

**Miring in the Muck:
Imagining Canada's Regenerated Peatland**

by

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Dalhousie University is located in Mi'kmaq'i,
the ancestral and unceded territory of the Mi'kmaq.
We are all Treaty people.

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Abstract

It is time that we mire ourselves in the muck. Peat-producing wetlands are disappearing into the atmosphere quicker than arctic sea ice is melting into the ocean, and they are taking millennia of sequestered carbon with them. A strong aversion to peatland is embedded in Western culture, pervading myth, religion and language, unconsciously influencing our environmental worldview. The regeneration of Canada's lost peatland is a re-initiation of the carbon sequestration process and an opportunity to reframe our relationship with these ecosystems. This thesis seeks to mire phenomenological imagination in restored peatland through dwelling, using architecture as framing device and interface between people and peatland. Everyday experience will be broken into programmatic fragments and redesigned, derived technically and poetically from the environment to inform a phantasmagoria of moments. Dwelling is used as a means of revealing the wonder of place and admiring the muck of the mundane.

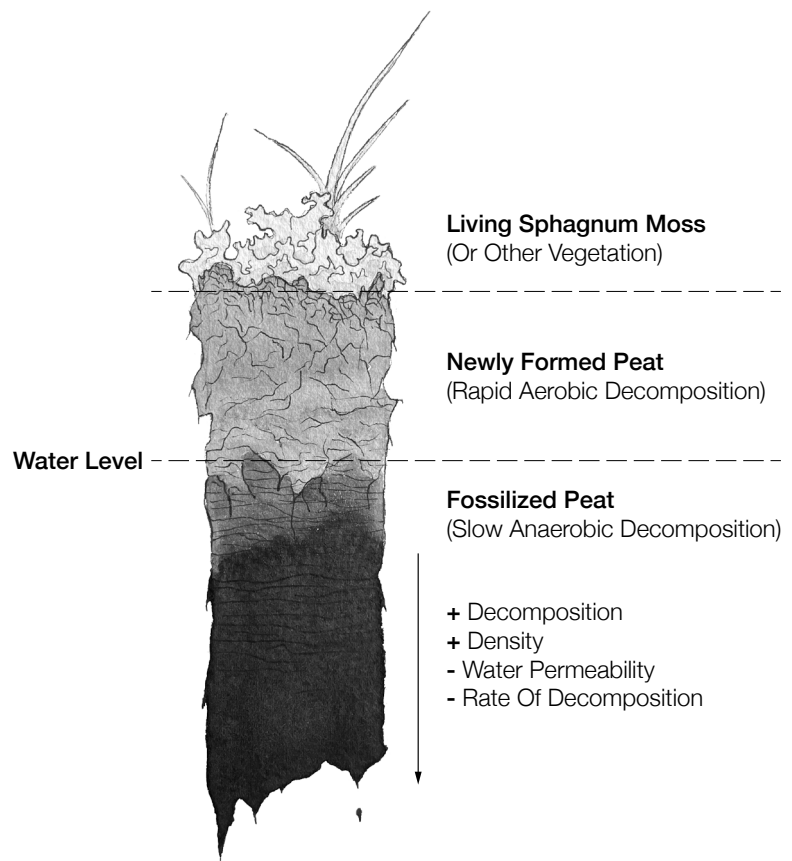
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Chapter 1: Introduction

Peat

You are sphagnum moss from 10,000 years ago. The glaciers of the ice age have retreated and you are enjoying the nice weather. Your time comes and goes, and you begin to decompose. You watch your friends grow over you and you are happy for them. As you sink into the embrace of the earth, you find yourself submerged in groundwater. There isn't much oxygen and the microbial workers in charge of your decomposition slow right down. Suddenly you realize that you are not alone. Beside you is the old sedge grass that you grew up with, below you is the moss that you once grew over. Who knew that they were down here this whole time? How many others are there?



Peat accumulation section diagram.



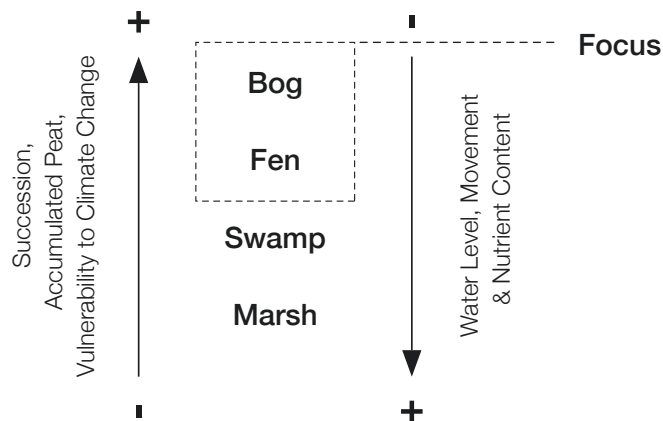
Open Bog (Küttim 2018)



Wooded Bog (Laurent NA)

This is the story of peat accumulation. Peat is a unique soil that is composed of partially decomposed plant matter. It is formed when the production of vegetal biomass is greater than the rate of its decomposition (Andriessse 1988). At first, like any other decomposition process, peat is chemically broken down by aerobic micro-organisms (Andriessse 1988). This process is then stalled as dead plant matter becomes subject to anaerobic conditions in oxygen-deprived groundwater, where it experiences little change over time (Andriessse 1988). Under the right conditions, peat is preserved for millennia.

Peat is best preserved in wetland environments, such as marshes, swamps, fens and bogs (Rydin 2006). The government of Canada defines “wetland” as “land that is saturated with water long enough to promote wetland or aquatic processes”, which includes shallow waters of two meters depth or less (Environment Canada 1988). When a wetland ecosystem accumulates forty centimeters of peat or more, it is classified as an organic wetland, or “peatland” (Environment Canada 1988). These peat-producing ecosystems follow a natural succession that starts with marsh and ends with bog (Rydin 2006). With



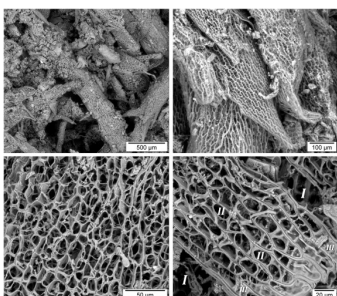
Peat-producing ecosystems of Canada ordered from highest accumulation to least.

each succession, access to groundwater and nutrient input lessens, increasing peat accumulation, making fens and bogs the ultimate peat keepers (Rydin 2006).

Peat is a captivating, indeterminable and unsettling phenomenon. It is an elemental mixture of earth and water. Every step sinks and squelches, leaving a taste in the air. It is deep, dark and boundless, rich in mystery and imagination. Its existence rests in limbo, stagnated in the sheer density of its own ruin. It belongs to another realm that is mirrored across the surface of subterranean water.

Peatlands are melting pots of life and death. They embody the existential balance of life on our planet by suspending the decay that follows death. Weathered boardwalks are not dissimilar to the storied streets of Paris, with catacombs underfoot. The ground is composed of former life that has been hollowed-out down to the cellular level (Fereidoun et al. 2016).

Peatlands are like ancient cities, the current plane of inhabitation is just the newest layer of strata. Their fibrous, pulpy layers read like the pages of a history book. It is for this reason that every bog is an archive, many of which have been recording for thousands of years. They function in the same way that our highly mechanized archives are designed to prolong the existence of precious cultural artifacts. But when subjected to the wrong conditions, peat and all of its treasures vanish into thin air.



Hollowed plant cells from decomposition in peat fibers (Fereidoun et al. 2016)



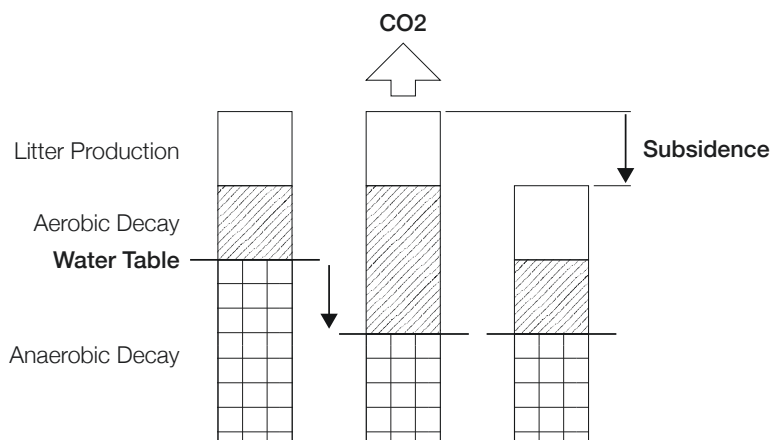
Core sample showing layers of peat and preserved plant fibers (Turetsky 2022)



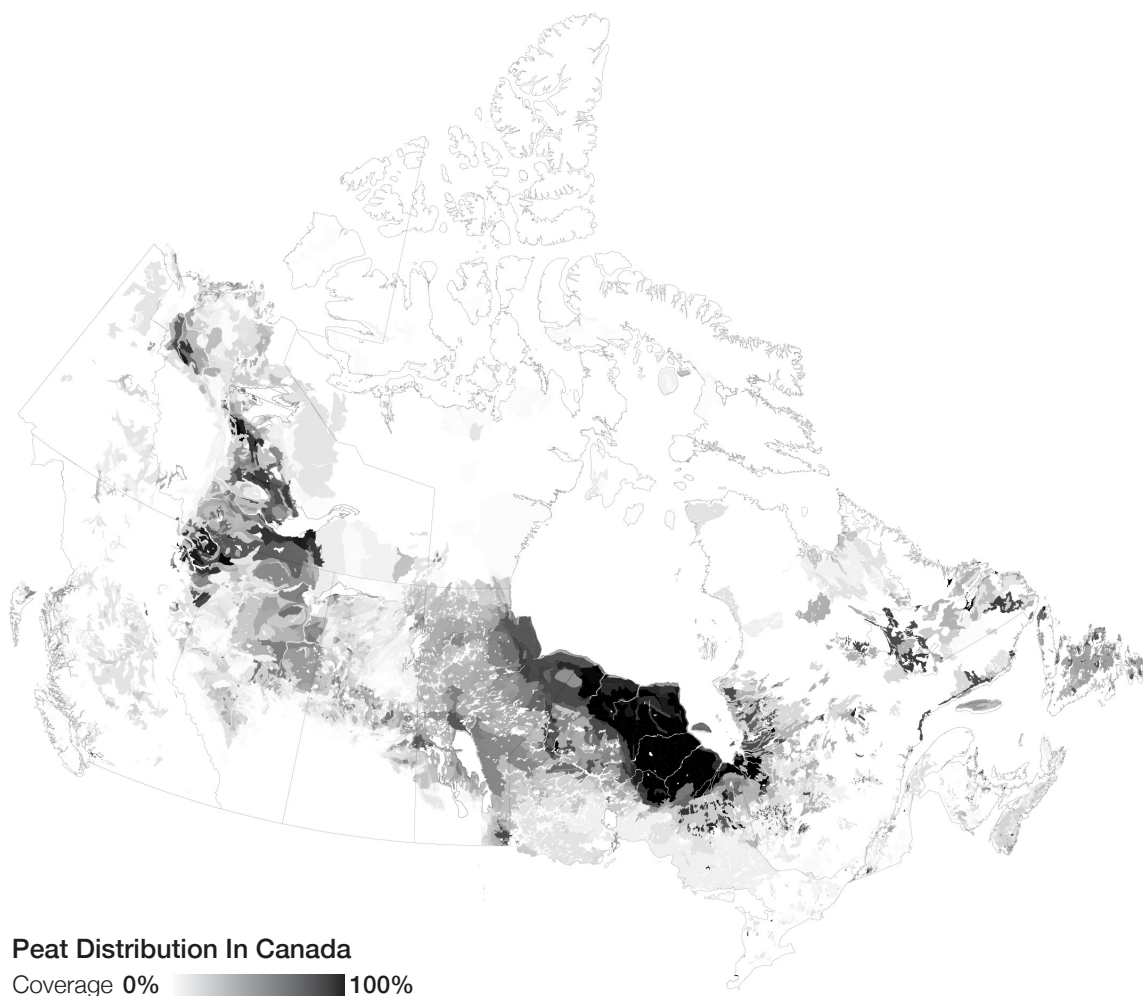
Texture from hand cutting bricks of peat to be dried and used for fuel. (Stein 2019)

Into Thin Air

Peat can be used for fuel, it is a precursor to coal, embodying centuries of sequestered carbon. Peatland accounts for 3% of the earth's land area, but it stores 30% of all land-based organic carbon (Fereidoun et al. 2016). To put that into perspective, one square meter of peatland in Northern Canada stores five times more carbon than one square meter of Amazon rainforest (Southee 2020). The retention of this carbon is dependant on the stability of groundwater. If groundwater drops or begins to circulate, it causes rapid aerobic decomposition to resume and carbon is emitted into the atmosphere in the form of carbon dioxide and methane gas. This process is called oxidation. Peat oxidation accounts for 6% of global CO₂ emissions, which is largely attributed to human drainage (Kaat and Jootsen 2008). To make matters worse, peat degradation and oxidation rates are only expected to increase by 60%-70% with climate change (Verhagen 2009).

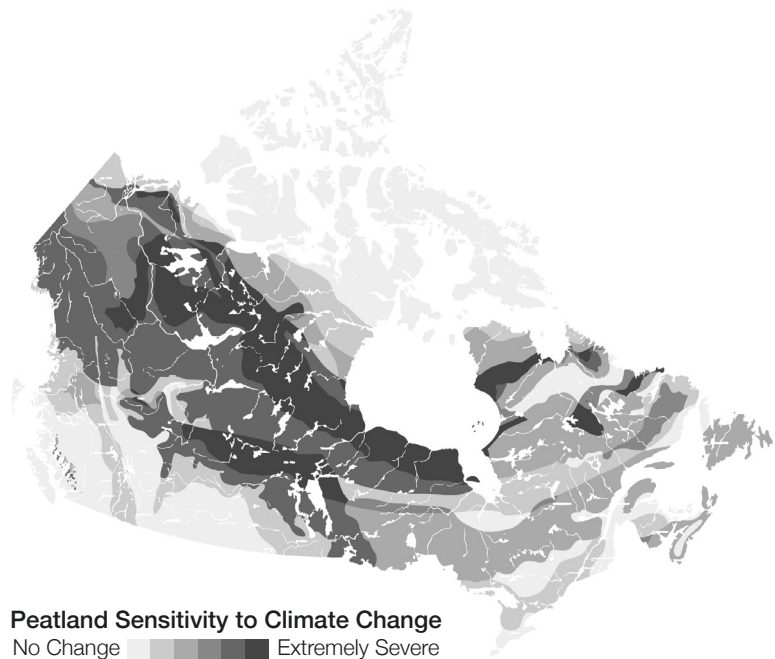


Lowered ground water causes peat to oxidize and ground level to subside.



