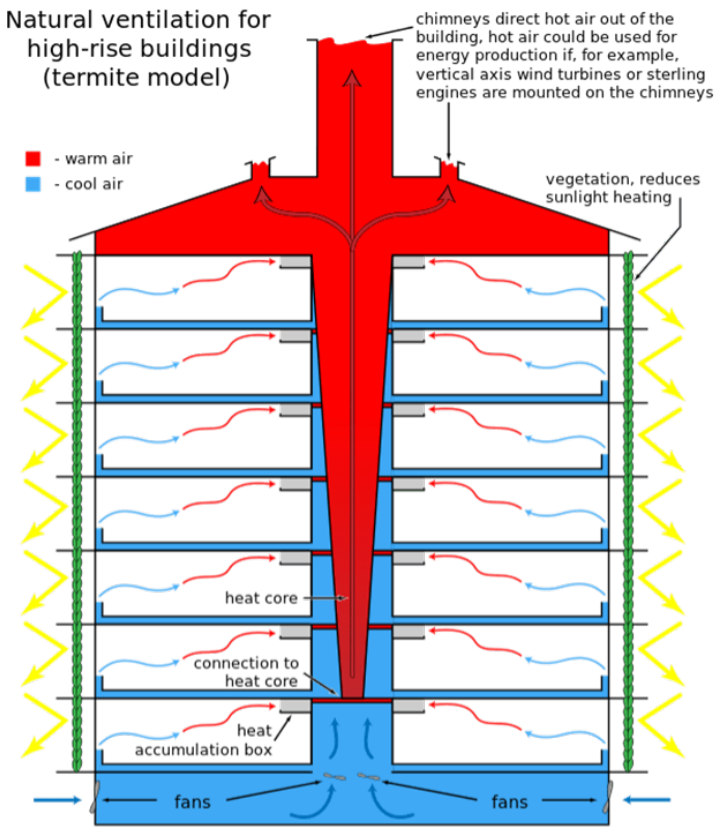


Figure 1. *A schematic showing the natural ventilation used in the Eastgate building in Harare. From: https://asknature.org/innovation/passively-cooled-building-inspired-by-termite-mounds/*

Regenerative design is an approach rooted in understanding the inner workings of ecosystems and a desire to enhance them. This framework recognizes that humans can play a positive role in nature. Regenerative building designs go beyond a simple 'do no harm' approach, and aims to regenerate underlying support systems, whether ecological or social (Mang & Reed, 2012, p.2). According to Wahl, 'sustainability' insofar as it advocates for net zero impact is not enough. We have degraded Earth systems to such an extent that the capacity of ecosystems to function is so seriously damaged that true sustainability necessarily requires regeneration to bring it back to functionality (Wahl, 2017). In the context of housing, the regenerative design framework favours home design initiatives that restore or enhance the environment instead of merely maintaining it. For instance, rather than a simple grass monoculture[4] a yard could be planted as a biodiverse food forest.[5]

By critically interrogating the underlying assumptions of sustainable home frameworks, we can ensure that strategies encompass both technological efficiency and the mindful use of materials and space, following Nature's blueprint.

HOME-NATURE INTEGRATION: FROM CONCEPT TO ACTION

To create an actionable framework for ecologically integrated homes, it is important to identify strategies that can be implemented at the community level that people can relate to their own lives. Particular features of ecologically integrated homes will necessarily differ by region. This is because ecologically integrated home strategies recognize and respond to local climates and environmental features. With that said, universal strategies always include optimizing space efficiency while facilitating home activity. This means reevaluating the amount of indoor space we need, as reflected in the tiny home movement. It also means considering how the space is used. What do we need the house to do for us, now and into the future?

Central to this vision is the notion of homes as dynamic ecosystems in their own right, where energy flows naturally through the house, not against it. Rainwater and snow collection or home composting systems are examples of this[6]. We need to consider outdoor space as it relates to the type of yard we steward. Incorporating native biodiversity, food forests, and permaculture gardens around the home can regenerate the soil, connect us with the land, and optimize space utilization. Further, bringing nature inside with indoor gardening and house plants is another simple way to increase nature connection. Rainwater and greywater collection can enhance indoor and outdoor gardening while creating more productive space. Space efficiency can also be maximized through green roofs which are becoming increasingly more affordable. Green or garden roofs increase the roof's longevity while providing better insulation, thus reducing heating and cooling costs. (AIBD, 2015). This design feature embraces regenerative principles by adding green space to the ecosystem, potentially increasing local biodiversity, lowering carbon emissions, and reducing costs to homeowners.

Integrated waste and water management systems may include capturing wash water from sinks and washing machine rinse cycles for flushing toilets and, if only natural soap products are used, for watering plants (Sundar et al., 2021, p. 382). Such systems significantly reduce freshwater use while lessening the strain on community water treatment centers (Earthship Biotecture, n.d.). The specific types of such systems will differ based on individual and community needs. However, these examples represent the potential for a low-tech technological solution within the realm of design-based strategies.

Ecologically integrated homes would also be built to respond and adapt resiliently to climate change. Strategies include building with durable materials and in appropriate locations, such as on higher elevations to avoid flooding. Water-harvesting roof systems can help mitigate flooding of basements and yards. Climate-resilient home strategies can extend beyond property lines. According to the American Institute of Building Design, constructing neighbourhood swales [7] and rain gardens [8] can prevent flooding by absorbing excess water. Further measures include self-draining streets and driveways, keeping native biodiverse yards, and preserving local forests and wetlands (AIBD, 2015).

It is also important to consider home location in relation to lifestyle needs and land choices. For instance, if someone works in the city, it is usually more sustainable for them to live within city limits. Furthermore, when choosing land for new home construction, it is worth considering options that don't involve deforestation to then build a 'sustainable home' on the land in a way that the ecosystem cannot recover. The principles behind the concept of ecologically integrated homes require the homeowner and homebuilder to consider these factors according to their particular circumstances and make informed, contextual decisions.

An ecologically integrated house design considers its environmental impact along every step of the process, from the blueprint to decades of life into the future. Embracing regenerative design entails adapting construction practices to take account of local ecosystems by considering the impact on the surrounding animal, insect, and plant biodiversity. This includes striving to minimize the impact of the construction process and the materials used. It is estimated that constructing a typical family home produces roughly two tonnes of waste. Due to the cost barriers of proper waste disposal, it is common practice to discard or bury construction and demolition waste materials rather than repurposing them (Laquatra & Pierce, 2014, p. 314). Degenerative home construction practices contribute significantly to our carbon footprint. The rates of energy consumption and raw material inputs needed for construction and eventual disposal of residential buildings could be more sustainable. Overall industry waste can be reduced by building with recycled, repurposed, and biocompatible materials such as cordwood, earthbags, rammed earth, or cob (Faulkner, 2020). Such practices may not be compatible with conventional building codes, however, which could be a barrier to adoption. [9]

Heating and cooling cost comprises over half of the average Canadian household's electricity bill (Government of Canada, 2021). Ecologically conscious homes are built in response to their unique climate by providing comfortable indoor temperatures while being mindful of the potential of a technocratic overtake. Along with proper insulation, air sealing and good windows and doors, the most basic approach is passive solar design which optimizes the capture of solar energy flows to heat the home. One passive solar design feature is called 'direct gain'; which designs the home so that sunlight may enter the building through south-facing windows paired with intentional dark floor choices. This allows natural heat to be stored during the day and released at night when temperatures drop (Krigger & Waggoner, 2001, p.2). Because of climate change, heat waves are becoming more prevalent, and summer cooling is as energy intensive as winter heating. Using thermal mass and passive cooling mechanisms in home design and construction offers a low-tech and biomimicry solution to the cooling problem. Such design features include coupling natural ventilation with thermal mass building materials as successfully illustrated by the shopping center in Zimbabwe. This example as well as recent research has shown that adapting existing and new buildings in this way is effective for air-conditioning and climate mitigation (Toldi, et al, 2022).

At the other end of the spectrum is the Net Zero Energy Home, which is designed to produce as much energy as it consumes (Pierson, 2021). It encompasses energy-efficient building techniques, south-facing orientation, high-quality windows, and efficient heating and ventilation systems to keep the overall energy consumption of the home low. These homes also utilize renewable energy sources like rooftop solar panels to provide power to operate the home's appliances, lights, and other electrical demands (CHBA, 2024). In other words, they could operate off-grid. The Canadian Home Builder's Association has a certification program for a Net Zero Energy Home. Over 1700 homes have been built and certified across the country (CHBA, 2024).

STEPS FOR COMMUNITIES

The concept of 'home' extends far beyond the confines of a house. True sustainability cannot emerge through isolated individual actions; entire industries and communities must come together. Strategies like neighbourhood swale construction and preserving local natural areas require community commitment and coordination. Community coordination for sustainable housing, however, can have a much further reach. Pairing ecologically integrated home designs with community-led sustainability initiatives can strengthen community resilience, improve access to food and housing, and contribute to the vision of an ecologically conscious civilization. With ties to co-housing and 'back to the land' movements, ecovillages are intentionally constructed communities with the goal of being more socially, economically, and environmentally sustainable. While each ecovillage is unique, they share the values of living in harmony with the ecosystem by minimizing consumption and negative environmental impact. Through intentional physical design and explicit community norms, they use participatory processes to regenerate and restore social and natural environments (Ecovillage, Wikipedia, n.d). Ecovillages exemplify how an eco-home mindset can transcend the concept of individual homes to encompass the entire community.

The Lammas Ecovillage located in West Wales is a community of people living in ecologically integrated homes focused on creating and maintaining a culture of land-based self-reliance. The community members use permaculture approach to land management, emphasizing stewardship for future generations over short-term exploitation. Their homes are constructed from local and recycled materials. They have successfully utilized low-impact and low-cost construction methods. Residents use shared hydro, solar, and wind power for electricity and heating is supplied mainly from wood (Lammas, n.d). The Lammas Ecovillage has embraced the home as a productive and integrated system. A 2015 report concluded that the citizens of Lammas live within the one-planet footprint, and their homes were a significant factor in this assessment (Nelson, 2018, p.137). The success of the Lammas Ecovillage serves as a model for the potential outflow effect of ecologically integrated homes on creating the communities we want and need.