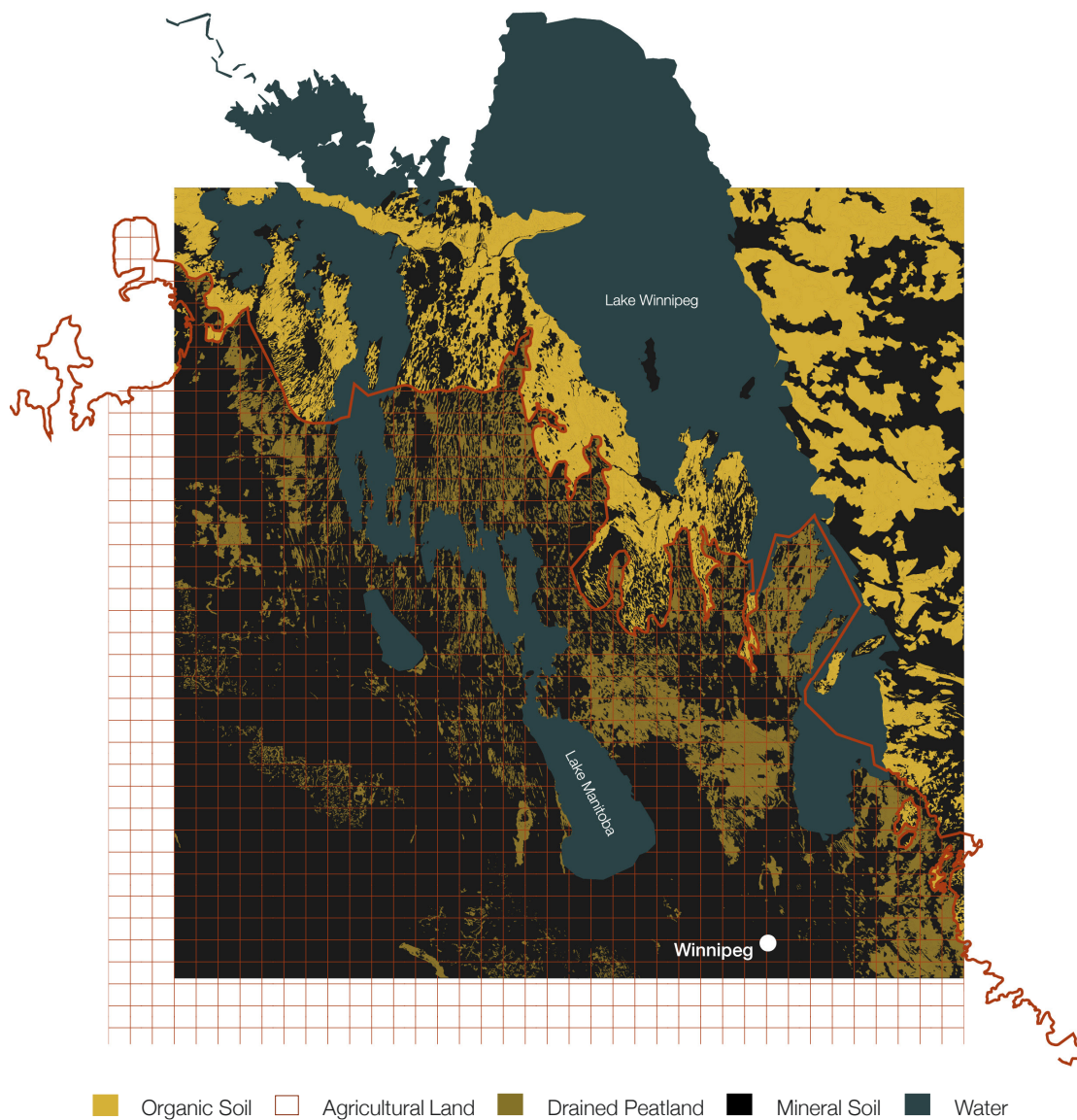
Peatland Distribution in Canada. Data Source: Tarnocai, Charles, Inez Kettles, Barbara Lacelle. 2011. "Geological Survey of Canada" Open File 6561. Ottawa. Natural Resources Canada.

Canada's peatlands account for 25% of the global peat reserve, it covers 12% of the country's land area (Tarnocai 2006) and stores over 150 billion tonnes of carbon (Kaat and Jootsen 2008). It is the largest peat carbon stock of any country in the world. The exact implications of climate change are unknown, but the predicted consequences are severe. Northern peat that is safely stored in permafrost is expected to thaw while peatlands to the South, in the boreal region, are expected to become more dry (Tarnocai 2009). Both scenarios result in massive carbon emissions that contribute to the greenhouse gas effect, worsening the global climate crisis.



Peatland Sensitivity to Climate Change. Base Map: Natural Resources Canada. 2010. "Potential Impacts: Sensitivity of Peatlands to Climate Change." Ottawa: Open Data Canada.

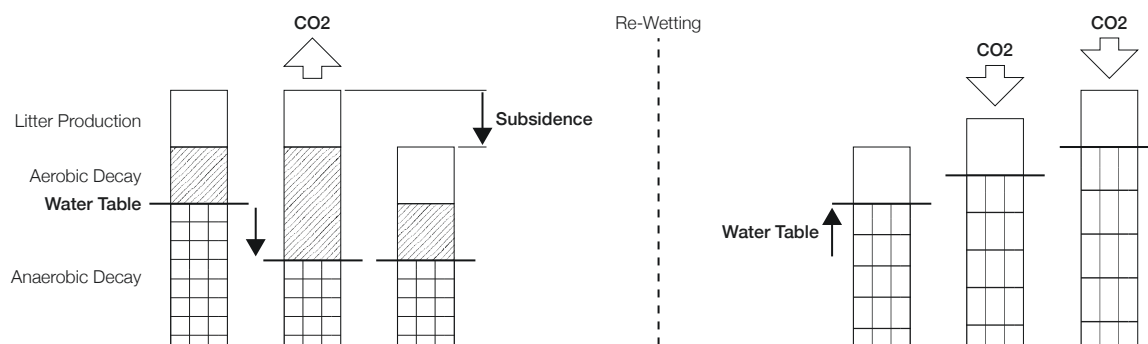
Of the fractional land mass occupied by the planet's peatland reserves, it is estimated that 200,000 square miles have been destroyed with systematic intention, an area slightly larger than the state of California (Struzik 2021). In Canada, drainage for agriculture has been the greatest threat to wetlands, accounting for 85% known wetland reclamation (Environment Canada 1991). "Reclamation" is a problematic term that suggests there was once dry land that we owned. Instead, "reclaiming" is laying claim to what is thought to be worthless and turning it into to a preferable environment for humans. It is also a process of destruction. Urban development accounts for 9% of claimed wetlands in Canada (Government of Canada 1991). The city of Calgary developed 90% of its local wetlands (Struzik 2021). In Southern Ontario, two-thirds of pre-settlement wetlands no longer exist (Environment Canada 1991). In total, Canada has lost one seventh of its wetlands, with millions of hectares that are currently degraded or at risk (Environment Canada 1991).



Extent of agricultural land on organic soil near Winnipeg, Manitoba.

One might argue that our environmental ethics have undergone radical change in the past half century and that historical statistics do not represent current trends. After all, the government of Canada released the Federal Policy on Wetland Conservation in 1991. However, this document does not protect privately owned land, nor does it include forested peatland. It is estimated that only 10% of Canada's peatland is protected (Harris et al. 2022). In 2021, 1200 km² of peatland was predicted to be at risk of development by 2030 (Harris et al. 2022). Canada also has a horticultural peat moss industry that destroys bogs and causes them to subside. In 2020, Canada harvested 1.4 million tonnes of peat from bogs and fens (Struzik 2021). Although environmental protection has improved, peatlands continue to suffer.

The planet is being stripped of its peatland as quickly as its arctic sea ice is melting away, but through ecological restoration, peatlands have the ability to grow back (Struzik 2021).

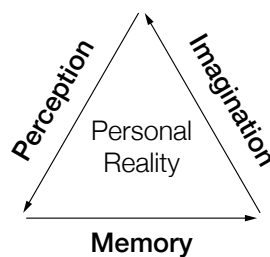


Restoration Diagram: From oxidation and subsidence to growth and carbon sequestration.

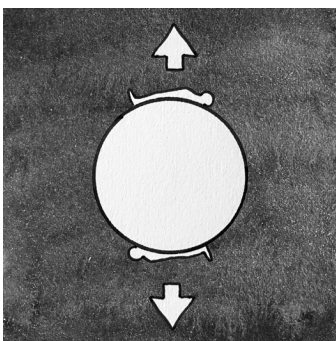
Into the Muck

Conservation is mitigation, but environmental restoration is resiliency. We cannot recreate peatlands as they once were, but it is possible to regenerate wetland ecosystems and re-initiate the carbon sequestration process. However, healing our relationship with the land is a fundamental principle of ecological restoration (France 2023). In this regard, Canada's relationship with peatland is long overdue for careful reflection.

Wetlands are a category of landscape that is shrouded in myth and legend. They are not environments in which many of us have spent much time. As a result, they exist in the peripheries of our imagination and are virtually experienced through our stories and culture.



Perpetual dialogue between perception, memory and imagination.



Looking up at the stars elicits feelings of awe and wonderment while looking down evokes feelings of unease and dread.

In a Western environmental worldview, this means that wetland equals wasteland. This reality informs our attitude, our storytelling, our land development, and our policy making. Re-wetting old agricultural fields and walking away will not change this reality, it requires more. It requires being there, experiencing the place, encapsulating memories, capturing the imagination and letting us fall in love with these landscapes.

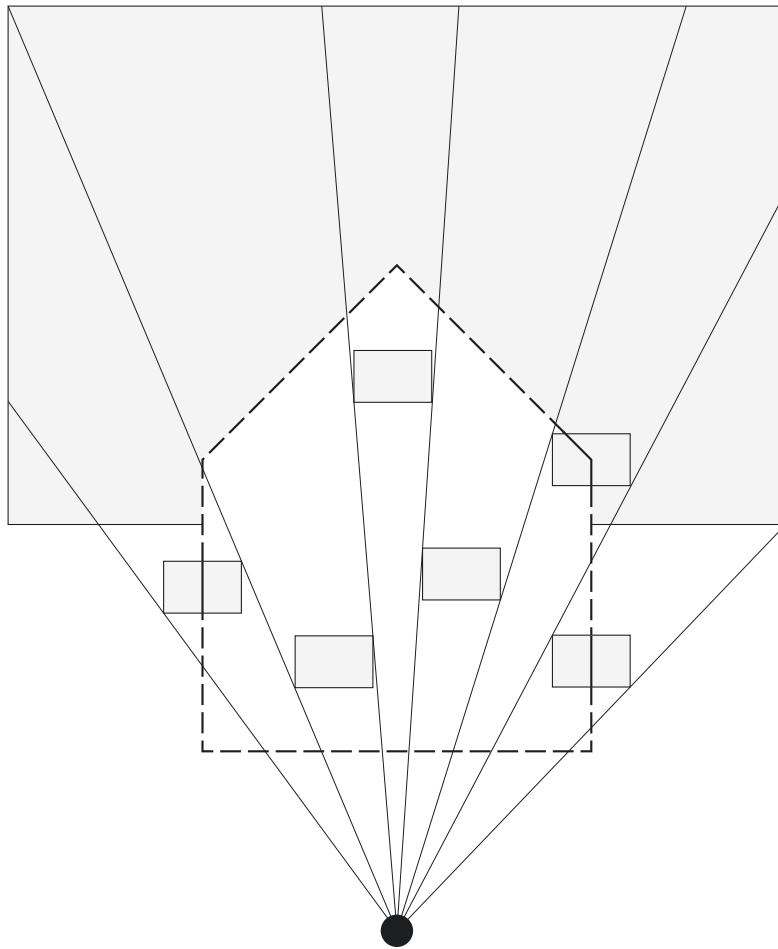
Our personal reality, which is experienced both physically and virtually, is formed by a perpetual dialogue between perception, memory and imagination. In the Phenomenology of Perception, Merleau-Ponty considers perception to be the bodily relation to its environment, and the background of experience that informs conscious decision (Merleau-Ponty 1962). Memory is the artifact of experience, a source of identity and fuel for imagination. One cannot dream without an archive of memory to draw upon (Bachelard

1958). Through memory, moments of imagined experience can become vivid and can even illicit emotional responses. Imagined experience is important because our reality is both physical and virtual. Defining new perceptions and re-imagining experiences can reframe a person's environmental worldview.

This thesis imagines an intimate experience of place through dwelling; it pictures life in Canada's regenerated peatland. Environmental restoration and architectural inhabitation are used synergistically to propose alternate perceptions and memories. In an attempt to represent life in peatland, the architectural program of dwelling will be fragmented into individual rituals and moments of the mundane. Each fragment is considered in the context of the peat landscape, reconsidering, redesigning and perhaps re-scripting what it means to dwell poetically and technically from, with, and within peatland.

The experience of dwelling will be represented by a series of images, or "phantasms" that are rooted in memory and imagination. The moments are rooted in different temporalities of restoration that range across Canada, but they share the archetypal program of a single dwelling. By miring in peatland and dwelling with the muck of the mundane, this thesis endeavors to imbue peatland with a sense of place, inspire stewardship, and reframe our environmental imagination.

Imagining Life In Peatland



By using the dwelling to frame and project experience, architecture becomes an instrument of imagination.

Chapter 2: Bad Air

Be it field, forest, mountain, desert or sea, we can appreciate them all, but there is something about wetlands that we love to loath. Our aversion to these environments lies deep within our cultural subconscious. Our myths, language, religion and economy all contribute towards a negative environmental perception that ultimately informs our actions. This perception has persisted despite a shift towards a scientific understanding of the world. We lost the mythic origins of our worldview, but we have kept the underlying sentiment. This is partly due to our lack of interaction with peatland, which creates a void in knowledge and experience that can only be filled by myth. In order to culturally reframe peatland and renew our relationship with these ecosystems, we must experience them first-hand and re-enchant peatland with a sense of wonderment and affection. This process starts by weeding out our issues with peatland and examining the roots of our perception. This understanding will enable the re-framing of peatland.

Wasteland

In Europe and North America, peatland is perceived as wasteland. Wasteland is a cultural construct that is characterized by absence and otherness to civilization (Di Palma 2014). In its conception, wasteland establishes a landscape dichotomy based on moral judgment of good and bad environments (Di Palma 2014). They harbour the wrong forms of life and are resistant to domestication and commodification (Di Palma 2014). For centuries, the British deemed Ireland, with all of its worthless peat, to be an unprofitable wasteland (Struzik 2021). In New Jersey, gangs dumped bodies, human waste, in wetlands

where nobody would them (Proulx 2022). The Nazis and Soviets forced Jews and political prisoners to dig peat in the moors surrounding concentration camps; something Ontario considered using prisoners for during the first world war (Struzik 2021). Ontario holds the largest peat carbon stock on the planet in the Hudson Bay Lowlands (Harris et al. 2022). In the 1950s, Canadian defence officials offered the Lowlands as a test site for the British to detonate twelve nuclear bombs of equivalent payload to that of Hiroshima. After all, it was “a wasteland suitable only for hunting and trapping” (Struzik 2021). Luckily, the project was moved to the Australian desert for fear of staff being too cold in Hudson Bay. Of all the waste-land uses, this plan most clearly demonstrates an utter disregard for the value of peatland.

Peatland has also been uniquely categorized as religious wasteland. The concept of “westen” is found in the old and new testament. It is a desolate place of danger and hardship that is populated with ungodly creatures and lacks sustenance for human inhabitation (Di Palma 2014). Through exile, a person’s soul can be tested and redeemed by surviving a westen (Di Palma 2014). At the turn of the 8th century, Saint Guthlac of Crowland did exactly that and was venerated for exiling himself to an island in the Great English Fens (Di Palma 2014). Almost a thousand years later, John Bunyan wrote *The Pilgrim’s Progress*, a christian allegory in which a mire called the “Slough of Despond” blocks the path to grace, representing a test of faith and courage. The poem indoctrinated farmers who were headed to the new world with a sense of Christian duty to drain wetlands (Struzik 2021). In the 20th century, as part of the Zionist movement, Jewish diaspora from around the world sent donations to

Israel to fund the draining of the Hula wetlands. The ancient wetland, steeped with millennia of human history, was turned into farmland with soil that has since lost its agricultural productivity (France 2023). Judeo-Christian religions have effectively established a system where the abolishment of wetlands is morally encouraged.

If peatlands are not systematically destroyed, they are largely avoided, creating pockets of refuge for people and animals alike. Woodland caribou will escape wolves and wildfire by finding safe haven in peatland (Struzik 2021). For humans, culturally marginalized people have escaped the persecution of society in these culturally marginalized landscapes. In the United States, swamps were a safe haven for escaped slaves, evicted natives, civil war deserters, moonshiners, and murderers (Proulx 2022). The Great Dismal Swamp was an asylum for African Americans who escaped the slave trade, offering the freedom and opportunity to raise a family in the safety of the swamp (Struzik 2021). In Israel's Hula Wetlands, escaped slaves formed a culture of Marsh Arabs called the Ghawaina (France 2023). History proves that humans are not so different from caribou and wolves; the vulnerable have found it safer to live with peat than with the rest of society. When these "wastelands" are systematically destroyed, so are the marginalized communities that depended on them.

Myth

Myths are collectively and individually constructed as a means of understanding the world (Tuan 1977). They proliferate in the absence of knowledge, producing garbled visions of empirical reality that provide psychological order and assign personality to space (Tuan 1977). In

this regard, architecture and myth are co-participants in a primeval rite of establishing order and creating place. This is a psychological requirement that people have of their environment (Tuan 1977). Therefore, myth making, like founding a building, tethers ourselves to a place, lays down generational connections and can become a powerful act of building community and collective consciousness.

Historically speaking, peatland and wetlands in general, reside in a realm of imagination that is void of knowledge and understanding. It is true that wetlands are not easy places to navigate on foot and can be dangerous to the unfamiliar traveller. As a result, they have been, and still are, separate from familiar workaday space, suffering from a lack of interaction. They are located far-off, in the foggy extensions of our cognitive spatial maps with which we navigate the world. In the mythic-space of our imagination, wetlands have gained a mythic aura of fear and loathing that persists today.

In the absence of familiarity, wetlands are fertile breeding grounds for monsters that operate out of sight but not out of mind. A frightful swamp woman called “M-ska-gwe-demoos” keeps Abenaki children away from bogs and swamps in Eastern Canada and United States (Proulx 2022). In Northern Europe, green moss sprites steal children in the night if they are not given bread and breast milk (Struzik 2021). Indigenous Australians spoke of Bunyip, an amphibious creature that lurked in swamps, billabongs and lagoons. Of the multitudes of wetland folklore, one of the best sources of inspiration comes from a natural phenomena caused by peat, capturing the imaginations of cultures across geographies and time. One of the chemical by-products of decaying peat is methane, and when it escapes the peaty earth, it can

produce a spontaneous flame. In Argentina, it is known as “Luz Mala”, which translates to “evil lights” (Struzik 2021). In West Bengal, it is called “Luz Aleya” and it marks where a person has died (Struzik 2021). In Scandinavia, “Irrbloss” are the lights of unbaptized children or un-departed souls who lure people into the mire. In England they are known as “corpse candles” or “will-o’-the-wisp”. Among these legends and mythic explanations, you may notice a common motif. Myth and folklore have perpetuated the perception of peatland as a source of evil and malevolence.



Will o' the Wisp (Arthur Hughes 1872)

Today, in a world of scientific knowledge and technological advancement, we believe what we can prove. Little is left to the imagination and the peat-dwelling monsters of the past fade from memory. But in its place, we have seen the rise of a new breed of monster, they are well documented and observable is their destruction, the steam dredge, mechanized peat-cutter, back hoe and bulldozer. These are the industrial beasts of our time, the true killers of the bog.

The weapons with which we have gained our most important victories, which should be handed down as heirlooms from father to son, are not the sword and the lance, but the bushwhack, the turf-cutter, the spade, and the bog-hoe, rusted with the blood of many a meadow, and begrimed with the dust of many a hard-fought field. (Thoreau 1862)

There is one more myth that lingers in public consciousness. Wetlands have historically been mis-diagnosed as a danger to public health. The Antonine Plague that ravaged the Roman Empire in the second century of the common era was attributed to poisonous marsh vapours (Struzik 2021). The emission of noxious vapours emitted from stagnant water is a myth that became known as “miasma” and was believed to be the invisible culprit behind the black death and cholera epidemic. Named prior to the discovery of its cause, Malaria is an Italian contraction of Mala Aria, meaning “bad air” (Proulx 2022). Colonists brought these European convictions about wetlands to North America. Prior to the construction of Central Park, the New York Times described the native wetlands as “a pestilent spot, where rank vegetation and miasmatic odors taint every breath” (Struzik 2021). This misinformed, proto-scientific stigma was so entrenched in European culture that it persists today.

When renown author and bryologist, Robin Wall Kimmerer describes the experience of walking through a bog, she feels the squishing of each step and she smells the “subtle release of faintly sulphurous gases” (Kimmerer 2003). The myth of miasma didn’t appear out of “thin air”, so to speak. The idea of “bad air” manifests from the sense of smell, it is a response to the odours of peaty environments, specifically the smell of decomposing plants. It is true that wetlands release bubbles of smelly gases, but we haven’t been telling ourselves the full story. During the draining of the great English fens, written account describes “airs of overpowering nastiness”, “stinking mud”, “foul and filthy fumes” and “sickly stench” (Proulx 2022). What is not recognized in such accounts is that the author is sensing the repercussions of human intervention (Proulx 2022).

Peat accumulates through the suspension of decay, it is the draining and dredging that causes rapid decomposition. The stories we tell ourselves does not change the nature of peatland, but they define our nature and they effect our actions towards these environments. Kimmerer's bog walking experience demonstrates an awareness facilitated by the senses of a direct cause and effect relationship. This awareness of a reciprocal relationship should be ever-present in the reinhabitation of peatland.

Language

Negative perceptions of peatland have persisted for long enough to become entangled within the English language. When we are stuck, we are "bogged down". When we are overwhelmed, we are "swamped". When we are held down by a troublesome situation, we are "mired". The language appropriated from these landscapes clearly reflects our attitude towards them. As do the names we assign to these places. Wetlands in the Unites States such as the "Drowned Lands", the "Devil's Samp" and the "Great Dismal Swamp" illustrate this point. Even if the perception of peatland as mythic wasteland is an antiquated worldview, it persists through our language and nomenclature. Language is dynamic and ever changing in parallel with culture. If the language remains unchanged, it is because the collective worldview remains unchanged.

"Muck" is colloquialism for peat. The word originates from Scandinavian description of farmyard excrement but it is broadly defined as "slimy dirt or filth". It is also a verb with multiple meanings. It could mean to dirty, to interfere, or to engage in aimless activity. The phrases "quit mucking around" and "don't muck it up" may be familiar to you. Eco-

artist Linda Weintraub has adopted and repurposed this word to fill a gap in our scalar domains. The English language lacks a word for the common scale of human experience, everything that occurs in between the macro and the micro. To fill this void, Weintraub proposes the “Muckro”.

The muckro realm is located where our feet are located. It consists of everything our hands can touch, our noses can smell, our ears can hear, our mouths can taste. It is where interactions are sensual, intimate, and responsive. (Weintraub 2017)

Just as Weintraub has contributed to the ongoing evolution of language, we should not be afraid to do the same. The Germanic root of “mire”, refers to environments of deep mud such as marshes, swamps, fens and bogs. Sometime between the 14th and 15th century, the word gained new meaning: to be stuck in an undesirable situation. Seeing as how language is like landscape, in a constant process of succession, it is time for the next evolution of the word. What if “mired” no longer meant “stuck” as an imposition? What if “mire” meant to be firmly held in place, by a place. It steadies the subject for long enough to truly ad-mire where they are situated. The etymology of “admire” comes from the latin “admirari” which is composed of “ad”, meaning “at”, and “mirari”, meaning “wonder”. Therefore, to be “mired” in place should be understood as a prerequisite to being at wonder with it. In turn, the redefinition of “mire” as a noun becomes: a wonder of place strong enough to make people stay.

PEATLAND VOCABULARY

- Bog:** to become impeded or stuck
(bogged down)
- Mire:** a troublesome or intractable situation
(a mire of debt)
to hamper or hold back
(mired in legal problems)
to cover or soil with mire
(mired boots)
- Morass:** a situation that traps, confuses or impedes
(legal morass)
an over whelming or confusing mass or mixture
(morass of traffic)
- Muck:** slimy dirt or filth
(farmyard muck)
defamatory remarks or writings
(mindless muck)
to dirty with or as if with muck
(muck it up)
to engage in aimless activity
(muck around)
to interfere or meddle
(muck with)
- Quagmire:** a difficult, precarious, or entrapping position
(sucked into a quagmire)
- Swamp:** a difficult or troublesome situation or subject
(medical or political swamp)
to be overwhelmed numerically or in excess of something
(swamped with work)

Re-Definitions

- Mired:** to be firmly held in place, by a place. It steadies the subject for long enough to truly ad-mire where they are situated.
(I go to the cabin to be mired in nature)
- Mire:** a wonder of place strong enough to make someone stay.
(The Irish countryside has a certain mire that makes tourists want to stay)
- Muck:** The thick realm of sensuous everyday experience, the fertile ground of the exotic commonplace.
(I spent the weekend at home, just enjoying the muck)

Re-Definitions: proposed definitions in the next phase of linguistic evolution

Re-Enchantment

Humans process thought linguistically, we understand and navigate the world through language. Ultimately, we see in words (Macfarlane 2015). Robert Macfarlane's book, *Landmarks*, is a powerful testimony to the power of language and its ability to enchant our relation to environment and place. We protect what we love, and we tend to love what we particularly know (Macfarlane 2015). To know a place, to see what is truly there, requires particular language (Macfarlane 2015). Unfortunately, the poetry of place-language is a dying breed that is superseded each year with words for new technological and cultural inventions. If we see in words, then the unnamed goes unseen (Macfarlane

2015). Consequently, when the words to describe nature are lost, nature goes unregarded and becomes vulnerable (Macfarlane 2015). The loss of nature vocabulary and place-language has contributed to a cultural disenchantment with the world. Disenchantment is a greater symptom of the rational, calculating age of rapidly expanding knowledge that we find ourselves. In *Landmarks*, Macfarlane notes that “mastery has usurped mystery” to the point where we are uncomfortable with not knowing and the unknown (Macfarlane 2015). The pursuit of mastery has fuelled the controlled destruction of the natural environment. Peatland is in need of what Macfarlane calls “re-enchantment”.

The international Peatland Society produced a glossary of 7,000 peatland terms, all of which are important. However, there are no terms comparable to the language generated from living in place, from experiencing peatland. There are lost Gaelic words for the sound tall grass makes in the wind, for types of fog over a moor, and for lighting effects caused by the interactions between sun and the landscape. This is not an argument against the work of science, but an argument to work synergistically, to marry understanding and wonderment.

It is for this reason that dwelling with Canada’s regenerating peatlands is essential, because people need to experience the wonder of peatland. These environments exist in the periphery of thought, in mythic space. They are not experienced with the senses, they are experienced within the imagination and through the stories we tell. If myth is born in the absence of knowledge and the modern age is uncomfortable with the unknown, it makes sense that our legends are based in fear. To change this dynamic and re-enchant peatland in a way that encourages protection and

stewardship therefore lies in wonderment. Wonder provides comfort when facing the unknown. To protect peatland, we need to fall in love with these landscapes. In order to do that, we will need to know it particularly and personally. We need to be “mired” in peatland.

Inhabiting regenerated peatland would also counter its paradigmatic perception as wasteland. If wasteland is characterized by absence and otherness of civilization, the act of dwelling would force a cultural re-categorization. After St. Gulath’s veneration in the English Fens, he stayed in the “westen” for 15 years and established a community that grew into an abbey, attracting a scattering of monastic communities throughout the fens (Di Palma 2014). Human inhabitation will also introduce socio-economic function thereby countering contemporary disenchanting notions of wasteland that are based on anthropocentric value. While England calls peat “worthless”, Ireland calls it “black gold”. This is not to suggest peat mining as a wise land use, but it demonstrates discrepancy in valuation between the resident and the visitor. There is also the matter of intrinsic value. In an angry poem by Hugh MacDiarmid, he responds “to a fool who cries “nothing but heather!””, writing with an appreciation that can only be gained with intimate experience over time. Wasteland should be redefined as land with values that are wasted on people.