Another different type of ecovillage project is underway in Sackville, New Brunswick. In October 2023, the not-for-profit Freshwinds Eco-Village Co-operative purchased a 21-acre lot intending to build a 60-home ecovillage (Wark, 2024). Spearheaded by a group of people committed to cooperative principles as well as sustainability, the initiative was born out of an urgent need for housing, including below-market housing. They are demonstrating this by integrating ecological design into the housing project, for which they hope to turn the sod in the Fall of 2024. (Freshwinds Eco-Village Housing Co-operative, 2024).

Ecovillages and other community-centred housing initiatives serve as an example of the potential of ecologically integrated design. With sustainable homes at the heart of these communities, there is a sense of purpose and commitment to ensure everyone's needs are met in a way that not only respects the ecosystem but seeks to regenerate it. From energy-efficient design, active home interventions, and natural building materials to ecovillage initiatives, every aspect of home building and habitation can be guided by principles of ecological integrity and resilience.

BARRIERS TO OVERCOME

As with any great change driven by creative solutions in the name of sustainability, barriers exist to revolutionizing the home. Some possible roadblocks include existing building codes and bylaws, cost, and prevailing norms.

Building codes

One of the biggest hurdles to implementing ecologically integrated features into homes are regulations that block unconventional design and materials. Public awareness of sustainable home strategies is mixed, and political support is generally limited. National and provincial building code standards and municipal bylaws reflect this. As Pickerill notes, building codes often favour technological approaches to lowering environmental impact through emissions reduction (Pickerill, 2017). Ecologically integrated homes strive for a more holistic approach. Regulations are often seen as the enemy of movements concerned with unconventional dwellings. However, codes are important to ensure home safety and durability.

One aspect of unconventional ecologically integrated homes is the use of natural building materials. Some natural building techniques, however, have associated design risks.[10] For instance, cordwood[11] and straw bale builds[12] risk cracking, vapour permeation, and water damage (Faulkner, 2020). Similarly, the rammed earth technique[13] may present insulation challenges. These building materials are relatively low cost if the homeowner provides the labour, but they are not always the best choice for the longevity of a family home. Building codes in many regions prohibit such techniques and materials based on safety concerns. However, this is not a problem for the movement in and of itself; safe and effective building materials are important for longevity, sustainability, and resilience. Thus, durable materials that are compatible with the ecoregion's climate are vital components of ecologically

integrated design. The good news is that plenty of more traditional, safe, and long-lasting building materials and techniques exist with less associated risk. These include sustainably and ethically sourced wood, brick, repurposed shipping containers, and stone for modified slip-form stone masonry. Traditional natural building materials[14] are still viable options (Natural Resources Canada, 2020). We can minimize waste in new builds by using recycled, repurposed, and conventionally renewable materials instead of unorthodox methods when it is more feasible to do so. It is worth noting that the most sustainable building materials are the ones already in use. Although it may be tempting to envision new and innovative building techniques, repurposing, restoring, and retrofitting existing buildings is most often the best ecological choice.

Although strict regulations and bylaws may present a barrier to more creative design ideas, building codes may also present an opportunity for change. They are a potential path to mainstreaming eco-conscious industry standards for builders. Ecologically integrated home solutions can be normalized and even mandated as industry standards by advocating for change in municipal bylaws and national building codes. It is worth noting that advocating for changes at the municipal level is often more feasible than targeting the national level. Further, local activism that targets building and yard maintenance bylaws is an accessible path for advocacy because broad one-size-fits-all codes may not adequately reflect the nuances required for ecologically integrated home development in different regions.

Cost

There are concerns regarding the perceived high cost of building and maintaining sustainable homes. While the cost of large, net-zero-energy-houses is higher per square foot, many sustainable housing projects have built on incredibly low budgets; such projects present opportunities to create affordable housing for those in need (Pickerill, 2012, p.100). Nevertheless, in cases where the upfront cost of construction is higher, ongoing operational costs are much lower (Cosgrove, 2020). Furthermore, Pickerill identifies ways to potentially lower costs outside of constructing with active design features that reduce energy use. Other cost-lowering strategies include self-building, using reclaimed materials, and purchasing remote land over city lots (Pickerill, 2017, p.352). Depending on circumstances, however, these strategies are not always feasible for the average person or more sustainable if they increase commuting.

Another way to lower the cost of eco-homes is by taking advantage of government subsidies and grants. For example, the federal government's Canada Greener Homes Loan program provides up to $40,000 in interest-free loans to eligible Canadians to retrofit their homes for energy efficiency, install heat pumps, and add solar panels (Natural Resources Canada, 2024). In New Brunswick, NB Power offers assistance for replacing inefficient heating systems, energy efficiency retrofits, and incentives for energy-efficient new home constructions (Save Energy NB, n.d.). Such programs make eco-home energy retrofits more financially accessible.

Status Quo Inertia and Rigid Social Norms

If ecologically integrated homes have such benefits and the costs of operating them is lower, why aren't they more common? The trajectory of widespread uptake of innovation tends toward gradual diffusion rather than rapid adoption of new approaches, technologies, and mindsets. One way to encourage the uptake of innovation is through public policy such as strengthened building codes. However, this method can create pushback, possibly preventing the acceptance of more radical systems change in the future. Another strategy is to advocate for a more radical paradigm shift to begin with (Grübler, 1996, p).

Although improving, there is still cultural resistance towards sustainability initiatives and the adoption of ecologically integrated home features alike. Pickerill suggests that resistance partly stems from the perception that the idea is too radical, alternative, fringe, or associated with a 'hippie' lifestyle (Pickerill, 2012, p.100). This is why fostering a collective shift in mindset is crucial for advancing transitions. Further, research on eco-home uptake largely focuses on social trends in urban areas, particularly the concentration of progressives and activists, presence of social experiments, or the result of government policies. While this might suggest that creative innovation happens only in the context of urban areas, this is far from the truth. Pickerill suggests that research should examine rural areas where practices such as self-building and self-sufficiency are well established to better understand the complete picture of innovation and motivation (Pickerill, 2017, p.360).

A partial solution to pushback may be to appeal to a wider variety of people and their lifestyles, emphasizing the diversity of ecologically integrated home design, and focusing advocacy and research on their scalability and personalizability (Pickerill, 2017). Sustainable home initiatives can support a wide variety of aesthetics, lifestyles, and interests. For instance, pairing sustainable home initiatives with other social goods can increase societal engagement and acceptance. The 12 Neighbours Social Enterprises in Fredericton, New Brunswick, provides an example of merging sustainable home strategies with the provision of affordable housing. This is a community of solar-powered micro homes that provides safe, affordable housing as well as support services and work opportunities for people in need. By merging social movements with sustainability efforts, pro-environmental behaviour can permeate all sectors of society. I believe that focusing research and advocacy on a wider variety of ecologically integrated home initiatives to include the motivations of different demographics and social causes will widen the circle of interested early adopters and increase funding opportunities.

MOVING FORWARD

The artificial constructs that define modern living contribute to the profound disconnection between humans and Nature experienced in modern society. A sustainable society must necessarily recognize that the 'human habitat' is embedded in ecosystems. Therefore, to cultivate communities that thrive while protecting Nature, we must first reimagine the very

concept of home itself. No longer should homes be viewed as passive structures isolated from their ecological context; instead, they must be reconceptualized as integral components of the larger ecosystem, reflecting the principles of regenerative design, biomimicry, and ecological stewardship. Eco-home initiatives have the potential to profoundly reduce our environmental footprint and the transform way we feel about our place in nature.

Regenerative and ecologically integrated homes involve mixing different techniques, frameworks, and practices to fit the unique needs of homeowners, communities, and the environment. There is no one-size-fits-all standard. Designing and constructing ecologically conscious homes requires extensive planning informed by intimate knowledge of local ecosystems and climate patterns, and community. Additionally, extending past the concept of individual homes and into the wider community is vital. Through this holistic approach, the interconnectedness of our living spaces with the natural world becomes clear, guiding us toward a future where sustainability is a way of life.

Moving forward, we need to focus on advocacy, education, and shifting mindsets to actualize the vision. We possess the tools to implement the outlined actionable strategies; however, as is the case with most sustainable solutions, this can only be done with a shift in collective consciousness, values, and principles. To rework our understanding of the home, we need a mindset shift that redefines our relationship with our living spaces and ourselves in relation to Nature. Through shared commitment, a world where human habitats exist harmoniously with ecosystems is possible.

ENDNOTES

[1] An Earthship is a uniquely constructed off-grid self-sustaining autonomous building designed to work with the landscape and to produce food for its occupants. Earthships are built with natural materials, but they also utilize local recycled or repurposed materials. Further, they are often constructed in with energy conservation in mind through the use of passive solar technics (Earthship Biotecture, n.d).

[2] With that said, high-technology solutions such as renewable energy systems and integrated digital controls can still be utilized under this framework. The idea is to first focus on designing the home in a functional way instead of simply constructing a regular home and adding technology to it.

[3] Jenny Pickerill is a Professor of Environmental Geography and Head of Department at the University of Sheffield who has researched and written extensively on the topic of eco-homes.

[4] This is a relevant comparison because green space does not harm the ecosystem, although it sequesters some carbon, it does not necessarily contribute to the well-being of people, nor does it help restore the ecosystem in any capacity. Thus, it has neutral impact instead of positive impact.

[5] A food forest is: "*a diverse planting of edible plants that attempts to mimic the ecosystems and patterns found in nature. Food forests are three dimensional designs, with life extending in all directions – up, down, and out. Generally, we recognize seven layers of a forest garden – the overstory, the understory, the shrub layer, the herbaceous layer, the root layer, the ground cover layer, and the vine layer. Some also like to recognize the mycelial layer, layer eight (mushrooms). Using these layers, we can fit more plants in an area without causing failure due to competition.*" (Project Food Forest, 2016)

[6] This used to be present in society but has since become rare. Perhaps a new understanding of the home should encompass valuing self-sufficiency and provisioning as many of our own needs as possible.

[7] Drainage swales are shallow ditches. They encourage natural irrigation. They take advantage of natural slopes in the landscape to direct water downward into all the soil to avoid pooling above ground (AIBD, 2015).
[8] A rain garden is a garden of native species that is set lower than its surroundings to be able to better absorb rainwater to prevent flooding.

[9] This topic is explored in more detail in the 'barriers' section of the chapter.

[10] The listed natural building materials and risk are not an exhaustive list.

[11] Cordwood construction involves setting softwood sideways in beds of mortar (Faulkner, 2020)

[12] Strawbale houses use bales of straw as the structural block of a home (Faulkner, 2020).

[13] The Rammed earth technique involves blending soil with clay and organics mixed with cement. The end result is a rock-like strong solid wall (Faulkner, 2020).