How do we address the pervasive negative mythology around peatland? According to Yi-Fu Tuan, Author of *Space and Place*, myth cannot be easily verified or proven wrong by evidence of the senses (Tuan 1977). Perhaps we can combat our old myths by writing new ones. Despite the overly fearful and misinformed nature of wetland mythology, there is a common sentiment at its core. There is something

about these places that feel otherworldly, like living portals between realms. “Hockomock” was the original name of the Devil’s Swamp in Massachusetts, the name that was given by the Wampanoag, meaning “where spirits dwell” (Struzik 2021). In British Columbia, the Tsawwassen believed that spirits would drag people into an underground river that flowed beneath Burns Bog (Struzik 2021). Scandinavians sought spiritual connection in the ancient mires through ritual sacrifice and votive offerings (Proulx 2022). Weapons, instruments, treasures, and human bodies were given to the peat. Peatland embodies a significance beyond ourselves, they have an innate sense of connection to mystic powers. While we may no longer collectively believe in spirits and monsters, perhaps peatland can continue to serve as points of interaction between humans and that which evades our senses and scientific understanding. Peatland can serve as portals between us and the natural world, because in a way, they always have.

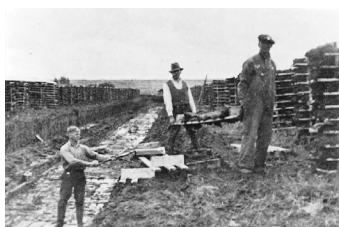
Chapter 3: A Healing Horizon



In Alberta, 88 percent of cutlines twenty years old or more have not yet recovered and regrown. Instead, they collect water and become canals. (Mac Mahon 2011)



Vacuum harvesting horticultural peat moss (Berger 2023)



Block-cutting peat in the Isle-Verte peatland, Quebec, during the 1940s. (Girard et al. 2002)



Drainage Ditch in a Destroyed Bog (Dumbris 2015)

Peatland has been destroyed and degraded across Canada. It has been infilled for development in the metropolitan area of Vancouver, with residents unaware of the subsiding peat beneath their homes. In pursuit of petroleum, Alberta has sliced through its Northern peatlands with 345,000 kilometers of seismic exploration lines, compressing peat with heavy machinery and clear-cutting all the trees in their path (Strack et al. 2019). New Brunswick, Manitoba and other provinces have domesticated and slowly depleted peatland for horticultural peat production, while Ontario, Quebec and Nova Scotia mined their bogs for fuel. Peatland has also been plundered for bog ore and flooded to generate hydroelectricity, but most significantly, peatlands have been drained for agriculture from coast to coast. These are the degraded peatlands of Canada with whom we reside, and through the process of ecological restoration, they hold the potential to resume some of the ecological functions that once occurred prior to our interruption.

Restoration

When planning for the future of Canada's degraded peatlands, there is much to be learned from the field of ecological restoration, but first we must clarify what is meant by "restoration". Restoration is not an act or event, it is an active relationship (France 2008). It accepts constructive human participation in ecological systems and invests in a common future in which we are forced to confront the most troubling aspects of our relationship with nature (France 2008). We may have many troubles to face, but this does not mean that our relationship is broken. We have a tendency to believe that a relationship that poses problems and



Blocked drainage ditch in regenerating peatland in Quebec (University Laval n.d.)



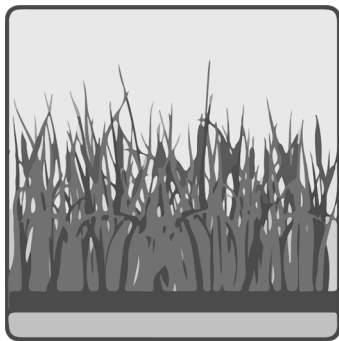
Rewetted Agricultural Fields in Balarus (UNCCD 2020)

challenges needs to be fixed, but perhaps our relationship with nature cannot and should not be made easier (Jordan and Turner. 2008). The key to a healthy relationship with nature does not lie in the elimination or avoidance of these issues but in how we work through them (Jordan and Turner 2008). Much like human relationships, the most meaningful and rewarding relationships are the ones that have known hardship and require constant effort and maintenance (Jordan and Turner 2008). This process of working through the troubles of our relationship is how we commune with nature, and perhaps this too is the value of restoration.

If we are to coexist, we must face our troubles with peatland. Our historic relationship with peatland is rooted in avoidance, destruction and exploitation. From a scientific perspective, it is only in recent decades that we have come to value peatlands for their ecological services and specialized biota. This will not be enough to undo millennia of environmental persecution. To change our relationship with these environments, we must foster understanding, appreciation and affection. To face our troubles and heal our relationship with Canada's peat-producing wetlands, conservation will not be enough. Conservation protects the "pristine" but it also perpetuates the separation of people from wetlands. It is a mitigative practice that prevents degradation, but it is not an act of resiliency. If we are to overcome the hardships of our relationship with peatland, we should begin with the restoration of what we have destroyed.

Time

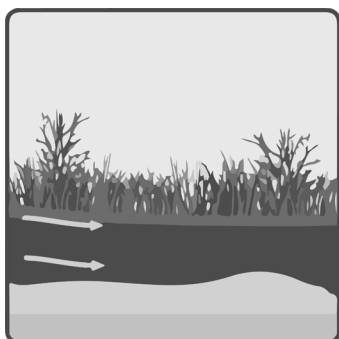
Time is an overarching theme when considering landscape and even more so when dealing with restoration. The question restorationists must face is "what are you restoring



Marsh: nutrient-rich, reed & grass dominant



Swamp: wooded marsh



Fen: ground-water fed, sedge dominant



Bog: relies on rainwater, sphagnum dominant

to?”. Landscapes are inherently dynamic, they are subject to a constant process of succession. It isn’t possible to simply return it to a “correct” past state, the very concept is a human idealization of nature (France 2008). Restoration to a point in time is an arbitrary decision based on human values and abstractions (Kidner 2008). This pitfall is partly due to our linear conception of time. The idea of restoration also suggests that time is reversible (Kidner 2008). However, natural time is interwoven, the past is embodied in the present and is constantly informing the future (Kidner 2008). We should do away with the pre-occupation of imitating the past, and attempt to embody the past as we look to the future (France 2008). It is for this reason that the word “restoration” itself is problematic, we are really promoting a process of “regeneration” (France 2023).

This concept is especially relevant to peatland. Bogs and fens represent the later stages in wetland succession. They are unique ecosystems with specialized biota. It isn’t possible to transform an agricultural field back into an ancient bog in the exact state that it once was. This idealization also relies on the assumption that we have the knowledge and understanding of the original ecosystem in order to recreate it. The peatland restoration process is still not fully understood or agreed upon in the scientific community. Therefore, it is imperative that we do not approach degraded peatlands with the ambition of restoring a previous state.

Process

For regenerative ecological interventions, the prioritization of process over product is essential. There is a misconception that regenerative interventions produce a final outcome, a desired ecosystem or landscape. However, restoration has

been compared to raising a child, it is not something that you can fully predict or control, it is a process that you can facilitate and respond to. Due to our limited understanding of natural systems, we can never truly control them, as we cannot control what we do not fully understand, nor should we (Kidner 2008). Within the ecological discipline, “systems thinking” is a term for holistically considering the complex interrelation of factors and processes, similar to how an ecosystem functions. However these systems also operate within a nesting of networks, operating at various scales, all of which are also interrelated (Kidner 2008). Ecological regeneration must be considered as human participation in a process that is beyond our full comprehension and control.

In Canada’s regenerating peatlands, the goals and processes of each site will vary on a case-by-case basis. However, for the concern of this discussion, a generalization is being suggested in the re-initiation of ecological processes that accumulate peat and sequester carbon. This process will not be ubiquitous, or entirely predictable. The balance of ecological, social, and economic function within these processes is sure to create a wide spectrum of systems. For example, one intervention may be largely ecological with only some recreational human interaction, while another might preserve economic productivity by transitioning agricultural land-use to paludicultural land use. This thesis is not reproducing landscapes, but instead re-initiating ecological processes in which we participate and respond.

“Nature”

We can no longer deny our participation in the ecological systems beyond our city limits. The failures of the dogmatic dualism of “man and nature” are all too apparent. The idea

of wilderness in absence of humanity is a relatively new construct that has not always existed (Cosgrove 1998). We can do away with the simplicity of separation (McHarg 1969). At this point in time, the way to deepen our understanding is being in, not outside (Ingold 2013). By being in peatland, peatland becomes part of our personal and national identity. Deriving identity from landscape is an essential precondition to being-in-the-world (Jackson 1984). In doing so, we assume a sense of belonging to something greater than ourselves. We might develop a sense of compassion and stewardship towards peatland, even if out of self preservation. As Donna Haraway might say, let us not shy away, but stir up potent responses, make connections, and be present by “keeping with the trouble” (Haraway 2016).

Ecological regeneration opposes our idealizations of nature (France 2008). As a way of processing and making sense of the external world, people intuitively define and categorize things (Kidner 2008). This has produced the dichotomy of nature and culture. Moreover, it breeds an air of human exceptionalism. Since the environmental movement of the 1960s, we have acknowledged the dangers of perceiving nature as other, but dismantling a worldview is not easy. Regeneration is a powerful practice that blurs the distinction between culture and nature, freeing us from this dichotomy by creating “culture on a natural landscape and nature on a cultural landscape” (France 2008).

Healing

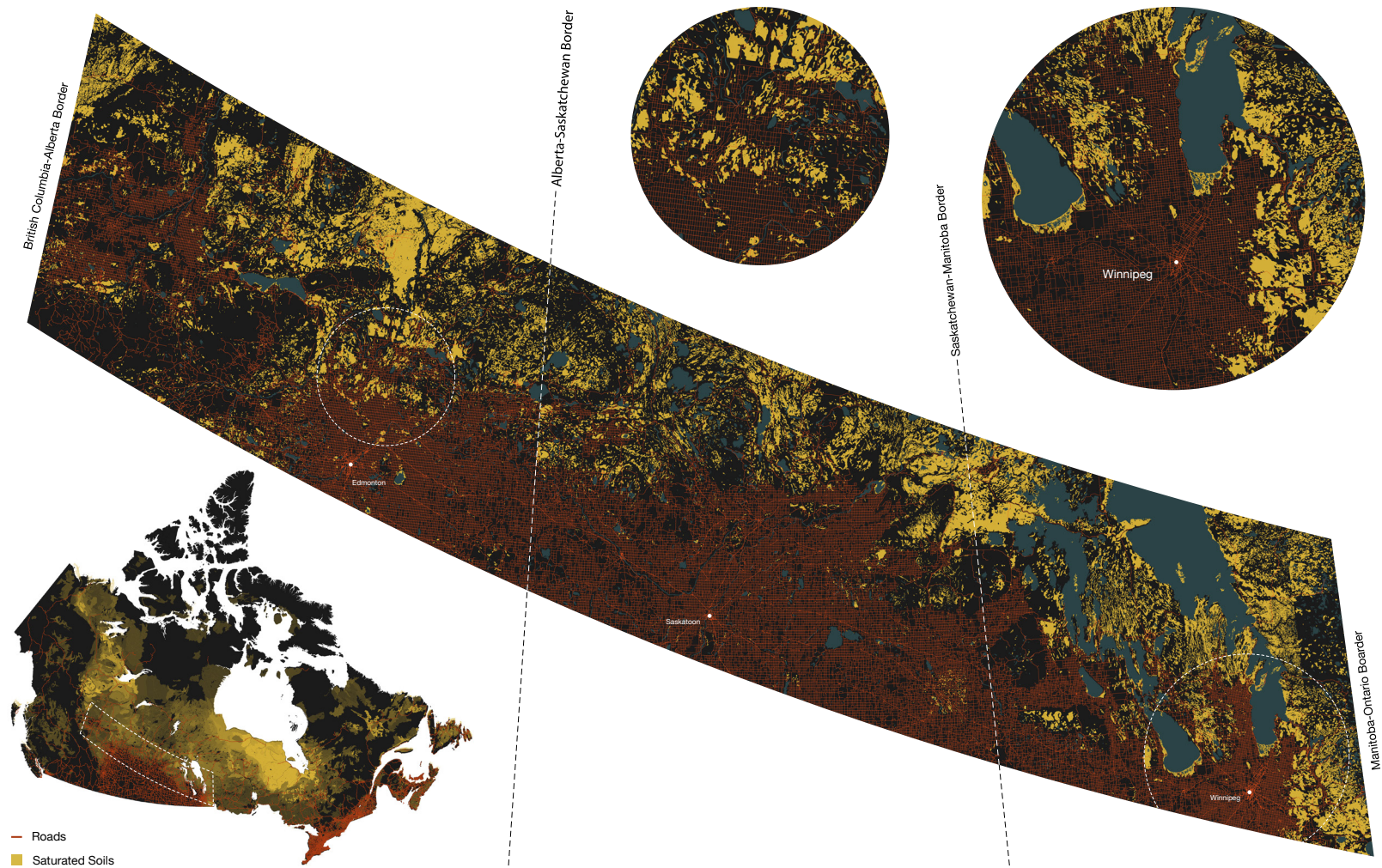
Healing is an effective metaphor for understanding regeneration. Multiple healing processes occur simultaneously that benefit local ecosystems, communities, and eco-social relationships. Authentic regeneration will

embody nature's own healing process as opposed to subjecting the environment to anthropocentric values and constructs (Kidner 2008). In doing so, we also learn about ourselves, how we live, our place in nature, and who we are (France 2008). The innately human act of healing affliction is a universal ritual that brings people together and builds community (Jordan and Turner 2008). The psychological and spiritual aspect of the healing process is often over-looked. This deeply personal and individualistic undertaking is achieved through extrospection as opposed to introspection, by being cognoscente and responsive to the world around you (Kidner 2008). In this regard, ecological regeneration can be considered a performative practice that unifies the internal mind and spirit with the external more-than-human.

Building upon the healing metaphor, affliction is a precondition to the healing. Ecological regeneration is a response to wounds and ailments that were inflicted by people. It is a form penance that only occurs after you have sinned (France 2008). In the Sand County Almanac, Aldo Leopold wrote "One of the penalties of an ecological education is that one lives alone in a world of wounds." (Leopold 1966). This perspective on the repercussions of human existence is a significant source of ecological grief and shame. However, destruction can also lead to the creation of something new. Architect Leubus Woods sought generative potential in the ruins of tragedy. The embodiment of artifact and memory within new creation has the ability to create the unexpected and unfamiliar, something he compared to "mutant scar tissue" (Spelmen 2008). By healing wounds that we have inflicted, we can turn grief and shame into something sacred.



Kintsugi: "joining with gold", the Japanese art of repairing ceramics and finding beauty in imperfection (Takahashi 2021)



A peatland frontier of affliction formed by the relationship between roads and saturated soils across the Canadian prairies. Data Source: Natural Resources Canada. 2017. "Topographic Data of Canada - CanVec Series." Ottawa: Open Data Canada.

The metaphor of healing a wound is particularly translatable to peat. Peatland has been mined as a fuel source, leaving physical scars in the landscape. They have been drained for agriculture and infilled for development. The violent interactions between people and peat are physical in nature and therefore easily translated into wounds. The symbolism of scarring is also applicable to a much larger geographic scale. There is a frontier of calamity in Canada that looks out upon a horizon of peat. This boundary is most apparent when looking at the extent of our road network. It represents a bleeding edge of affliction. Through ecological regeneration, all of the disturbed, degraded, and destroyed peatland below that line can begin to heal over, creating a patchwork of mutant tissue that will stop carbon from bleeding into the atmosphere. One day, a scar will span across the country and will remind future generations of our hubris.

The Horizon

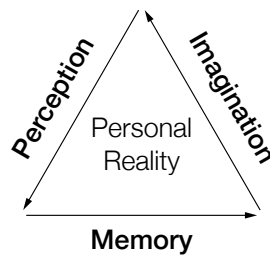
In the face of climate change and a culturally programmed sense of otherness towards wetlands, we must begin to heal the peatlands that we have destroyed and cultivate a relationship in which we can co-exist. Based on the lessons derived from ecological regeneration, it becomes possible to imagine cultures and vernacular landscapes that might arise from this new relationship. We cannot recreate the bogs and fens of the past as they once were, nor should we try. However, we can acknowledge the history that is embodied in these sites and allow it to inform their future. The regeneration of Canadian peatland will not seek to create particular landscapes, it will rehabilitate and re-initiate ecological processes such as carbon sequestration. This will be an ongoing effort that will require communities to be attentive and responsive to dynamic systems and

mechanisms as they progress. In doing so, we can acknowledge our participation in the operation of peatland systems. Local culture can be integrated into regenerated peatland, just as peatland will integrate into local culture. As a result of our destruction, we are presented with a momentary opportunity to create a new, unfamiliar condition. Our infrastructure, architecture, and built-forms can merge with peatland in ways they haven't before. The Western tradition of avoiding and destroying peatland can turn a new page. This will only be achieved by facing our troubles with these environments through eco-cultural healing. As we help peatland to heal itself, we mustn't neglect to heal ourselves, and our relationship with peatland. If we are successful, the regenerated peatlands of Canada we will be doing a service for the planet at large in the fight against the climate crisis that we have caused.

Chapter 4: Imagining

The task at hand is to facilitate the imagination of peatland as a place whose familiarity and intimacy comes from years of experience and co-habitation. This thesis seeks to fuel the process of imagining by dwelling on the right subject matter and by providing the necessary information to trigger the most vivid response. It requires remembering, reaching back into childhood, drawing from the familiar, and activating the senses.

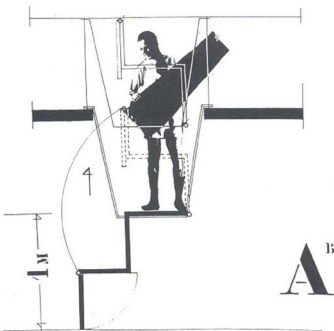
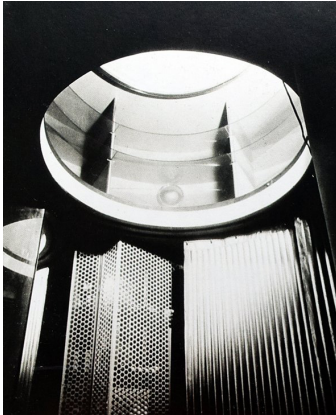
Images of Memory



Perpetual dialogue between perception, memory and imagination.

In order to imagine, we must first remember. It is the perpetual dialogue between perception, memory and imagination that forms our physical and virtual reality. Once past, moments of presence become memory, encapsulations of our perception (Pallasmaa 1996). Memory is the artifact of experience, a source of identity and fuel for imagination. One cannot dream without an archive of memory to draw upon (Bachelard 1958). It is for this reason that when we experience and interpret a work of art, we are also encountering a part of ourselves (Pallasmaa 1996). Through memory, imagination becomes vivid. Conversely, memory and imagination influence perception and the dialogue continues. In order to imagine life in peatland and affect people's environmental perception, we must infiltrate this cycle. This thesis attempts to join the internal conversation by implanting quasi-memories from which the viewer can extrapolate and mix with their own memories and emotions. It attempts to access the power and sentiment of personal memory in order to inspire meaningful imagination.

“I believe those buildings only be accepted by their surroundings if they have the ability to appeal to our emotions and minds in various ways. Since our feelings and understanding are rooted in the past, our sensuous connections with a building must respect the process of remembering.” (Zumthor 1998)



Faux Plafond in the Badovici Aptment by Eileen Gray 1931: Storage in a dropped ceiling creates mundane domestic situation that breaks from convention and activates the imagination (Moreno 2017)

These quasi-memories will be presented as a sequence of dreamlike images, as a phantasmagoria. Gaston Bachelard describes memory as motionless, fixed in space with no duration, which makes the image an appropriate method of representing memory (Bachelard 1958). The fragmentation of continuous experience into singular moments is also an effective design tool. The design approach of architect Eileen Gray stems from the investigation of “minute situations of daily life” as opposed to aesthetic and spatial composition (Pallasmaa 1996). Peter Zumthor also rejects the prioritization of abstract conceptual thinking; he dreams images of buildings into being (Zumthor 1998). However, film is an art form that is born out of fragmentation. The medium consists of multitudes of images strung together in order to create the illusion of duration. Juhani Pallasmaa notes how cities represented in cinema are composed of momentary fragments, yet they envelop us as whole and complete places (Pallasmaa 1996). He claims that success of the film’s representation can be determined by whether or not you can imagine falling in love with the city (Pallasmaa 1996). This will also be the measure of success for a phantasmagoria of dwelling in peatland.

Childhood

Like natural landscapes, each of us are living embodiments of our past. Every love, fear, trauma, and moment of happiness is carried with us, contributing to the essence of who we are. Childhood is a particularly formative period of our lives that can produce memories of significance that we continually

associate with the present. For Pulitzer prize-winning author Annie Proulx, the image an orb-weaver spider web from her childhood continues to visually represent her understanding of the natural world.

We manage to acquire images in childhood that carry decisive meanings for us. They function like those threads in the solution around which the significance of the world crystallizes for us. (Proulx 2022)



Dutch architect, Aldo van Eyck designed over 700 playgrounds in the city of Amsterdam. His designs drew upon a profound understanding of childhood and a sincere empathetic respect for children. (McCarter 2015)



Playgrounds were shoehorned into vacant, abandoned, or interstitial spaces throughout the city. In 1957, Eyck stated that “The city has forsaken its identity. It has become an onlooker instead of a participant, an isolated soul amidst millions of isolated souls. But children withdraw from this paradox. They discover its identity against all odds”. (Torrijos 2019)

Childhood memories are equally foundational for our perception of architectural space. Gaston Bachelard recognized that an entire past moves with us when we inhabit a new house. Your childhood home is your first spatial experience of the world and it formulates fundamental conceptions of home and inhabitation. You bring your childhood home with you to every house you occupy, comparing and contrasting, influencing your perceptions. In *Thinking Architecture*, Swiss architect Peter Zumthor recalls how the atmosphere of his aunt’s traditional kitchen is “insolubly linked” to his idea of what a kitchen is (Zumthor 1998). He attributes the root of architectural understanding to childhood and the unique biography of every individual (Zumthor 1998).

This phenomena also applies to the perception of place. For adults, meaning is built-up over time through steady accumulation of sentiment and stories (Tuan 1977). Due to the preoccupation of conceptual thought, adult experience is less immediate and visceral compared to children, who experience heightened moments of emotion (Tuan 1977). They process their environment at face value, whereas adults are haunted by memory (Tuan 1977). Children are not reflective by nature, nor do they have much experience to reflect upon (Tuan 1977). They are wholeheartedly invested in the present and quick to emerge themselves in fantasy.

The phantasms of peatland will leverage the power of childhood by presenting moments from the perspective of a child. Before picturing the experience, viewers will have to place themselves in the mind of their younger self. By imagining each scene from the perspective of a child, the viewer will be ready to immerse themselves in fantasy and will intuitively amplify the emotional effect of the situation. They will look with an innocence unburdened by memory and preconception. Hopefully, they will also draw from their own childhood memories, charging the experience with nostalgia. As an adult, you can't help but extrapolate the effect of imagined childhood experience and project how it might effect who the child becomes and their relationship to peatland. In the best case scenario, the viewer would feel affection garnered for their own childhood environments and lend it to peatland, even if only for an instant.

The Mundane

The opposite of mythic is the mundane. In fact, Juhani Pallasma identifies cultural storytelling as a mental counterpoint to everyday experience (Pallasma 1995). We situate our daily interactions in this humdrum realm of familiarity, effectively demoting human experience and contributing to the disenchantment of modernity. Linda Weintraub, inventor of the Muckro, laments the relegation of the physical world, in all its sensual wonder, into lacklustre mundanity (Weintraub 2017). The Muckro is a way to re-enchant our daily interactions with the world. It celebrates the dense, murky, fertile muck of everyday life that holds rich potential for primeval interactions that qualify as avant-garde to the contemporary city-dweller (Weintraub 2017). Built-form can act as interface or divider. The architecture of peatland must resist the production of sterile containment

units and should celebrate micro-scale interactions. It should frame the systems and phenomena of peatland, inspire engagement and re-enchant the mundane. In acknowledgment of our collective sensual impoverishment, Pallasma issues a call to action for architects that shares the micro sentiment.

The duty of responsible architecture is to defend authenticity and autonomy of human experience. In the world of simulacra, simulation and virtuality, the ethical task of architects is to provide the touchstone of the real. (Pallasma 1995)

Infiltrating the mundane is essential to influencing the environmental ethic and imagination of the individual. Environmental philosopher Irene Klaver sees the mundane as an opportunity to foster environmental imagination through everyday situations that enable nature and culture to interface (Klaver 2013). People will come to care for local ecological systems if they see them as part of their everyday life, which is arguably more important than promoting care for the pristine. There will always be communities of people who protect and care for exotic wilderness; the only people who will appreciate local, everyday nature, are the locals themselves (Light 2008). Moreover, which is more likely to change our behaviour and inspire us to become better environmental stewards? We often feel disconnected from the farmland that produce our food, let alone remote wilds. Affection for wilderness is less likely to change our day-to-day habits than the local landscapes with which we commune (Light 2008). As Irene Klaver notes, people are in-situ beings (Klaver 2013). Landscapes are not merely passive backdrops; where we are is part of who we are.

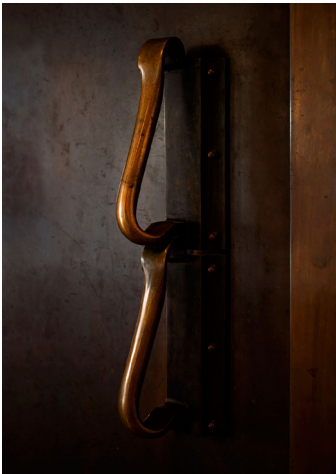
Therefore, the phantasms of dwelling peatland will be firmly grounded in the muck of everyday life. It will depict moments from daily routine and seasonal activities. The archetypal

program for a single family residence serves as the basis for the architecturally mundane. Front yard, patio and mudroom are ubiquitous programmatic fragments that are immediately understandable to all. This archetypal familiarity will assist in the viewer's ability to imagine each scenario and locate themselves within the moment. Fragments are chosen based on the influence peatland. Each sub-program elicits a different degree of technological or cultural response to place. One can imagine how being in peatland might affect the cultural significance of a mudroom more profoundly than a kitchen. The resultant phantasmagoria of moments hopes to spark the re-imagination of the familiar and enchant the muck of everyday life.

The Sensuous

A scent can awaken dormant memories and summon long forgotten images. It can transport you to a specific place, time and feeling. It might be the smell of wooden cabinetry, a dish your parents made, or a garden at a certain time of year. The same can be said for particular sounds, textures and tastes. The non-visual senses are profoundly tied to memory and are therefore rich fodder for imagination. The moments depicted in a phantasmagoria of peatland should invite the viewer to draw upon the smells, sounds and feelings of their own memory. It is equally important that the architecture facilitates this process with sensually engaging design.

Our senses not only tether us to our past, they also anchor us in the present. They are the means in which we experience the world around us. Sight and kinaesthesia are two important senses for our situational and spacial perception. They create space and atmosphere, according



Finnish architect, Alvar Aalto considered the door handle to be the handshake of the building. These two door handles are stacked to accommodate the comfort of tall and short people. It is curved to the hand's grasp and can be used by left-handed and right-handed people. The wearing of the brass patina reveals its use over time. (Aalto2 n.d.)

to Yi-Fu Tuan, and they create place, according to Lucy Lippard. Kinaesthesia is a spatial awareness created by the body's positional relation and movement through space. Objects are subconsciously weighed against the mass of your own body (Pallasmaa 1996). Architectural and public spaces are measured in paces and arm lengths (Pallasmaa 1996). Landscapes are translated to a person through walking (Lippard 1997). Ultimately, we come to know a place through a succession of movements through them (Tuan 1977). Unfortunately, it is not easy for humans to move through peatland, walking is more like "controlled lurching" as Robin Wall Kimmerer describes it. The situation is exacerbated by the fact that the ground is not easily assessed with visual acuity. The unreliability of sight and the difficulty of kinaesthesia in peatland subverts the hierarchy of our senses, heightening touch, taste and smell.

This subversion has contributed to feelings of disgust and animosity towards peatland. Disgust is an emotion rooted in touch, taste and smell, but rarely sight (Di Palma 2014). Putrid smells, textures that stick to your skin, and anything that enters the body is capable of generating disgust (Di Palma 2014). Mud is a particularly indeterminate texture that is neither earth nor water, it is an impure substance capable of dirtying and defiling (Di Palma 2014). People prefer things to fall neatly into categories of their own construction, which makes indeterminacy a psychologically unsettling quality. Wetland mires are the environmental embodiment of indeterminacy, they "confound sight and threaten the foot" (Di Palma 2014). Consequently, the very idea of peatland has an aura of psychological distress and disgust, regardless of whether people have ever set foot in a swamp, fen or bog.