[14] Although they can still be resource-intensive depending on harvesting and treatment methods, these practices have the potential to improve.

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CHAPTER 5
Planting the Seed: Embracing Indigenous and Traditional Wisdom for Food Sustainability

by Erin Hurley

INTRODUCTION

I am a child of lakes and mountains. I learned how to swim by doggy paddling in Lake Winnipesaukee and how to run by racing my sisters down Mount Major. The first obstacles I faced were the rocky scrambles of Mount Percival and the first darkness I encountered was when I squeezed my eyes shut as I dove into the lake. Lake Winnipesaukee and the White Mountains of New Hampshire challenged, shaped, and raised me.

On many warm summer days, my family and I would escape to the mountains or to the wooded islands that dot the lake. I can't always remember what it looked like along those mountain trails or through the island woods, except for one thing: blueberries. Blueberry bushes grow abundant in New Hampshire in the height of summer. My parents are avid blueberry gatherers. My mom's favourite competition is who can pick the most blueberries, and she always wins. I think that's why it's her favourite. Our most cherished blueberry oasis is called Ragged Island. Blueberry bushes run wild along the island, their roots tangling around each other, their branches falling into the water or reaching up into the sky.

When I was very little, I didn't care for blueberries. Why would I have blueberry pancakes or blueberry muffins when I could have *chocolate chip* pancakes and *chocolate chip* muffins? In fact, as a child, food was always something that came from the grocery store. I never thought much about how it got there. I was more concerned with the taste once it reached my mouth. But later, looking back on those beautiful blueberry-filled days on Ragged Island, I realized that I felt such a strong connection to the land when picking blueberries and to the food I ate when I had gathered it myself. Because of this, blueberries began to taste so sweet.

Eventually, my dad began transplanting blueberry bushes into our front yard so that we could nurture them ourselves. What started with blueberries blossomed into a fruit and vegetable garden complete with tomatoes, lettuce, kale, cucumbers, chard, beets, basil, mint and more. My family spent summer days tending the garden and nights making dinner with the fruits of our labour. We made salads with the greens from the garden and mixed in orange, red and yellow tomatoes. We made pesto with the basil and sprinkled mint in our nighttime cups of tea. This inspired me to think more about the origins of my food when I had not grown it myself.

THE PROBLEM

In Western society, we have become severely disconnected from the original provider of our food: the Earth. Following World War II, most small family farms were replaced with large industrial-scale farms that promote mass production and consumption of food on a globalized scale. Once agribusinesses came to dominate the production and sale of food, environmental conservation, food security, and rural livelihoods were pushed to the side in favour of profits (Wender, 2011). Monocultures, which are farms containing a single crop such as acres-long corn fields, now dominate the food production side of this system. Monocultures allow for "maximum surplus extraction in the short-term" (Filatova, 2021). However, they undermine the natural cycles of ecosystems, in which different plant species coexist, as well as the very foundation of the land: soil. Repeatedly planting the same crop in one area depletes the soil of its nutrients so that it cannot naturally sustain crops (Filatova, 2021).

Monocultures are dependent on synthetic fertilizers and pesticides to maintain plant growth. Nitrogen and phosphorus inputs are the main cause of nutrient pollution of waterways through runoff from fields. Nutrient pollution is extremely harmful to aquatic ecosystems, and it exacerbates climate change because nutrients can "stimulate the biological production of the greenhouse gases carbon dioxide, methane, and nitrous oxide" which drive global warming (Beaulieu et al, 2021). Industrial agriculture is now seen as the single most environmentally destructive human activity from an ecological standpoint (Fairlie, 2022). We are clearly facing the dire consequences of our disconnect from the earth that has led us to exploit the very land that we depend on for our sustenance and, ultimately, for our survival. Industrial agriculture is inherently unsustainable and cannot be reformed but must instead be transformed (O'Connor, 1991). The question is: What would a re-envisioned food system, that is more sustainable and just for all life on Earth, look like? Which principles and system models can inform us in this transition?

PARADIGM SHIFT NEEDED

Changing any system requires a change in the underlying perspectives and values that comprise and reinforce that system. Mental models refer to the overarching beliefs, values, and assumptions on which systems are built; in other words, they represent the 'mindset or paradigm out of which the system – its goals, power structure, rules, its culture – arises' (Meadows, 1997, pp. 2). Intervening to change the system paradigm has the greatest leverage in changing the system itself. I think this theory of leverage points can make a system transition feel less overwhelming because it guides us towards the most effective interventions where we should be focusing our efforts. The iceberg model (Figure 1) illustrates the idea that mental models present the best leverage point for systems change.

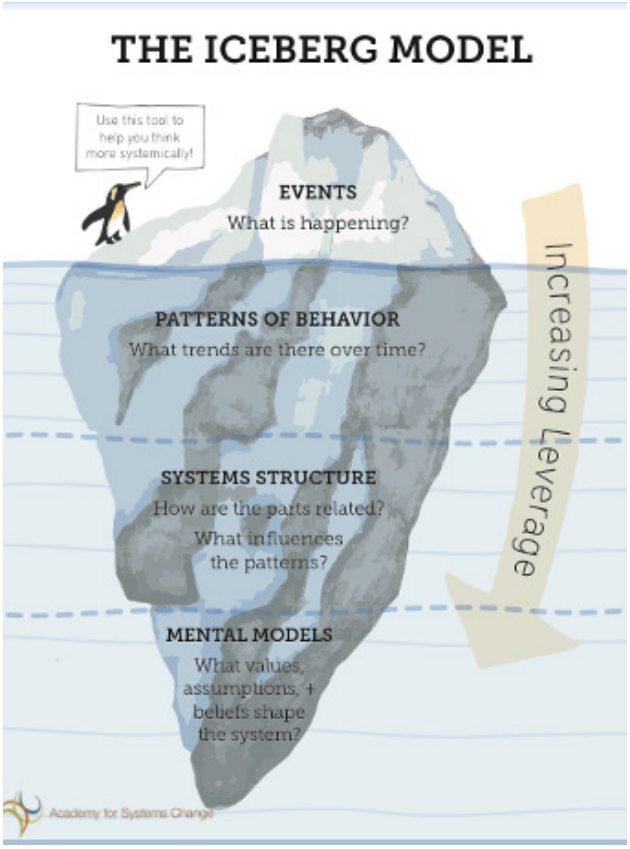

Figure 1. *The iceberg model of systems thinking. https://donellameadows.org/systems-thinking-resources/*

To change the industrial food system, then, we must change the paradigm on which it is built. Industrial agriculture is embedded in a capitalist political economy fueled by the belief that endless economic growth is inevitable and desirable, and that Nature is simply a collection of resources to be exploited for human use. It is underpinned by values and goals of capital accumulation and competitiveness in terms of the global economy. Similarly, humans view the more-than-human world as inferior due to our misguided perception that we are not a part of nature at all. This stems from our disconnection from Earth and the anthropocentric perspective that humans are the only, or primary, species worthy of ethical consideration (Leopold, 1949). Such a perspective allows us to justify the complete degradation of the environment for human benefit. We must abandon our superiority complex as humans and recognize our place in Nature's community. This idea is discussed in Aldo Leopold's *Land Ethic*, where he says that humans must relinquish our long-held positions as "conquerors" of Nature and instead simply become "citizens" of it (Leopold, 1949, pp. 204). These beliefs and values often go uncontested because they are so deeply ingrained in our society and economic system. Yet, they drive the harmful mass production and consumption associated with this system (Meadows, 1997).

This societal paradigm translates to the industrial agriculture system in specific ways. In her book *Monocultures of the Mind*, Indian food activist Vandana Shiva identifies three characteristics of the mental model underpinning industrial agriculture. The 'mechanical mind'

leads to the disconnection of humans from nature and the degradation of soil with chemical fertilizers; the 'militarized mind' enables the exploitation and marginalization of Nature and small farmers through what Shiva calls chemical warfare; and the 'monoculture of the mind' represents the belief that there is no other way to feed the world (Shiva, 1993).

The result is a food production system that is itself 'fragmented' and that fragments Nature through the separation of farms from forests under the guise of 'scientific forestry', fragments ecosystems under the guise of 'scientific agriculture', and fragments human society by not prioritizing equity and justice (Shiva, 1993). In Western culture and science, rocks, mountains, soil, water, wind, and light all start as 'dead.' In contrast, Indigenous cultures view the Earth as 'a communion of beings and not objects: all matter and energy is alive and conscious' (Santa Cruz Permaculture, 2021). A food system built on this perspective would look very different from the dominant industrial system. Changing the mental model to one that prioritizes reciprocal relationships with Earth's communion of beings is necessary to shift from a fragmented and fragmenting food system to one that is holistic and sustainable.

THE NEW PARADIGM: VALUES

The values for a new food system paradigm have been demonstrated in non-Western and Indigenous cultures. Food activists Robin Wall Kimmerer, Winona LaDuke, and Vandana Shiva ground their work in following values: reciprocity, gratitude, respect, compassion, equity, an ethical responsibility to the land, decolonization, and food sovereignty. Reciprocity refers to a mutually beneficial relationship with Nature in which humans give back to the land in return for the sustenance and nourishment it provides us (Ban et all, 2022). Winona LaDuke, a food activist and an enrolled member of the Mississippi Band of Anishinaabeg, calls for a transition to reciprocal relationships between humans and the natural world (Brandman, 2021). She says, "It is about how we re-establish this relationship with our ancestors and our relatives, the ones that have roots" (LaDuke, 2012). Her White Earth Land Recovery Project, which is focused on reclaiming traditional Indigenous lands and foods, is working towards a reciprocal relationship that will benefit both people and the planet. It has a vision to form 'healthy, holistic and sustainable relationships with Akiing – the land to which people belong' and an economy that promotes 'the well-being of one another and future generations' (WELRP, n.d.).

Robin Wall Kimmerer, a botanist and member of the Potawatomi Nation based in Oklahoma, also advocates for reciprocal relationships with Nature. In her book *Braiding Sweetgrass*, she emphasizes the importance of honouring Earth's natural cycles by working with, rather than against, the land. She writes, 'In a culture of gratitude, everyone knows that gifts will follow the circle of reciprocity and flow back to you again' (Kimmerer, 2013, pp. 381). In other words, when people maintain a reciprocal relationship with the land, they too feel the benefits. Hence, the importance of a food system that does not undermine the very foundations it is built upon but that instead honours and nourishes the land that nourishes us. Kimmerer uses sweetgrass as a theme to symbolize Potawatomi values of respecting and caring for the

natural world, and the importance of this type of mutual relationship between humans and the planet. 'Sweet grass is considered a gift and the braided hair of Mother Earth, its smoke is used to purify and keep evil away' (Citizen Potawatomi Nation, 2024). This 'evil' is symbolic of our current exploitative relationship with the Earth, and we can learn from Indigenous traditions and values to purify our dominant societal interactions with the environment.