The fact of the matter is that ecological compassion is strengthened by direct interaction with the living world, and weakened by our separation (Kimmerer 2013). If peatland confounds sight, the psychological distress of the unknown can be relieved by getting to know peatland through our other senses. Robin Wall Kimmerer says that “Going barefoot is the best way to know a bog. Your feet will tell you things your eyes cannot. At first, the pillow-soft surface of the bog seems homogeneous, but as you walk through it, its complex pattern becomes apparent.” (Kimmerer 2003). Her account goes on to describe a sensuous intimacy that quiets the mind and enchants the spirit.

I love listening to a bog, the papery rustle of dragonfly wings, the banjo twang of a green frog, the occasional hiss of sedges moving in the breeze. On a hot summer day, if you're very quiet, you can witness the smallest discernible sound I know—the “pop” of Sphagnum capsules. (Kimmerer 2003)

I crumble the peat between my fingers, I remember its story, where it came from. The dry brown fibers that now see the light of day spent centuries beneath the dark water of the bog. And before that, they had a brief existence at the green surface, where dragonflies dove after mosquitoes snatching them away from the sundews. (Kimmerer 2003)

To re-entice peatland and reframe our environmental perceptions, we need to experience it first hand, we need to feel, hear, and smell these places for ourselves. It is task of architecture and landscape architecture to broker these interactions and to mediate our experience. It could passively provide kinaesthetic opportunity by enabling movement through landscape, or it could actively frame attention towards the nuances of place. Built-form must be seen as the interface through which we engage with peatland and it should enrich sensuous experience, not reduce peatland to an aesthetic backdrop.

Chapter 5: Miring

Miring is a meditation on where you are, actively perceiving and contemplating the qualities of a place through dwelling. To imagine dwelling in peatland requires an understanding of what it means to dwell and what the function of a dwelling is. To imagine peatland as a place to belong requires the same clarity of what constitutes a “place” and where the feeling of place comes from.

Dwelling

What does it mean to dwell? For Martin Heidegger, dwelling is simply existing at peace on earth, staying with things while preserving their nature (Heidegger 1971). To truly build, we must first be capable of dwelling; our buildings are only dwellings because we are dwellers (Heidegger 1971). This definition will serve as a basis for architectural imagination. The architectural function will be to let-dwell, to exist for the sake of dwelling and to facilitate “staying with” peatland.

Dwellings are complex psychological entities that are inextricable from the environments in which they are situated. Gaston Bachelard describes the universally primitive role of home as “the non-I that protects I” (Bachelard 1958). This entity is experienced in reality and in imagination. A feeling of comfort is generated by the illusion of protection which is dependant on the imagination of the exterior environment in all of its harshness and danger (Bachelard 1958). This idea is so powerful that it defines what a dwelling is for many people. John Brinkerhoff Jackson defines a dwelling as a “counter environment that resists the outside and is an instrument for the production and protection of family” (Jackson 1994). Because of this psychological dynamic,

lingering mythic perceptions of peatland might actually elevate the virtual experience of dwelling and feelings of comfort. For Bachelard, this is closer to the primary function of a dwelling, it shelters daydreaming, meaning the reliving of memories, fixations of happiness and imagined feelings of security (Bachelard 1958). When imagining life in peatland, architecture will seek to facilitate Heidegger's notions of "staying with" as a functional reality of dwelling, as well as Bachelard's "day dreaming" as a virtual reality of dwelling.

Place

To imagine dwelling in peatland in a holistically fulfilling way, it must be possible to imagine peatland not as a landscape, but as a place. It must be capable of feeling like one's axis mundi, the centre of the universe and a home where you belong. The challenge is to elicit this feeling for an unfamiliar environment. Lucy Lippard observes that "one can be homesick for places they've never been, deep seeded longing for roots and continuity" (Lippard 1997). The phantasms of peatland must provide the necessary ingredients for the viewer to construct this type of emotional longing. To do so requires an understanding of what differentiates the space of a landscape from a place to belong.

The difference between an empty wasteland and a place to dwell is invisible. According to Yi-Fu Tuan, author of *Space and Place*, space is movement and place is paused movement long enough to become place (Tuan 1977). Which makes "miring" an important step to creating place. Once a space is comfortably familiar, it becomes place (Tuan 1977). As such, space is associated with freedom and place is associated with security (Tuan 1977). Therefore, in its most

basic definition, place is a familiar area of pause that feels safe. This will inform the atmosphere of phantasmagoria.

Landscape is often confused with place; a particular fen or bog is not necessarily a place. To become a place, requires our emersion in the landscape. Inherent to the concept of landscape is an external observational position (Cosgrove 1984). The term comes from the history of painting, which creates a subject and object relationship (Cosgrove 1984). For an insider, a local participant, there is no distinction between themselves and the scene (Cosgrove 1984). It is for this reason that the perception of place is seen from the inside (Lippard 1997). Places are lived-in landscapes that are felt, landscapes are seen from the outside (Lippard 1997). One is intimate, the other distant (Lippard 1997). This means that dwelling must be imagined from within peatland as opposed to above or adjacent to the landscape. The phantasms should produce feelings as opposed to views and the composition of images should not separate place from the people who dwell within it.

Architecture can act as a marker in space that delineates place. Henry Glassie compares the way architecture functions in space to the way historical events operate in time. Events break up the flow of time into organized segments to which we associate meaning, just as architecture interrupts space and marks meaning (Glassie 2000). Pallasmaa pushes this idea a step further, declaring that the fundamental role of architecture is to domesticate time and space. It creates a pocket of refuge in the immensity of time and space that renders reality comprehensible (Pallasmaa 2011). Both interpretations speak to the spiritual act of establishing order in an incomprehensible world of chaos and immensity.

Space begins its transformation into place the second we imagine a building in peatland.

Ritual

Place is a location that hosts particular activities and events. The anticipation, participation and celebration of these occurrences become more significant to the identity of place than the space itself (Jackson 1994). J.B. Jackson believes that the average American derives a sense of place from ritual more than its architecture or public spaces (Jackson 1994). Many people attribute identity of place to its monuments, memorials, and institutions, but Pierre Nora considers these constructions to be the rituals of a society without ritual (Nora 1989). Religion used to commemorate the tasks of the working day, the passing of the seasons and the milestones of one's life (Lippard 1997). The day-to-day events of life were ritually celebrated, giving meaning to the mundane (Lippard 1997). Like religion's celebration of life, place is defined and beloved because it is embedded all around us, in our everyday ongoings, as ritual.

Ecological regeneration offers a means of establishing new rituals that relate to peatland. Like a garden that requires tending, regeneration represents a mutually beneficial relationship. It is an ongoing process of adaption, making internal changes in response to external conditions. As a result, it challenges our modes of operation and offers the opportunity to develop new rituals as a way of overcoming tradition. The founding of new rituals transforms community, which is the regeneration of culture.

To imagine falling in love with peatland, a phantasmagoria of peatland should demonstrate the rituals of place. It should celebrate rituals of dwelling, rituals of nature and



Thermal Vals by Peter Zumthor 1996: the ritual of bathing is celebrated through intimate sensory experience driven by materiality and atmosphere (Guerra 2004)



Brion Cemetery by Carlo Scarpa 1968-1978: channels of running water represent the ceaseless flow of time, emphasizing the permanence of the architecture and the passage of life towards death (Hansen 1994)

rituals of interaction. The rituals of dwelling are ubiquitous and therefore the easiest to imagine. We all prepare food, bathe our bodies, clean our living spaces and go to bed at night. Some of nature's rituals govern our own, such as the cycling of night and day and the passing of the seasons. We may be less attune to others, like bird migrations, seasonal flooding or the reproduction schedule of plants and insects. The rituals that connect us to these natural cycles are often sources of pleasure, like gardening, walking, birding, stargazing and sunbathing. The phantasmagoria will explore how rituals in these three categories might be influenced by peatland and how architecture can host these rituals. The result will hopefully help to define a place worth cherishing in the imagination of the viewer.

Time

We do not only dwell in place, we also dwell in time. Which is ironic because modernity lives in fear of time. Our cultural kronophobia pushes any evidence of aging, death and decay out of sight, to the periphery of thought. As a result, our experience of time is weakened and we lose our sense of participation in history. Which is another irony because easing the dread of non-existence requires the exact opposite response. As said by American psychologist Gotthard Booth, "Nothing gives man fuller satisfaction than participation in process that supersede the span of individual life" (Pallasmaa 1996).

It is for this reason that people find comfort in places with a sense of cultural history. For folklorist Henry Glassie, history is the essence of place (Lippard 1997). In this way, people become a part of place by participating in its history. A place's cultural history is virtually experienced in the realm

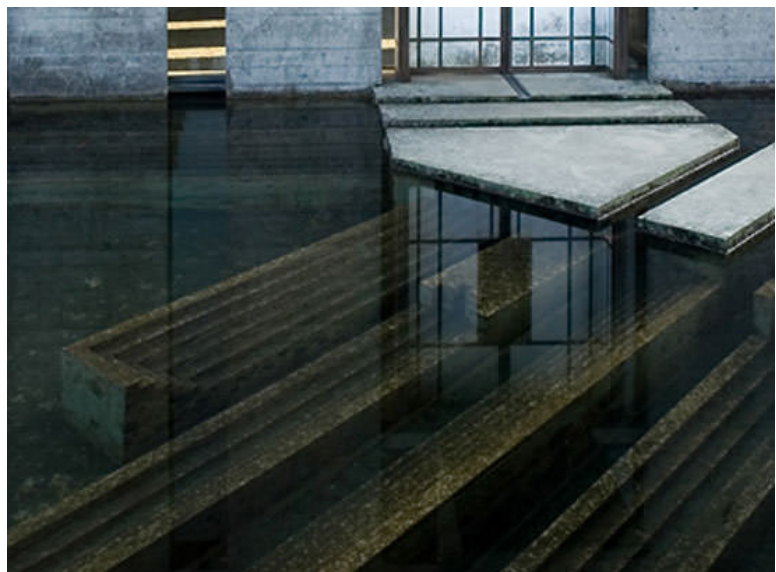
of imagination. That is why empirical data will never fully describe a place (Tuan 1977). The imagination of life in peatland will be enhanced by the imagination of such a cultural history. Evidence should be planted in the phantasms of peatland as queues to imagine this dimension of place. Activities, objects and architecture establish a culture. The presence of vernacular design suggests a legacy of dwelling that has informed the creation of cultural artifacts. Bog shoes, glazed peat tiles, water cisterns, thatching, raised homes and water management infrastructure all contribute to the establishment of place through the depiction of culture.

If permitted, architecture can act as a conduit for experiencing history and time scales greater than our own (Pallasmaa 2005). We can project a building into the future and find comfort in its permanence, or we can dream of time's duration through architectural ruin (Pallasmaa 2005). Architecture bears witness to the past in its materiality. The past is engraved into the skin of a building through patina, scratches and wear (Zumthor 1998). Too often our cultural kronophobia forces us to refinish, renovate, and demolish buildings when they show signs of their past too prominently (Pallasmaa 2005). However, this is one way the phantasms of peatland can suggest history and memory of place. The architecture should be rendered as if they have been lived-in and endured years of exposure. Each phantasm should be imbued with a consciousness of time passing. This will help to establish a sense of place and a sense of comfort.

The most powerful method of strengthening our experience of time lies in peatland itself. One could argue that there isn't sufficient cultural history in Canada's degraded peatlands to transform its space into place. That point of view segregates human history from natural history. If we reunite the two,

then every peatland ecosystem holds more history than any building or settlement in the country. Peatland has been sculpted by glaciers, undergone ecological successions, and hosted extinct flora and fauna. They have inspired myths, met their destruction at our hands and have been born again. They are the natural embodiments of the life, death and decay that we try so hard to forget. If we expand our anthropocentric history, there will always be stories in the land.

The connection to natural time is the most difficult to expose through architecture and phantasmagoria. At best, architecture can act as a framing device that suggests profundity. It can become an instrument that measures growth and decay. It enables us to stay with peatland as touchstones of natural time. But anything beyond lived experience exists in the realm of imagination; we can only project the future and dream the past. The meaning and experience of time will ultimately lie in the imagination of the participant.



Brion Cemetery by Carlo Scarpa 1968-1978: water's surface acts as a metaphorical boundary between the realm of the living and an underworld of meticulously detailed aquatic architecture (Yusheng n.d.)