Kimmerer introduces the concept of 'honourable harvest' as the 'indigenous canon of principles and practices that govern the exchange of life for life' (Kimmerer, 2013, pp. 217). This is an agreement, rather than a law, between humans as "consumers" and non-human species as "providers" (Kimmerer, 2013, pp. 222). Being grateful to the natural world for the sustenance it provides, and thus feeling an ethical responsibility to protect the land and respect the natural cycles of ecosystems, is inherent to this ideology. Kimmerer calls for us to be grateful for all the land gives us, and reciprocal in caring for and nurturing the land in return. She engages in the honourable harvest in her own life by introducing herself to the plants, asking permission to pick them, and leaving some of the plants in the ground for other species that may want or need them for survival (Kimmerer, 2013, pp. 212-19). This reciprocal agreement is therefore rooted in compassion towards the more-than-human world (Frankel, 2017).

Vandana Shiva critiques the corporatized global food system and how it undermines traditional, sustainable systems. Shiva suggests a new food system paradigm that resists the mechanical, militarized, and monocultural mindsets behind industrial agriculture. System change, according to Shiva, will come when we 'change the way we think about ourselves on this Earth, about how we grow our food, and how we relate to other relatives in the Earth family.' This alternative paradigm is centred around viewing food as sustenance and the provider of life rather than as a commodity; viewing agriculture not as a human creation but as the 'ultimate co-evolution of human beings with the Earth'; prioritizing the health of all species including humans, animals, plants, and soil; and maintaining a connection to the earth. This food system model envisions biodiverse farms, reciprocal relationships where both farmers and soil benefit through practices such as seed saving, and nutrition per hectare as the measure of productivity rather than profit per hectare (Shiva, 2017). She presents human beings as members of the Earth family and charges us to treat all members of that family with gratitude and respect.

THE NEW PARADIGM: STRATEGIES AND PRACTICES

Indigenous communities have cared for the lands they have lived on for millennia, but their wealth of traditional knowledge is often overlooked. It is usually branded as a connection that Indigenous cultures have with Nature, but it is more than that. Traditional ecological knowledge (TEK) is 'an umbrella term for information about the natural world collected by countless generations of Indigenous people' (Eagle and Marohn, 2022). Recently, there has been a rise in interest in the integration of TEK into environmental management regimes (Minnesota Native News, 2023; Eagle and Marohn, 2022). Pairing TEK with Western scientific

knowledge is known as two-eyed seeing (Institute, n.d.). It is a necessary step in achieving a reformed food system which benefits all peoples and species on Earth. TEK can inform a sustainable transition on traditional interactions with the natural world that demonstrate respect and reciprocity (Whitaker, 2022). Figure 2 highlights the main components of TEK which are: cosmology, factual observation, ethics and values, temporal dimensions, management systems, and cultural identity. Ethics and values include respect for the environment as well as rituals and tradition.

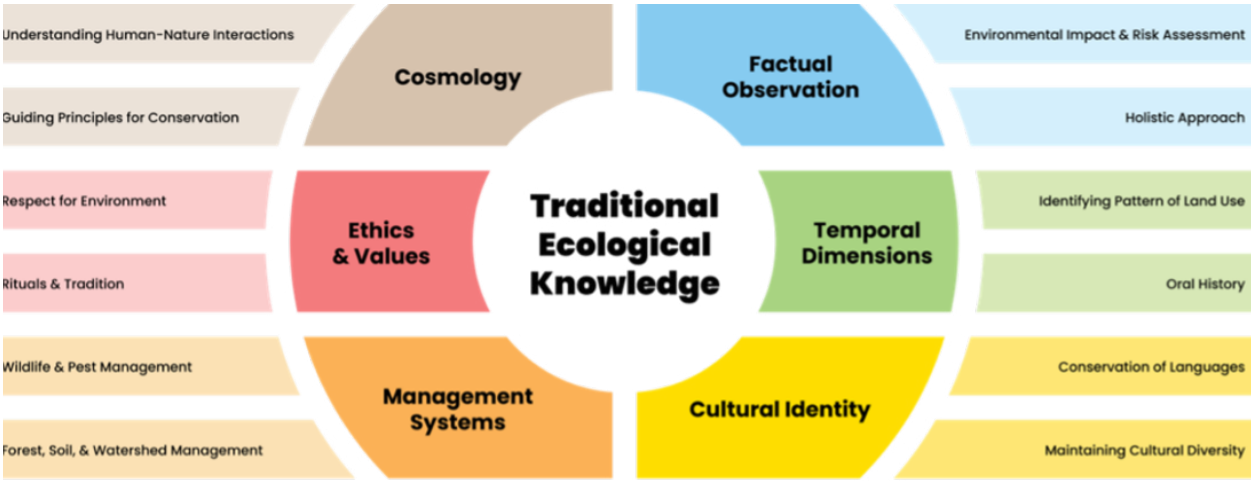

Figure 2. *Elements of traditional ecological knowledge. https://www.climatejusticecenter.org/newsletter/traditional-ecological-knowledge-and-climate-justice*

Farming strategies and practices that reflect traditional knowledge of the land on which food is grown and incorporate values such as gratitude and reciprocity towards the more-than-human world can act as models in the transition of our food system. One strategy that is integral to this transition is to establish food sovereignty. Indigenous food sovereignty refers to Indigenous communities being self-reliant both in their food-growing and the decisions that they make regarding their food (Anderson et al, 2022). This is an essential element of decolonization[1], which is the act of resisting and dismantling colonial structures which oppress members of the population such as Indigenous communities (Queen's University, 2024). Decolonization is intimately connected with the sustainable transition. Food sovereignty and other decolonization movements not only serve to dismantle the oppression of Indigenous and traditional rural communities, but also the oppression of the natural world as perpetuated by industrial agriculture activities.

Winona LaDuke founded the White Earth Land Recovery Project (WELRP) in 1989 to reclaim and restore the traditional land of the White Earth Indian Reservation 'while preserving and restoring traditional practices of sound land stewardship, language fluency, community development, and strengthening our spiritual and cultural heritage.' The goal of this organization is to preserve Indigenous culture, knowledge, and foods while promoting the well-being

of Earth. These go hand in hand because Indigenous cultures and knowledge hold so much wisdom on how to maintain a reciprocal relationship between humans and the Earth (WELRP, n.d.). WELRP members practice Indigenous food sovereignty by preserving native seeds, storing them in a community seed library for future use, and through projects such as providing traditional Indigenous foods to school cafeterias. LaDuke describes food sovereignty as 'an affirmation of who we are as Indigenous peoples and a way... to restore our relationship with the world around us' (Brandman, 2021).

Founded in 1987, Shiva's organization, Navdanya, is an 'Earth-centric, women- centric, and farmer-led movement for the protection of biological and cultural diversity' (Navdanya, 2016). Navdanya advocates for a food system that fosters a connection to the land and between people with the elimination of 'hierarchies between species, culture, gender, race and faiths.' It is based on values of reciprocity, collaboration, and equity in food production, with the goal of achieving the integrated well-being of both people and the planet through ecological agriculture. The word Navdanya has two meanings, 'nine seeds' and the 'new gift,' signaling seeds as a common resource to be saved and shared to protect biodiversity and promote community collaboration (Navdanya, 2016).

Navdanya is also dedicated to food sovereignty and decolonizing agriculture from transnational corporations. Its farmer-members cultivate food in 22 Indian states using ecological practices such as saving seeds, promoting the health of the soil, maintaining biodiversity, and growing food organically. They use native Desi seeds, as opposed to corporate hybrid seeds, which they preserve in a seed bank containing over 150 different varieties of native seeds (Murray-Nag, 2021)

Unlike industrial monocultural growing systems, Indigenous food growing techniques employ polyculture. Polyculture involves the intentional grouping of plants that coexist well and nurture each other's growth. The traditional polyculture technique called "milpa", also known as the Three Sisters, is practiced in many Indigenous communities throughout North and Central America. This involves planting maize, beans, and squash together. The beans fertilize the soil by fixing nitrogen needed by the corn; the corn provides the structure for the bean plants to climb, while the squash leaves shade the ground, reducing weeds and conserving soil moisture. Thus, there is a mutually beneficial relationship between the three kinds of plants. Milpa also has other advantages as the flowers attract beneficial insects, helping to reduce pest damage, and the soil channels created by the milpa crop roots increases system water and nutrient availability. In short, milpa increases the soil quality and prevents the presence of pests which spreads this reciprocal relationship between the crops to the soil, animals, and insects as well (Alcalá et al, 2023).

Other traditional Indigenous cultivating techniques apply reciprocity to marine food harvesting. The sea gardens on the Pacific coast of North America and fishponds in Patagonia

and the Chiloé archipelago involve building rock walls in the intertidal zone to enhance the habitat and increase the abundance of certain species. For instance, sea gardens foster the seeding of native butter clams and littleneck clams, benefiting both human and non-human harvesters such as birds, bears, and racoons. Similarly, fishponds "simultaneously promote increased mollusk abundance and the presence of fish-eating birds" (Ban et al, 2022). Sea gardens and fishponds both demonstrate a relationship that benefits humans and non-human species alike, in a way that respects and models Earth's natural ecosystems rather than exploiting them. Sea gardens and fishponds fell out of use over time, due to a plethora of factors including a law against permanent fishing methods in Chile. Recently, these techniques are being revived for sustainable marine harvesting activities. For instance, the Wsánéc and Hul'q'umi'num nations on the Pacific West Coast have collaborated with Parks Canada on the Clam Garden Restoration project to "manage, restore, and conserve" sea gardens in the Gulf Islands Nature Park Reserve (Ban et al, 2022). All of these Indigenous and traditional strategies and practices provide models for alternative food systems because they demonstrate that people can have a presence in nature without destroying it.

WESTERN REGENERATIVE AGRICULTURE MODELS

Indigenous values and strategies are deeply embedded in the sustainable agriculture movements that developed in the West in the post-War period. Regenerative agriculture, for instance, is grounded in the principle of reciprocity as it seeks an integral model that prioritizes community members as well as the land in that it revitalizes the soil (Bartel et al, 2020). It "has at its core the intention to improve the health of soil or to restore highly degraded soil, which symbiotically enhances the quality of water, vegetation and land-productivity" (Rhodes, 2017). Regenerative agriculture techniques include planting diverse crops, avoiding chemical pesticides, and preserving topsoil (Andersson, 2021).

Hayes Farm in Fredericton, New Brunswick is a small teaching farm that offers many educational opportunities – through Open Farm Days and partnerships with local schools – on regenerative agriculture practices. The farm uses compost to fertilize the many crop varieties that it plants and to preserve the soil. The people at Hayes Farm also prioritize food sovereignty and have foods available to the community by donation on Open Farm Days. They draw from Wabanaki teachings to guide their interactions with the land. The Indigenous Foodways Instructor, Cecelia Brooks, is an elder of Wolastoqey, Mi'kmaq, Mohawk and Korean descent and is a member of Sitansisk First Nation. She specializes in traditional plant knowledge, and she shares some of this wisdom on the Open Farm Days (Hayes Farm, n.d.).

The technique of regenerative agroforestry can be traced to the traditional practice of the Lenca people in Honduras. Agroforestry is a method of planting crops among trees that provides shade, protection, and nutrients and thus mimics a natural forest ecosystem (Hoffner, 2019). One specific technique of agroforestry is called "alley cropping" which is planting foods between lines of trees (Martin and Sherman, 1992). An important principle of agrofor-

estry is reciprocity as demonstrated by this practice that promotes both soil enrichment, for example, and the well-being of the community by addressing community needs (Martin and Sherman, 1992).

Permaculture, a form of sustainable agriculture, also has a far-reaching history in Indigenous communities. With its origins in the words “permanent” and “agriculture”, the term was coined by Australians David Holmgren and Bill Mollison. Mollison, deemed the father of permaculture, credited his knowledge to Aboriginals in Tasmania as well as other Indigenous communities. Permaculture is ‘the conscious design and maintenance of agriculturally productive ecosystems which have the diversity, stability, and resilience of natural ecosystems’ (Permaculture Research Institute, 2024). One example of a permaculture strategy is the selection and rotation of several crops that will maintain soil fertility and improve soil moisture, control pests, and provide pollination services (Dari, 2021).

Santa Cruz Permaculture in California operates a farm and wilderness center as well as offering courses on permaculture techniques. Some of these courses focus on the common principles of permaculture. This includes reciprocity that is demonstrated by preserving the soil through composting and avoiding tillage. This benefits the land itself and, of course, the people that are depending on that land for food (Santa Cruz Permaculture, 2021). One historical permaculture technique used in Indigenous cultures, including in various Aboriginal communities in Tasmania, is called controlled burning. This involves intentional, contained fires used to encourage new grass growth for grazing animals and to eliminate dead trees and other vegetation that could otherwise increase the devastation of forest fires (Mott, 2024). Thus, controlled fires promote the “diversity, stability, and resilience” of ecosystems (Permaculture Research Institute, 2024; Walker, 2019).

Organic agriculture, another specific form of sustainable farming, also aims to preserve biodiversity and the soil through practices such as applying compost to the soil, not using synthetic fertilizers or pesticides, and not overworking the land. According to Biernbaum, ‘Most people committed to organic production for social and environmental reasons, as opposed to economic opportunists, expect to be operating within and as part of the ecological system or web of life as opposed to dominating and subjugating the system’ (Biernbaum, 2016). In other words, organic agriculture promotes reciprocity by honouring the natural cycles of ecosystems. Many organic farms obtain certifications so that they can officially label their foods as organically grown. The Organic Food Production Act of 1990 in the United States developed a program and guidelines for the certification process and organizations such as the Organic Growers of Michigan (OGM) and the Organic Crop Improvement Association (OCIA) grant these certifications (Biernbaum, 2016). In Canada, in order to be labelled organic, food products must meet regulated Canadian Organic Standards (Canada Organic, n.d.).

These alternative agriculture systems are informed by a deep understanding of plants, the land, and even planetary cycles. The biodynamic farming method uses information on lunar and planetary cycles to guide planting and harvesting times. This is a practice informed by the Māori system of 'observing the relationships between signs, rhythms, and cycles in the environment' which is called the maramataka. Maramataka fosters a reciprocal relationship between humans and nature by recognizing that the well-being of people rests on the well-being of the planet and therefore prioritizes the well-being of both in its practices (Awatere et al, 2023).

Each of these sustainable agriculture models is underpinned by values such as reciprocity and an ethical responsibility to the land in which food is grown. Regenerative, permaculture, biodynamic and organic techniques all promote soil health (Biernbaum, 2006). These alternatives are centred in respect for natural cycles of the ecosystem and improving the resilience of the land. Looking at traditional techniques and modern Western applications of them can serve as an effective model for a re-envisioned food system (Walker, 2019).

INDIGENOUS-LED COMMUNITY FOOD PROJECTS

Several Indigenous-led community initiatives illustrate the centrality of reciprocal relationships which bring people together to produce local, nutritious foods for the community. The Grand River Territory in southern Ontario is a hub for several such initiatives. The Waterloo Region Indigenous Food Sovereignty Collective (WRIFSC) and Wisahkotewinowak were formed to promote Indigenous food sovereignty and combat food insecurity. The WRIFSC oversees 18 gardens, some in backyards and some as big as an acre. This organization plants, gathers, hunts, fishes, and harvests food organically and is rooted in traditional Indigenous values. They arrange meals for Indigenous Elders and others in the region, work to rebuild the resilience of the land by growing culturally appropriate Indigenous crops, and reuse seeds for future crops (Indigenous Food Circle Waterloo Region, n.d.). The WRIFSC collaborates with the University of Waterloo Indigenous Student Centre and the North End Harvest Market in Guelph. The student centre tends to a "small produce garden, medicine gardens, and a ceremonial fire site" while the market "provides access to free produce and culturally significant foods to the local Indigenous community" (Anderson et al, 2022).

Wisahkotewinowak cultivates gardens and distributes Indigenous foods in the Grand River Territory. Participants practice seed-saving, growing and gathering food, hunting and fishing, processing and preserving food, and sharing and distributing food. One member, said of her responsibility to the planet: 'Well because I'm on it. And my feet are on it. So, where Creator has my feet, there I will be responsible' (Anderson et al, 2022). Another said she felt a sense of community and could make new connections through this organization (Anderson et al, 2022), while a third said that saving succotash beans and Lenape squash helped him connect with his Indigenous sense of self (Miltenburg, 2023). The actions of these participants represent many of the core elements of a reciprocal, collaborative, and ethical food system

model. With agribusiness forcing a reliance on patented seeds, seed-saving is a form of community resistance and resilience. This practice benefits the environment by avoiding the seeds from large corporations which are often genetically modified, and it also holds much cultural significance. Growing and preserving your own food defies the mass production of industrial agriculture, and sharing and distributing food strengthens community cooperation in fostering new food system models. In addition, urban gardening done by these collectives is an informative case study for communities that do not have the space for farms or gardens that span multiple acres, presenting a realistic example of the how we can transition to a holistic food system in our urbanized world. In heavily developed areas, individuals and groups must be more creative with the way they use their space. And I think it's rather beautiful to foster green spaces in areas that seem to have exiled Nature (Anderson et al, 2022).

The Indigenous STEAM Collective, which operates in Chicago and Seattle, works to incorporate Indigenous wisdom of the relationships between humans and non-human species into educational opportunities for families and communities. This organization aims to foster a deeper understanding of and connection to the land in those who come to learn. It is mainly concerned with this question: How do we live respectful, responsible, and reciprocal relationships with our lands, water and communities? (ISTEAM Collaborative, 2020). This is one of the most pressing questions we can ask ourselves in the face of the climate crisis. Community-based agriculture fosters better relationships between humans and the more-than-human world as well as between humans themselves (ISTEAM Collaborative, 2020). We can learn from this collective and the other community models to promote self-sufficiency, collaboration, and reciprocity in the food practices of all communities.

MOVING FORWARD

All of these community initiatives center around the decolonization of our food system from corporate agriculture and colonial economies, reciprocal relationships with the land and non-human world, ways of growing that improve resiliency of the crops and land, respecting natural ecosystem cycles, and building food self-reliance of communities. Indigenous perspectives inform the guiding principles of a collaborative and resilient food system that fosters a deep and profound connection with Nature. By integrating these practices and their underlying principles into a re-envisioned food system, we can help achieve a sustainable and just transition to a society that is mindful of all life on this planet.

Vandana Shiva said: "Change our mind before we can change the world" (Arizona State University, 2014). I think the first step in shifting the paradigm that legitimizes the destruction of industrial agriculture is by recognizing that our life comes from the Earth, and that we should live with gratitude. Then we must make a conscious collective choice as a society to act on our responsibility to the natural world by transforming our interactions with the environment to model those principles in compassionate and respectful ways. Change can therefore be cultivated by learning from and joining the people and communities who are actively work-

ing to develop alternative food systems. Systems analyst Donella Meadows asserted: 'You don't waste time with reactionaries; rather you work with active change agents and with the vast middle ground of people who are open-minded' (Meadows, 1997). In shifting our mental models from ones that are 'exclusivist' and that disregard marginalized perspectives, we can recognize the wisdom in other ways of interacting with our food and the Earth (Shiva, 1993).

There is a Kwak'wala story that says a mink developed the first sea garden – called lokiwey in their language. Minks were seen as powerful in this culture. Coastal Indigenous communities in Canada view clams as 'marine relatives in a different form' which would certainly help to foster a sense of respect and companionship between those humans and the clams they are harvesting. Some Indigenous elders in rural Chile are even against the harvesting of fish in fishponds during the spawning season because, 'like us (humans), they (fish) need privacy' (Ban et al, 2022). By deeming non-human species worthy of ethical consideration and empathy, Indigenous wisdom informs reciprocal relationships with non-human species and the ecosystems which support them.

In the transition to sustainable food systems, and indeed in the transition to a better world for all, we must embrace empathy and reciprocity among all species. As Kimmerer says, 'As we work to heal the Earth, the Earth heals us'. This is about learning Mother Nature's language, listening to her songs in the wind and her whispers in the trees, and thanking her in return (Kimmerer, 2013, pp. 404). The Earth sustains us and all life, and we have a responsibility to give back to the natural world for all it has given to us.