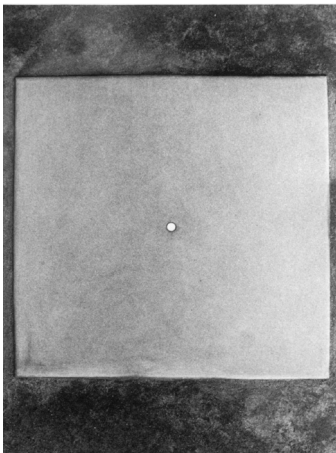
Chapter 6: Phantasmagoria

Design Methodology

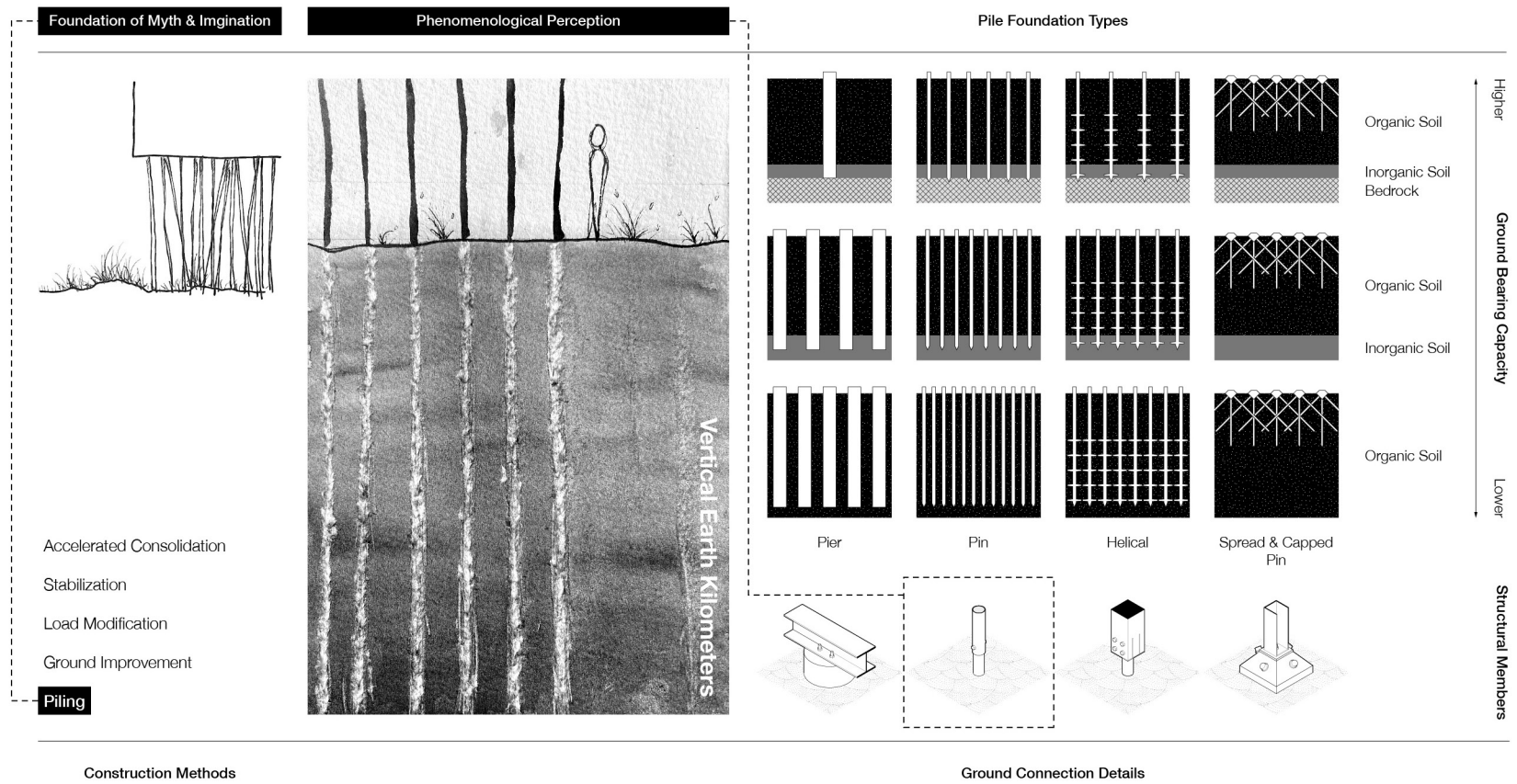
A line has intentionally been drawn between the realms of science and imagination as if any cross-contamination will be mutually diminishing. However, ecology has proven the edge condition between environments to be far richer than the guarded centre of either party. In the Wheatgrass Mechanism, Don Gayton searches to analyze the territories of science in “the way a lover studies living flesh.”(Gayton 1990). This thesis aims to use Gayton’s method of understanding the mechanisms and phenomena of the natural environment in order to inform a design vernacular. This is significant because simply knowing and understanding the details of a place is key to developing feelings and personal connections to place (Tuan 1977). A doctor and a sculptor both know the human body, but their appreciation of the body likely varies drastically as a result of their different ways of knowing. The best design response to peatland will be informed by a balanced scientific and poetic understanding of place.

Architecture is a product of science and poetry. On this topic, Luis Barragan says “If there are many equally valid technical solutions to a problem, the one which offers the user a message of beauty and emotion, that one is architecture.” (Ambasz 1976). Whether you call it poetry, emotion, or beauty, they are all just words trying to describe human experience. For the purpose of designing a series a moments in peatland that are framed by architecture, the technical will be complimented by the phenomenological. They will inform one another in order to make a series of design decisions.

Let us examine some decisions required to design a foundation in peatland. There are many challenges associated with foundations in organic soil, differential settling being the biggest (MacFarlane 1969). There are multiple construction strategies that address this issue. Any that involve peat removal and excavation can be eliminated as a result of the environmental perceptions that have been established. The remaining strategies include: accelerated consolidation, stabilization, load modification, ground improvement and piling (Ibrahim et al. 2014). Pragmatism may narrow the list, but the myths and legends of imagination may already have an answer. Imagine a glowing hut on a rickety bed of tall, crooked stilts. Is a description of the environment required, or has it already been placed in an ancient wetland, thick with fog? Pile foundations are already an established wetland vernacular of the imagination that can be used to the advantage of this exercise. Of course there are many types of piles, concrete piers being a popular method. There will also be a transition from pile to stilt and the stilt might be a variety of structural members. Which combination offers a message? Let us look to land art. Walter De Maria's Vertical Earth Kilometer is a conceptual artwork that primarily exists in the mind of the viewer. Only the end face of a kilometer long brass rod is visible. That shape is mentally extruded into the depth of the earth, forcing the viewer to consider immense subterranean conditions as well as technical execution. This redirection of thought below the ground's surface will be the message behind the foundation. To facilitate this redirection, a single extrusion profile will penetrate the ground plane as seamlessly as possible, extending as far as the viewer imagines. From here a technical solution can be selected.



Vertical Earth Kilometer by Walter De Maria. A one kilometer long solid brass round rod 5 centimeters in diameter inserted its full length into the ground so that the top of the rod reaches flush to the surface of the earth. (De Maria 1979)



Determining foundation design through technical and phenomenological investigation, a mutually informative relationship.

Phantasmagoria

The following design fragments frame the experience of dwelling in peatland through a series of mundane moments. They do not belong singularly to the realm of dwelling or landscape experience because the two cannot be separated.

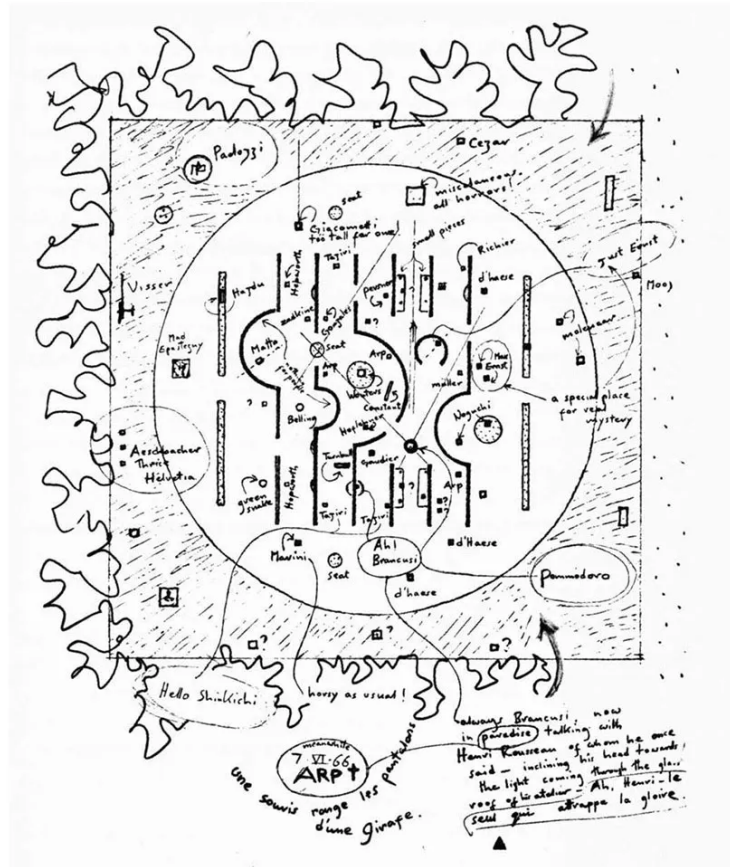
The phantasms are sequenced based on their programmatic relation to one another, moving from the road, through the house and out into the landscape. However, it should be noted that these programmatic fragments are not aggregates of a single dwelling or single ecosystem; they are disparate pieces from imagined dwellings and peat landscapes across Canada. As the phantasmagoria transitions from front yard to mudroom or patio to path, the moments may be programmatically adjacent but they could be separated by thousands of kilometres, by time of day, by the seasons, or by decades. Each one is the product of its own situational and temporal context. When experienced in sequence, they hope to provide the viewer with the necessary “memory” to imagine an intimate relationship with peatland that can only be born out of time.



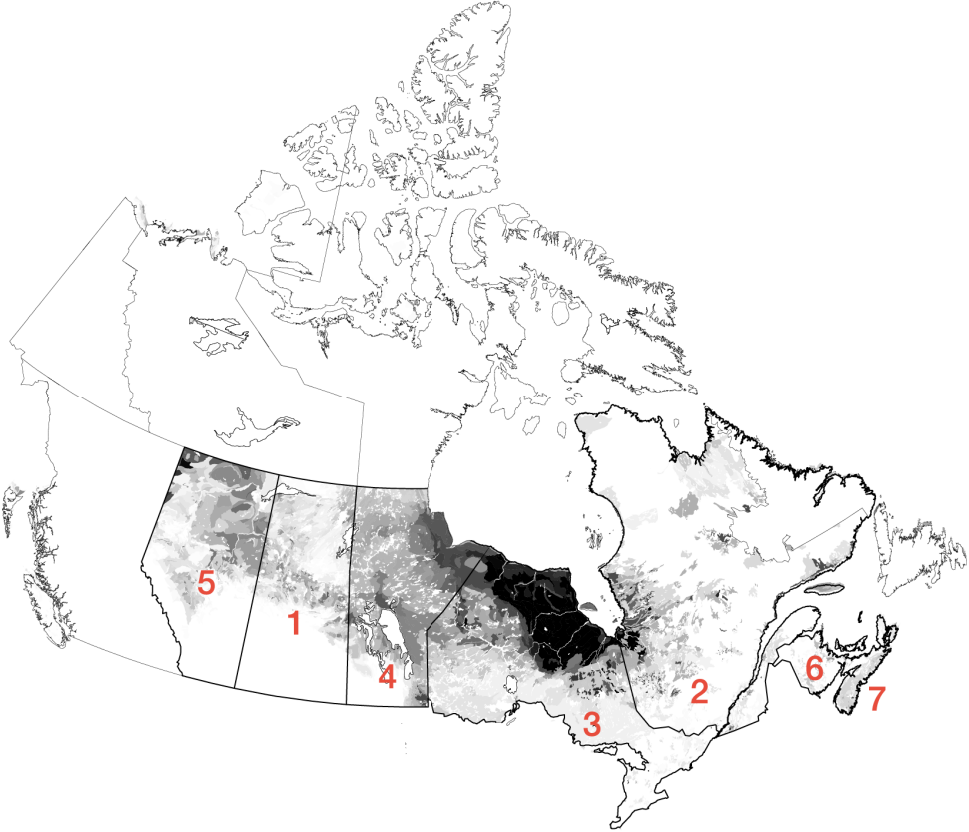
Eileen Gray's 1925 lacquer “brick” screen: a departure from the style and materiality of the prevailing art-deco movement, garnering public attention and inquiry (Phillips 2016)

When interpreting these moments, remember the dream-like nature of phantasmagoria. Our dreams often appear as reality interlaced with nonsensical incongruences. Let what is missing, different or unfamiliar guide you, acting as cues for imagination. These moments represent a version of ourselves that differs in the way that we operate in peatland and perhaps the way that we “stay with” the world in general. Materiality and construction details are used to draw attention, frame conditions and recall the past. The design that frames each moment is meant to enhance experience, be it phenomenological, mythological, temporal

or ecological. They aspire towards Yūgen, a quality found in Japanese Zen gardens that suggests a subtle profundity in its dark, beautiful, and unknowable nature. Lastly, as you move through these dream-like images, embrace that the dreamer is not overly analytical or reflective when they are dreaming, they go along, immersed in each moment as it comes to pass, much like a child.

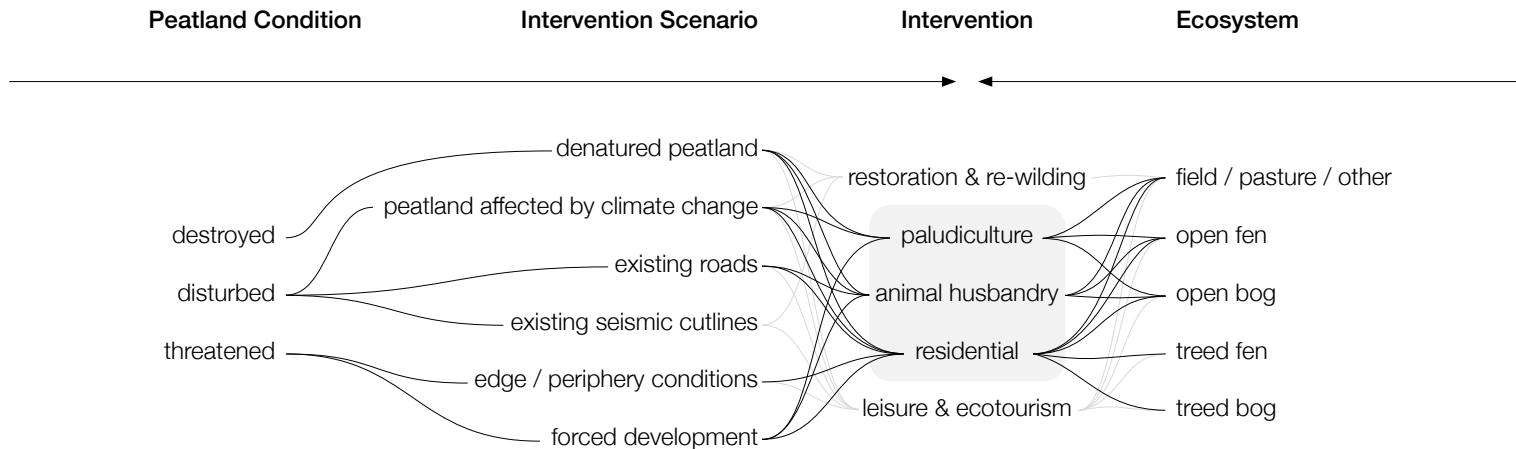


Sonsbeek Sculpture Pavillion by Aldo van Eyck 1965: architecture of standard construction and materiality where unexpected points of intrigue are generated by departures from regularity in plan (Van Eyck 1965)