Humans are a part of Nature and will inevitably alter it by our very existence, but our presence can be one that is works within Earth's cycles rather than completely undermining ecosystems. The industrial food system is clearly unsustainable. We have been ignoring our place in Nature's community and abusing our relationship with Earth for far too long. We must mend this relationship by moving forward with values such as reciprocity, compassion, and equity. Indigenous teachings that prioritize reciprocal relationships with the more-than-human world can provide the foundation on which to build a truly sustainable food system and repair our relationship with the Earth (Bless, 2023).

ENDNOTES

[1] One prominent decolonization movement involves the "Land Back" campaigns happening across the globe. In this movement, Indigenous peoples and allies are fighting to have traditional Indigenous territories returned back to those communities who were forced out by white colonizers (Arizona State University Library, 2022).

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CHAPTER 6
A United Front: Harnessing the Power of Collaboration for Sustainability

by Chris Roddis

INTRODUCTION

Growing up in New Brunswick, Canada, I've always been surrounded by the vast and tranquil beauty of our forests. These wooded areas, with their dense canopies and the array of wildlife they shelter, have been the backdrop to my life's most serene moments, weekend family hikes, quiet walks to clear my head, and adventurous outings with friends. It was during one of these walks, in an area I had frequented since childhood, the woods behind my house, that I first noticed the stark change. Where there once stood towering trees and dense underbrush, there was now an unsettling emptiness. The ground, scarred and bare, seemed to stretch endlessly, a stark contrast to the lush greenery that used to define it.

Forestry giant J.D.I., an Irving company synonymous with industry in our province, was expanding its operations, and the forests I had grown to love were under threat. This realization hit me with a mix of sadness and helplessness. The forests that were the setting of my childhood memories were disappearing. It was a quiet moment of observation, but it was impactful. It made me think about the bigger picture, how these small changes, when added up, signal a global crisis. It showed me that environmental degradation isn't a distant problem; it's happening here and now, affecting our communities. This realization sparked a question within me: How can one individual's concern translate into meaningful change against such vast and complex issues? The answer, I found, lies in the power of collective action. It became clear that to address the root causes of environmental degradation, including deforestation, and to advocate for sustainable practices, we need a united front. This is not just a matter of conserving nature for its own sake but preserving the quality of life for communities and the countless species that depend on these ecosystems.

With each passing day, the reality of the polycrisis becomes more apparent and daunting. Polycrisis, a relatively new term, can be understood as the accumulation of environmental, social, and political problems that are mutually interacting with one another, compounding the issues (Heinberg & Miller, 2023). With warning signs everywhere: we are experiencing hotter temperatures, more extreme weather, an increase in natural disasters, and escalating species extinctions. These aren't just random events that are a part of the Earth's natural cycle; no, they're warnings that our planet, our home, is at a breaking point. At this pivotal moment in history, the collective action of people everywhere, from local community activists to global

entities, shines as a beacon of hope. It's about coming together, pooling our passion and resources, to steer our world towards a better, more sustainable path.

I have called this chapter 'A United Front: Harnessing the Power of Collaboration in the face of the Polycrisis.' This is more than just a title; it's a vision, one that is necessary if we hope to fight back the threat of the polycrisis. It's about recognizing that while individual actions are commendable and necessary, they fall short of tackling the enormity of the issue. The challenge we face is global, and it demands a global response—a united front is necessary, where civil society collaborates with governments, the private sector, and local communities to combine unique strengths and perspectives.

Collaborative action requires creating deep, meaningful partnerships that goes beyond basic cooperation. Each group brings unique skills and insights to the table, for our collective strength lies in this diversity. Diversity also means differences—differences in perspective, in approach, in priorities. These can be obstacles, but they're also opportunities. By navigating through these differences, finding common ground, and leveraging our unique strengths, we can forge a powerful collective strategy to combat the greatest threats of our time.

Later in the chapter, I delve into stories of success, where collaboration has led to significant environmental achievements. These are not just tales of victory but lessons in how unity and collaboration can create impactful change. Whether it is saving fragile ecosystems or advancing renewable energy, these collaborations show us what's possible when we come together. They serve as both inspiration and models for future efforts, shedding light on strategies that enable successful partnerships.

The role of digital technology in nurturing collaboration is itself transformational. The digital era has revolutionized the way we connect, communicate, and organize. Through social media, online forums, and virtual meetings, civil society groups can now coordinate efforts on a scale previously unimaginable, overcoming geographical and logistical barriers. This digital connectivity can amplify the voices of civil society, enabling us to reach a wider audience, influence policy, and promote sustainability in ways we couldn't before.

Harnessing the power of collaboration and digital tools is just part of the journey. We also need to confront the systemic barriers that hinder our collective efforts, from political opposition to financial challenges. I explore and showcase strategies that have successfully navigated these barriers, drawing on the lessons and experience of those who've made it through these hurdles. This isn't just about highlighting what worked but also about understanding how to overcome the obstacles that stand in our way to a better world.

This chapter is a call to action, a call to everyone to care about our planetary home and embrace the power of collaboration. As we stand at a crossroads for the fate of the world, the decisions and actions of civil society today will determine the kind of future we will face. Through strategic collaboration, we have the opportunity not just to mitigate the impacts of climate change but to forge a path towards a sustainable, equitable future for everyone.

ROLE OF CIVIL SOCIETY IN DRIVING CHANGE

In this context, it is crucial to define 'civil society'. The cornerstone in our collective endeavor to address the multitude of ecological and societal issues, civil society encompasses a diverse array of entities operating outside the governmental and for-profit sectors, including international non-governmental organizations, religious groups, volunteer community groups, and advocacy organizations. These groups form the bedrock of grassroots movements and are instrumental in pushing for social and ecological change. They engage in activities ranging from public education to direct action and policy advocacy. Their contributions are vital, as they bring unique perspectives, mobilize public opinion, and enact change through collective action (Edwards, 2011). By understanding the multifaceted nature of civil society, we can better appreciate the potential for civil society organizations to collaborate effectively with governments, the private sector and local communities, leveraging their diverse strengths in the unified fight against the polycrisis.

Distinguished by their commitment to advocating for social, ecological, and political change, these entities embody the voice of the people, working to bridge gaps between government policies and community needs (Edwards, 2011). Through their efforts, civil society organizations champion broad social change, each with varying goals and aspirations, targeting different levels of government and sectors of society (Caniglia, Brulle, & Szasz, 2015). They play a crucial role in shaping public policy, influencing societal norms and perception, and advocating for the collective interest. Civil society strengthens the fabric of democracy, ensuring that it remains responsive, inclusive, and resilient in the face of evolving global issues.

Civil society holds a unique position in our society, belonging neither to the profit-minded market sphere nor to the regulatory and governing functions of the state. While the market and the state are constrained by their concrete interests and mandates, whether that is maximizing shareholder returns or ensuring public order and prosperity, civil society groups respond to emerging needs and issues. Their ability to operate flexibly, adapt to changing circumstances, and innovate solutions that often elude more rigid structures of the market and the state puts them in a position where they can drive significant ecological and social change (Caniglia, Brulle, & Szasz, 2015).

To drive change, civil society groups craft narratives that highlight issues, aiming to capture public support and engagement. By presenting these concerns in a manner that resonates with the public's values and experiences, they kindle a movement toward significant change.

The effective framing of issues often challenges existing narratives and the status quo, encouraging people to question their perspectives and existing systems. This disruption initiates dialogues that can transform abstract concerns into actionable agendas that resonate on a personal level, garnering widespread support and enlightening citizens of pressing issues. Through these efforts, civil society not only elevates awareness but also mobilizes communities by connecting with their emotions and sense of justice, motivating collective action and advocacy for transformative change (Caniglia, Brulle, & Szasz, 2015).

Effective action requires adept understanding of the political environment within which they work. By closely monitoring the political landscape, civil society organizations identify key moments when the political environment is more amenable to change. These can be seen in times of broad shifts in public opinion, changes in government, or the emergence of new political allies. This enables groups to strategically time their actions, aligning them with moments of increased political opportunity or vulnerability. Proactive measures are equally important. Through advocacy, lobbying, and public campaigns, civil society works to create new political opportunities. Such measures involve establishing strategic alliances to create new avenues for change. By forging partnerships, civil society organizations can pool resources, share expertise, and unify their voices, making their advocacy efforts more potent and persuasive. (Caniglia & Carmin, 2005; Caniglia, Brulle, & Szasz, 2015).

COLLABORATION CASE STUDIES

In driving societal change, collaboration stands as a cornerstone strategy that magnifies the influence and effectiveness of civil society. Bringing together unique entities and organizations not only pools resources, but also fosters a united front that commands greater legitimacy and attention from both the public and policymakers. Furthermore, collaboration brings with it a breadth of perspectives and strategies, promoting innovation and adaptability, while sharing knowledge and mutual support better equips groups to achieve meaningful change. Ultimately, collaboration amplifies the voices of civil society, transforming them into a more powerful force for the advancement of collective goals and the realization of a more just society.

The following case studies illustrate how various groups have united, combining their strengths and resources to make a significant impact in addressing some of the direst impacts of the polycrisis.

Case Study 1: The Global Forest Watch Initiative

Global Forest Watch is an initiative launched by the World Resources Institute (WRI), a global research nonprofit dedicated to fostering a sustainable and resilient Earth. With a mission to live in harmony with the Earth and to keep its beauty and function for the future generation, WRI created the Global Forest Watch. This collaborative effort unites the environmental advocacy of Global Forest Watch, Google's technological prowess, and the academic research

capabilities of the University of Maryland to create an innovative, real-time forest monitoring platform. Designed to surveil deforestation across the globe, this online platform leverages interactive mapping technology to provide timely data, thereby enabling the detection and deterrence of illegal forest destruction. By harnessing each partner's unique strengths, this collaboration offers a potent solution for preserving the beauty and functionality of Earth's forests for future generations (Popkin, 2016).

Global Forest Watch harnesses satellite data to track deforestation in real time. The University of Maryland provides the scientific foundation and expertise necessary for analyzing deforestation data. Led by Professor Matthew Hansen of the Geographical Science department, they developed sophisticated algorithms that can detect minute changes in forest cover. These algorithms are used to interpret data from NASA's Landsat satellites, allowing for the precise monitoring of changes in forest landscaptes (Popkin, 2016).

Tech giant Google contributes its substantial technological resources, particularly in cloud computing, to efficiently process the vast volumes of data from Nasa's Landsat satellites. Without Google's computing power, analyzing such large datasets would be painstakingly slow, hindering timely detection of deforestation. This mobilization of technological resources amplifies the impact of conservation efforts, enabling real-time analysis and response to deforestation (Popkin, 2016).

Making this data accessible and actionable falls to the Global Forest Watch and the WRI. Through their online platform, supported by Google's satellite maps, they feed real-time information into a worldwide network of legislators, environmental activists, and concerned citizens. Global Forest Watch empowers these activists by alerting them to changes in forest conditions, facilitating immediate protective response. This open-access approach provides people on the ground with the information they need to take collective action (Popkin, 2016).

Together, these partners combine their unique strengths and resources in academic research, technological innovation, and advocacy, to create an unprecedented system for monitoring and combating deforestation globally. This project gives us important insight on how to establish effective and essential collaboration. No one group can combat deforestation on its own. Real change is the result of various entities working together and pooling their resources and expertise. It's evidence that when we come together for a common goal, the results can drive real change.

Case Study 2: The Greenest City 2020 Action Plan

Another great collaboration success story involves the City of Vancouver. Vancouver embarked on an ambitious journey with the Greenest City 2020 Action Plan, setting specific targets to reduce its carbon footprint significantly. Among these targets were a 33 percent reduction in greenhouse gas emissions below 2007 levels by 2020, and reaching 80 percent

reduction by 2050. Leadership for this initiative was centrally located in the Greenest City Action Team, a special unit established by the City Council under the visionary guidance of then-Mayor Gregor Robertson and his administration (Burch, 2010).

With the Mayor and Council promoting an atmosphere that allowed for the free exchange of ideas and the encouragement and support of creative solutions, the effort to integrate collaboration into the City's response to climate change has gained considerable traction in the mid-2000s. Since then, Vancouver has consistently improved its cooperative endeavors, incorporating them into the core of its operational ethos. To ensure a comprehensive strategy for sustainability and climate resilience, the Greenest City Action Team actively engaged with a broad spectrum of stakeholders. This collaboration extended to developers, who were responsible for fostering green building practices, to local communities who incorporated their feedback into urban planning, and to third-party experts including environmental scientists and sustainability consultants, to ensure the initiative was informed by the latest research and best practices in urban sustainability (Burch, 2010).

This amalgamation of stakeholders was not only a symbol of dedicated political will but also a strategic mobilization of resources, rallying both public and private stakeholders around a shared agenda for sustainable urban development. The collaboration was multifaceted, involving the sharing of knowledge, resources, and best practices across city government departments. It comprised group planning meetings, collaborative policy development, and project execution that was well-coordinated. The "Eco Density" program, which aimed to promote environmentally sustainable urban density, was one significant initiative. As part of this program, planners had to collaborate closely with engineers and community members to incorporate energy-efficient practices and green building standards into development projects (Burch, 2010). The Action Team utilized workshops, committees, and inter-departmental meetings as platforms for collaboration. These gatherings were instrumental in creating a shared understanding of climate goals and in identifying innovative strategies to achieve them.

These platforms for engagement served not just as forums for ideation but also for fostering a shared commitment towards the city's climate goals. This process underscored the initiative's underlying narrative: that a shift towards sustainability transcends policy and technical fixes, requiring a cultural transformation anchored in teamwork and shared responsibility.

The importance of collaboration in Vancouver's climate action strategy cannot be overstated. The City was able to move closer to its ambitious climate goals because of the combined efforts of various groups that shared a common goal. The Vancouver Greenest City 2020 Action Plan exemplifies the critical role of political leadership in driving environmental stewardship and sustainable urban development. This case study underscores that when political leaders harness the moments ripe for change, mobilize necessary resources across sectors,

and effectively frame the environmental imperative, transformative change is not only possible but within reach.

Case Study 3: Mexico's Urban Watershed Governance

In Mexico, a diverse series of cross-sector collaborations are revitalizing the environmental governance of urban watersheds in a nationwide initiative with local implementation. While watersheds are fundamental to the well-being of communities, their critical significance often eludes the awareness of both the public and policymakers. Urban growth in recent decades has led to significant habitat loss, biodiversity decline, water pollution, and water shortages, underscoring the urgent need for integrated management of urban and rural watershed, a need that is often unmet by traditional governance models. Numerous environmental groups and other civil society organizations in Mexico have taken a leading role in bridging these gaps. These organizations have been instrumental in educating urban populations about their dependence on the surrounding rural ecosystems for water and other vital ecosystem services and the urgency of integrated management approaches that bridge the urban-rural divide.

These efforts are not isolated to a single city but span multiple regions, including Xalapa in Veracruz, Coatzacoalcos-Minantitlán in Veracruz, San Cristobal de las Casas in Chiapas, La Paz in South Baja California, and San Miguel de Allende in Guanajuato. Each of these cities faces unique socio-environmental conditions, from industrial pollution of waterways to water scarcity. Under this initiative, environmental nonprofits, community-based organizations, and advocacy groups have actively collaborated with government agencies, the private sector, and local communities to develop and promote collaborative governance models that integrate urban areas into comprehensive watershed management plans. These models aim to foster conservation efforts and sustainable water use practices across distinct zones and regions (Cotler et al., 2022).

In these collaborative efforts, decision-making processes involve a wide array of stakeholders from both urban and rural settings, ensuring that diverse perspectives and needs are considered. For instance, in the Pixquiac Watershed in Xalapa and the Atoyac River basin in Puebla, environmental coalitions have mobilized resources ranging from local knowledge to international funding, to forge governance structures like the Watershed Committees and Citizen Observatories for Water. These committees work to define specific conservation targets, sustainable land use policies, and water management strategies that are responsive to the unique environmental challenges of their respective regions. The Pixquiac Watershed Committee in Xalapa shows how diverse groups, including local landowners, ejidos (communal lands), producers, civil society organizations, and academics, can come together for the common goal of watershed conservation. These collaborations have made it easier to obtain funds, get technical help, exchange best practices, and jointly develop regional environmental solutions. The efforts of civil society organizations and communities to implement

efficient conservation strategies have been strengthened by the involvement of the commercial sector and academic institutions, which have contributed further resources and expertise (Cotler et al., 2022).

These collaborative initiatives have led to significant advancements: educating urban communities about their water sources, implementing payment for ecosystem services, and promoting sustainable land management practices. Enhanced stakeholder accountability and trust have further increased governmental transparency and responsiveness. This underscores the transformative power of multi-sector partnerships in yielding outcomes that are not only environmentally friendly but also resilient, equitable, and sustainable.

These first-hand accounts from the front lines of environmental and social change serve as models for how groups can work together to change their world, providing examples of the practical effects of adopting a variety of approaches and the significance of having a collaborative mindset. Together, these local efforts cumulatively contribute to a broader global movement, offering inspiration and a roadmap toward a just and sustainable future. By acting in our own contexts and joining forces with others, we are not just changing our immediate surroundings; we're contributing to a wave of change that spans across the globe.

As we delve deeper into the nature of collaboration for environmental sustainability, we uncover several mechanisms that underpin successful partnerships.

NETWORKS, COALITIONS AND ALLIANCES

Networks are informal structures within which resources and information are freely exchanged. Their open and decentralized structure allows for quick and flexible and localized responses to environmental challenges. Being highly adaptive, networks facilitate dynamic engagement, poised to shift direction as the landscape of sustainability challenges evolves (Park et al., 2020).

In contrast, alliances and coalitions are formal mechanisms that provide the stability and structure of a long-term commitment. These approaches, which are frequently codified in agreements, bring organizations together to work toward a specific measurable goal such as achieving significant policy changes or undertaking ambitious conservation projects. By combining forces in a coalition or focusing strategically in an alliance, civil society groups can marshal resources at a magnitude that would be difficult for individual organizations to accomplish on their own (Park et al., 2020). Choosing the best collaboration model is a difficult balancing act that requires an in-depth understanding of the task at hand, the stakeholders involved, and the resources available.

MEMBER-BASED COLLABORATIONS

In the landscape of civil society organizations, a member-based model represents a foundational approach where organizations are supported, governed, and driven by their members. Member-based organizations (MBOs) such as leagues, federations, societies, and unions rely on the active participation, contributions, and decision-making of their members. Members are not just supporters but are integral to the governance structure, embodying democratic principles by having a say in organizational directions, policies, and actions. This model fosters a sense of ownership and accountability among its members, making these organizations potent vehicles for social change (Gordon-Farleigh, 2024).

The professionalization of civil society over the past few decades, characterized by a shift towards NGOs that operate in the halls of power, represents a departure from the tradition of membership-based organizations. The transition towards a 'sector of advocates without members' has sparked considerable debate, particularly around the implications for grassroots dynamism and democratic engagement that have traditionally been the lifeblood of collective action. This transformation into a more formal and structured realm has undoubtedly brought efficiency and specialized expertise to the landscape of civil society. However, it also raises concerns about diluting the community spirit and participatory ethos fundamental to civil society's essence (Gordon-Farleigh, 2024).

The necessity to reconnect with grassroots dynamism and democratic engagement arises from the recognition that true social change requires the collective power and accountability that only active public engagement can muster. Member-based models are a shining example of democracy in action, representing the idea that community engagement is the foundation of sustainability efforts and that there is power in numbers. To ensure that initiatives are not just about the communities but also by and for them, these models support a bottom-up approach that embodies the values of inclusivity and representation (Gordon-Farleigh, 2024).

THE DIGITAL DIMENSION: EXPANDING HORIZONS

Social media and digital platforms have completely changed the potential for civil society collaboration by removing geographical restrictions and opening new channels for participation and mobilization. With the help of such digital tools, the traditional activism landscape has changed, and a global community of change-makers can now connect, share, and act at a never-before-seen pace and scale (Alghamdi et al., 2023).

Digital platforms function as workshops where ideas can be developed, polished, and shared in addition to being megaphones for the cause of sustainability. They offer a venue for online strategy sessions, training seminars, and brainstorming sessions without requiring in-person attendance. The move to digital engagement presents enormous opportunities to expand the reach and effectiveness of cooperation and enable a wider and more inclusive participation (Alghamdi et al., 2023).

Nonetheless, the shift towards digital engagement introduces several challenges, including ensuring equitable access to digital tools, combating misinformation, and fostering genuine online interaction rather than surface-level interactions. Addressing these challenges requires concerted efforts from a coalition of stakeholders, including civil society organizations, tech companies, policymakers, and educators. Civil society organizations need to advocate for and implement digital literacy programs, while tech companies have a responsibility to design platforms that are inclusive and accessible to all. Moreover, policymakers play a crucial role in addressing the digital divide, potentially requiring public policy interventions to ensure that digital engagement tools benefit every segment of society, thereby making the digital space a truly inclusive domain for environmental activism and collaboration (Alghamdi et al., 2023).

OVERCOMING CHALLENGES TO COLLABORATION

Even though working together for a cause has enormous potential, there are frequently obstacles in the way of a successful collaboration. Despite numerous cases of successful collaborations, we are still confronted by an unavoidable speed bump: the difficulties that can cause civil society collaborations to stumble and fall. Tackling these obstacles head-on and developing plans to overcome them is essential for success.

One of the major obstacles we face is conflicting priorities and goals among the various groups. Imagine multiple organizations, all with good intentions, coming together but going in slightly different directions due to their distinct missions and approaches. This discrepancy can lead to conflict, making it challenging to forge a shared path toward sustainability. Competition for resources, funding, and public attention can also create tension that can divert us from our shared environmental goals (Lozano et al., 2021).

Trust and communications are two of the most important foundations for navigating through these difficulties. Developing trust between partners is essential to the success of any collaboration; it is not optional. Without it, resistance and doubt impede every step you take forward. Cultivating this trust demands time, an open-book approach, and a dedication to treating each other with respect and understanding. Effective communication goes hand in hand with trust as it helps to clarify objectives, resolve conflicts, and keep everyone moving in the same direction (Murray et al., 2010). It is the glue that unites everyone.

Then there is the governance issue in these partnerships. Getting the governance structure right is imperative. A balance is needed to ensure everyone feels valued and heard, without letting the collaboration lose its flexibility or direction. Effective governance means establishing clear roles and decision-making procedures. This creates an atmosphere in which each group can flourish while still contributing to the overall objective (Murray et al., 2010). This delicate balance is key to enduring partnerships that be sustained and maintained.

PUBLIC POLICY SUPPORT

Civil society collaborations operate in an environment greatly influenced by governments and institutions. The right mix of regulatory support, financial incentives, and logistical assistance can significantly lower barriers to collaboration, allowing partnerships to emerge and grow. Governments possess the power to either foster these collaborations through measures such as tax incentives for sustainable projects, grants for cross-sector partnerships, and simplification of legal frameworks, or hinder them with restrictive policies and bureaucratic obstacles (Flores & Samuel, 2019). For example, creating platforms for continuous dialogue such as public forums or advisory councils ensures an ongoing exchange between civil society and government, promoting mutual understanding and cooperation.

Conversely, the absence of such supportive measures or the presence of bureaucratic hurdles can slow down these efforts. These hurdles can manifest in lengthy approval processes, rigid regulations, and complex funding requirements. Additionally, a lack of coordination among government agencies and insufficient information can create confusion and inefficiencies. Excessive paperwork, known as red tape, further burdens organizations, diverting their focus from core missions (Flores & Samuel, 2019). To overcome these barriers, streamlined regulatory processes, improved government coordination, and clear communication are essential. Simplifying access to financial incentives and reducing administrative burdens can foster a more supportive environment for civil society efforts (Murray et al., 2010).

INSTITUTIONAL SUPPORT: THE WIND BENEATH CIVIL SOCIETY'S WINGS

Formal institutions such as universities, colleges, international agencies and research centers can provide the foundation for civil society collaborations. They can provide funding and resources, while bringing knowledge, credibility, and networking opportunities that can enhance the work of local or regional civil society groups (Gemmil & Izu, 2002). The Global Forest Watch initiative showcased how academic and technological institutions can contribute significantly to civil society projects. Similarly, in Mexico, the urban watershed management collaborations benefitted from the support of local universities and international bodies like the United Nations Development Programme. Through research facilitation, capacity building, and promotion of effective strategies, institutional involvement in collaborations can enhance the strength, expertise, and interconnectedness of the civil society sector (Murray et al., 2010).

These examples show the diverse ways policy support and institutional frameworks can empower civil society collaborations. Governments and institutions facilitate collaboration by offering an enabling setting. For civil society organizations, this recognition can be a strong incentive that strengthens their commitment to collaborating for the greater good.

MOVING FORWARD

As civil society groups come together to steer our world towards a more sustainable future, the message is clear: collaboration is beneficial and vital. Case studies of civil society collaboration show that a blend of traditional models with modern digital strategies holds the key to unlocking high levels of engagement, innovation, and impact. Through the integration of both the democratic nature of member-based models, the large-scale potential of formal mechanisms, and the utilization of digital technology, civil society groups can establish a resilient and flexible framework for cooperation to effectively tackle the diverse obstacles associated with environmental sustainability.

Exploring the mechanisms of collaboration highlights for us the vast potential for collective action in shaping a more sustainable world. It shows us how crucial strategic alignment is to creating partnerships that are not just successful but transformational. These observations serve as a roadmap for navigating the complexities of environmental advocacy and action, motivating us to create partnerships that are as resilient, varied, and dynamic as the ecosystems we work to safeguard.

The interconnected elements of the polycrisis are too complicated and multifaceted for any one group to handle on its own. The strength to confront these challenges lies in our ability to join forces, bringing together diverse perspectives, resources, and innovations. The cases presented here provide evidence of the effectiveness of collaboration and demonstrate to us the significant impact that united efforts can have on advancing sustainability.

We find ourselves at a crossroads, with an obvious call to action echoing all around us. It is time for civil society organizations and institutions to get closer, collaborate more creatively, and keep our sights focused on our common goal: a sustainable future for everybody. We need to engage in conversations that welcome the wide array of voices in civil society, recognizing their crucial role in this fight. The accomplishments we have examined are more than simply stories of success; they serve as a source of motivation for what we can accomplish in the future. Yes, the challenges ahead are formidable, but so too is the collective's fortitude, ingenuity, and resolve. The road to a better world demands our combined determination, hard work, and creativity, requiring every sphere of society to contribute, with collaborative civil society spearheading the effort.

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EPILOGUE
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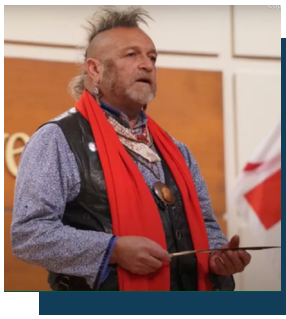

It was a great honour to have met with the students in Dr. Janice Harvey's Environment and Society Capstone Seminar, and to be invited to share some closing thoughts. I am particularly excited by the courageous visions, feelings, inspiration, and determined perspectives and aspirations from the students. Each one shares a sombre yet attentive and exciting vision on the state of the world and civil society. Such visions inspire me to hold each of them in Heart and Soul and extend this into the partnership of collaboration for the future we are working for. The Youth of our Nations must be supported, guided, and honoured in their trust and diligence in the essentials for *weaving a new tapestry* for the *world we need*.

Their vision is heartening for me. Their thoughtful regard for the state of the world and the processes required for social transformation, especially their effort to learn about Indigenous perspectives, is deeply reflective and resonating. For far too long, the voices and contributions of Indigenous Peoples have been ignored, devalued, and regulated to align with the classic array of false narratives based on myth, folklore, and retrograde nonsense, historically rampant in the stereotype of North America. Their writings suggest that the insistence and understanding of Native Peoples that Earth and Cosmos remain fundamental to the survival and nurturance of every Life; that all matter and manner of living with the Sacredness of Existence must be highly regarded as crucial and uncompromising; that humanity needs to live within such life-giving cycles of love and balance, has taken root. Such understanding is absolute and worthy of our mutual responsibility, undivided focus of our mutual capacity for expressing and living *Deep Love*, and immense respect for giving thanks for every moment of the great, yet mysterious, *Gift of Life* and the living flowing from it.

The thoughts, care, love, and sentiments hearkened by these courageous voices parallel Indigenous/First Nation sensibilities, determination, coherent regard for life on the planet. This matter would behoove all of Humanity to embrace such regard for *All Life*, if concern for the future is upheld, sanctified, and prominently inculcated in the how, why and wherefore of our mutual daily living. Such a time of alertness and love, compassion, and realization existed among human cultures throughout the world, embraced by all humanity and most assuredly, here in *Kicit8nupaqit*, the Great Turtle Island/the western hemisphere, prior to 1492 and since. All humanity is essentially indigenous to the Earth and Sky. Indigeneity requires responsibility to the interdependence and inter-cognizance with all of Life.

History is a mysterious encounter of evolution, development, enlightenment. The transitions of knowledge, wisdom, love, was and is replete with the arrays of value, purpose, achievements, yet eventually escalating into a form of social reversal; a belligerent undoing; an unbecoming. The horrors of designed tragedies abound, such as the inventions of deliberate falsities and untruthful narratives, conspiracies forwarding crimes against humanity, and the historical and contemporary flow of genocide, unwarranted aggressions, the relentless use of violence, intimidation, threat, forced submission, all in the service of unchecked capitalism and colonial domination. The undercurrent of greed, quest for power and control, the socio-political, religio-economic narcissism and unbridled policing aggressions remain a continuing trauma of social psychosis, a schismatic rebellion from truth, love, respect, and regard for life in seismic proportion.

This descriptive analysis brings to reality the clarion call for *weaving a new tapestry*. These writers opine the prospect of Indigenous values, knowledge, and wisdom as formidable in the pursuit of aiding and allying the prospects of social transformation. This *Calling* is perhaps the clarity of realizing *who* best can espouse the structures required of social transformation. Despite longstanding efforts of settler colonialism's impacts and intensions to dismantle, abolish, bury, then inertly marginalize, *the Indigenous Being* remains steadfast and determined to be loyal and providential to the *Sacred*, to *the Relational* of Earth, Sky, and the All of Life. Who can be better suited for such a *Calling*?

There can be no future and no life should the very requirements for sustaining Life in all its dimensions not be heeded, remain inattentive, nor fully embraced. Ignoring the call and profundity of Love and Life is insensibly fatal. The lessons of history, the detriment of not paying attention, of ruthless disregard, of uncaring and unfeeling, interplayed throughout the life of Humanity, necessitates responsible, loving, and extraordinary care. Regard the visions of these Young People, who are charged with Life's continuance, honour their courageous invocation, supplement, embrace, enjoin, become sponsors of life as these Young People see it. Our lives and the life of all living beings depends on this unparalleled need for their vision.