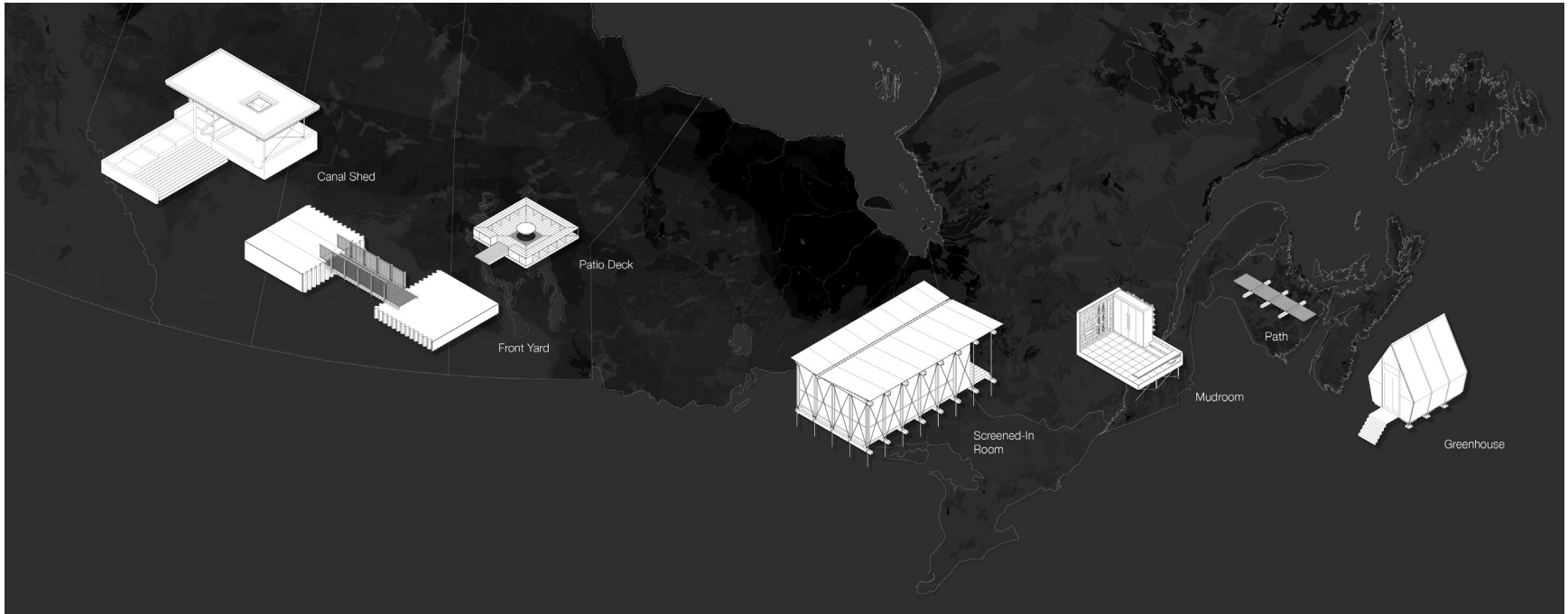
	Program	Location	Peatland Disturbance	Proposed Design Context
1	Front Yard	Saskatchewan	Roads & Climate Change	Rural “Steward” Residences
2	Mudroom	Quebec	Mining & Agriculture	Restoration Research & Recreational Reserve
3	Screened-In Room	Ontario	Development Encroachment	Periphery Residences & Cottages
4	Patio	Manitoba	Agriculture & Climate Change	Biomass Paludiculture
5	Path	New Brunswick	Horticulture	Sustenance Berry Farming & You-Pick Berry Patches
6	Canal Shed	Alberta	Agriculture & Climate Change	Canal-Irrigated Grazing Moor
7	Greenhouse	Nova Scotia	Mining & Agriculture	Wildlife Refuge

Location Matrix: design locations by province, their existing ecological disturbances and a proposed land-use to inform each phantasm



<p>destroyed: no longer ecologically functions as marsh, swamp, fen or bog.</p> <p>disturbed: ecological function is negatively affected by human activity.</p> <p>threatened: ecology is at risk due to anticipated human activity.</p>	<p>denatured peatland: peatland that has been fundamentally transformed into another environment but its peat remains. (agricultural fields, excavation sites, horticultural sphagnum crops)</p> <p>peatland affected by climate change: peatlands that are overly dry or wet as a result of climate change, increasing GHG emissions.</p> <p>existing roads: logging, mining, and public transportation routes that have already disturbed peatland hydrology.</p> <p>existing seismic cutlines: clearcut oil exploration corridors. (primarily concentrated in Northern Alberta)</p> <p>edge / periphery conditions: minimally invasive development opportunity around the edges of peatland.</p> <p>forced development: developments that are proceeding in peatland regardless of the approval of scientists, architects or poets.</p>	<p>restoration & re-wilding: assisted ecological improvement with the intent of preserving carbon sinks and increasing carbon sequestration.</p> <p>paludiculture: wetland agriculture for biomass.</p> <p>animal husbandry: grazing livestock suitable for peatland such as alpacas, sheep, goat, water buffalo.</p> <p>residential: private dwellings and rural communities.</p> <p>leisure & ecotourism: public parks, trails and attractions.</p>	<p>field / pasture / other: agricultural fields, horticultural crops, dairy pastures, etc.</p> <p>open fen: nutrient poor fens without trees.</p> <p>open bog: nutrient poor bogs without trees.</p> <p>treed fen: nutrient rich fens with trees.</p> <p>treed bog: nutrient rich bogs with trees.</p>
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Intervention Matrix: every peatland that is in need of restoration is subject to a complex set of socio-economic and ecological conditions that should inform the restoration process. This matrix begins to categorize some of these conditions.



A Phantasmagoria Roadmap Across Canada

Front Yard

Phantasm #	1
Program	Front Yard
Location	Saskatchewan
Disturbance	Roads & Climate Change
Proposed Land Use	Rural Stewardship Residences

Front Yard Context Legend

A front yard in peatland exemplifies how a technical solution to a basic infrastructural requirement can shape program and create profound phenomenological effect on dwelling experience. Dwelling in peatland forces the reconsideration of essential services such as waste management. Septic systems and holding tanks are required in the absence of public sewage infrastructure, which is not uncommon in rural environments. However, the intake and outtake for these systems must be elevated above groundwater level, roughly 600 mm depending on provincial regulations. The solution is a raised septic bed, a common sight in regions with shallow bedrock. It often produces in a mass of earth that people simply circulate around, but in peatland, dryland is a rare commodity. As a result, the septic bed becomes a stage for arrival and departure, effectively creating the front yard.

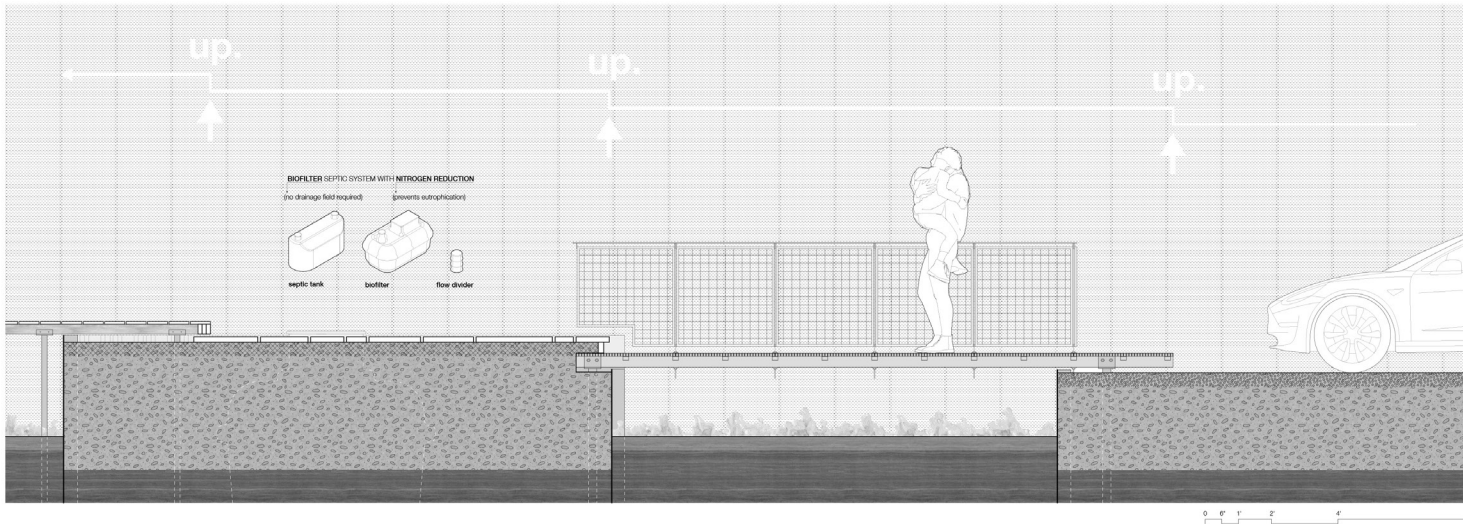
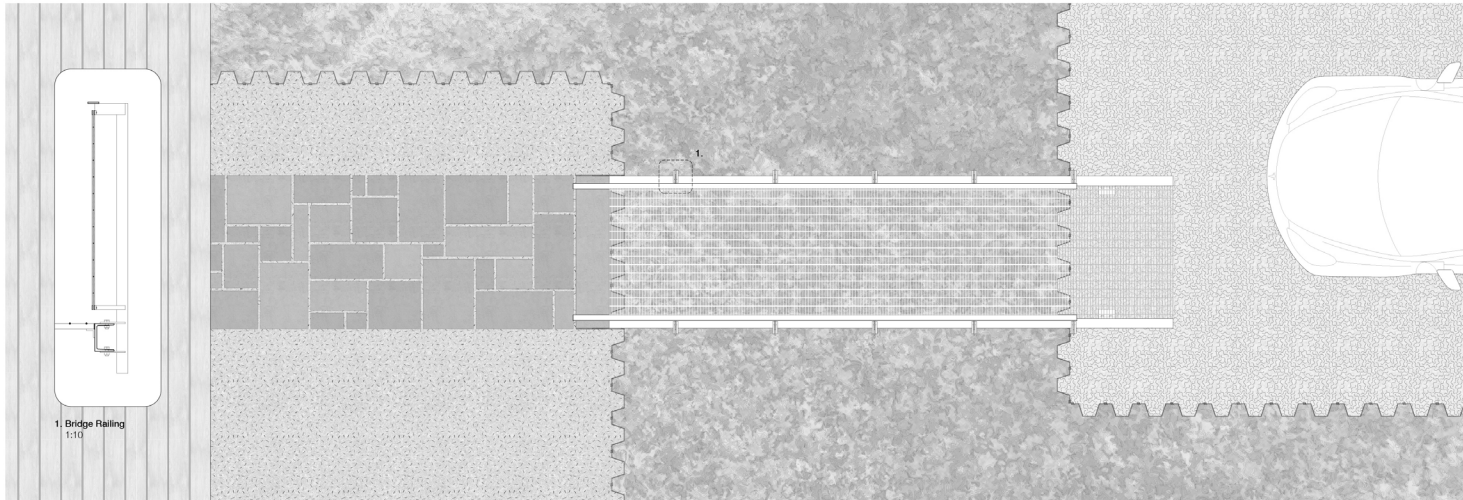


We come to a stop, the door opens and mom lifts me out of the car, we must be home. As I'm carried to the house, half asleep, eyes closed and feet off the ground, I know every step to the front door: the crunch of gravel underfoot, a step up, the low thunder of the bridge, a step up, the soft pat-pat of patio stones, a step up, and finally, the warm thud of the porch. Each sound makes the foot remember: jagged rocks, hard metal, cool stone and soft wood, each step more comfortable than the last. I like to think about the ground below, and how it will suck its teeth at you for walking on it, squelching and squealing, trying to steal your boot. It's my favourite part of coming home.

Phenomenologically, the septic bed creates something of psychological and mythological significance that borders on sacred. In Ireland, “sithean” and “knowe” are old Gaelic terms for fairy hills, prime real-estate for a fairies to live in a moor (Macfarlane 2015). Within this snippet of folklore, there is an environmental perception that can be found across cultures and time. In 1150, a monk named Hugo Candidus wrote about the English fens where his monastery was built.

From the flooding of the rivers, or from their overflow, the water, standing on un-level ground, makes a deep marsh and so renders the land uninhabitable, save on some raised spots of ground, which I think God set up for the special purpose that they should be the habitations of His servants who have chosen to live there. (Di Palma 2014)

This type of sacred interpretation of raised land is best exemplified by the creation story of Egyptian mythology. The Primeval Mound of Heliopolis was the first land to rise from the waters of Nun, allowing the sun god to climb up and bring the cosmos into being (Hart 2005). The mound is a reoccurring symbol in Egyptian culture that can even be found in the form of the pyramids of kings (Hart 2005). The primordial and mystic aura that surrounds raised earth can also be found in the architectural discipline. German architect Gottfried Semper, identifies the “mound” as one of the four elements of architecture, as a protector of the hearth’s flame against the hostile elements of nature (Semper 1989). It is in this way that the septic bed operates experientially; a basic technical necessity becomes an island of safety and the psychological foundation of the dwelling.



Front Yard Plan and Section: climbing the primordial mound

Mudroom

Phantasm #	2
Program	Mudroom
Location	Quebec
Disturbance	Mining & Agriculture
Proposed Land Use	Restoration Research & Recreation

Mudroom Context Legend

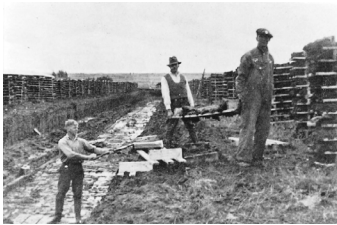
This phantasm reframes the mudroom from the perspective of an imagined peatland culture. Many country homes and suburban residences have mudrooms that are relegated to the side of the house, away from the “main” entrance. The “main” entrance is reserved for guests and unanticipated visitors while the mudroom operates as a working entrance for the people who live there and for friends and family who visit often. The mudroom is typically accepted as a messy utilitarian service space like a garage or storage closet that one passes through when entering or exiting the home. The question is, how would a mudroom change as a programmatic vernacular if the local culture didn’t consider mud to be something unsettling, something to be hidden, and something to be ignored when seen? It is possible that the mud-room might become a muck-room, where “muck” is considered to be part of the thick realm of sensuous everyday experience. So, in a social context where people see the beauty in the muck, the mudroom is held in a similar regard, where mudroom and main entrance are one and the same. It is a room that can get dirty but is also designed and maintained with care.



After a long day, I come through the door, drop my keys, hang up my coat, sit down to take off my shoes and find myself looking at the same wall that I pass everyday. When in shadow, the glazing catches enough light to make the dark tiles of peat appear wet, as if they were freshly cut from the yard just this morning. My neighbour's daughter is an artist who works with ceramics and she used the peat that was displaced when the homes around here were built, prior to the restoration. The texture they make reminds me of old photos that I've seen of our bog, grainy black and white images of cut turf and stacked fuel briquettes. When I think of it, I can smell the soft drying peat. The aroma is actually coming from the bookshelf in the next room, but I like to pretend that it's not.

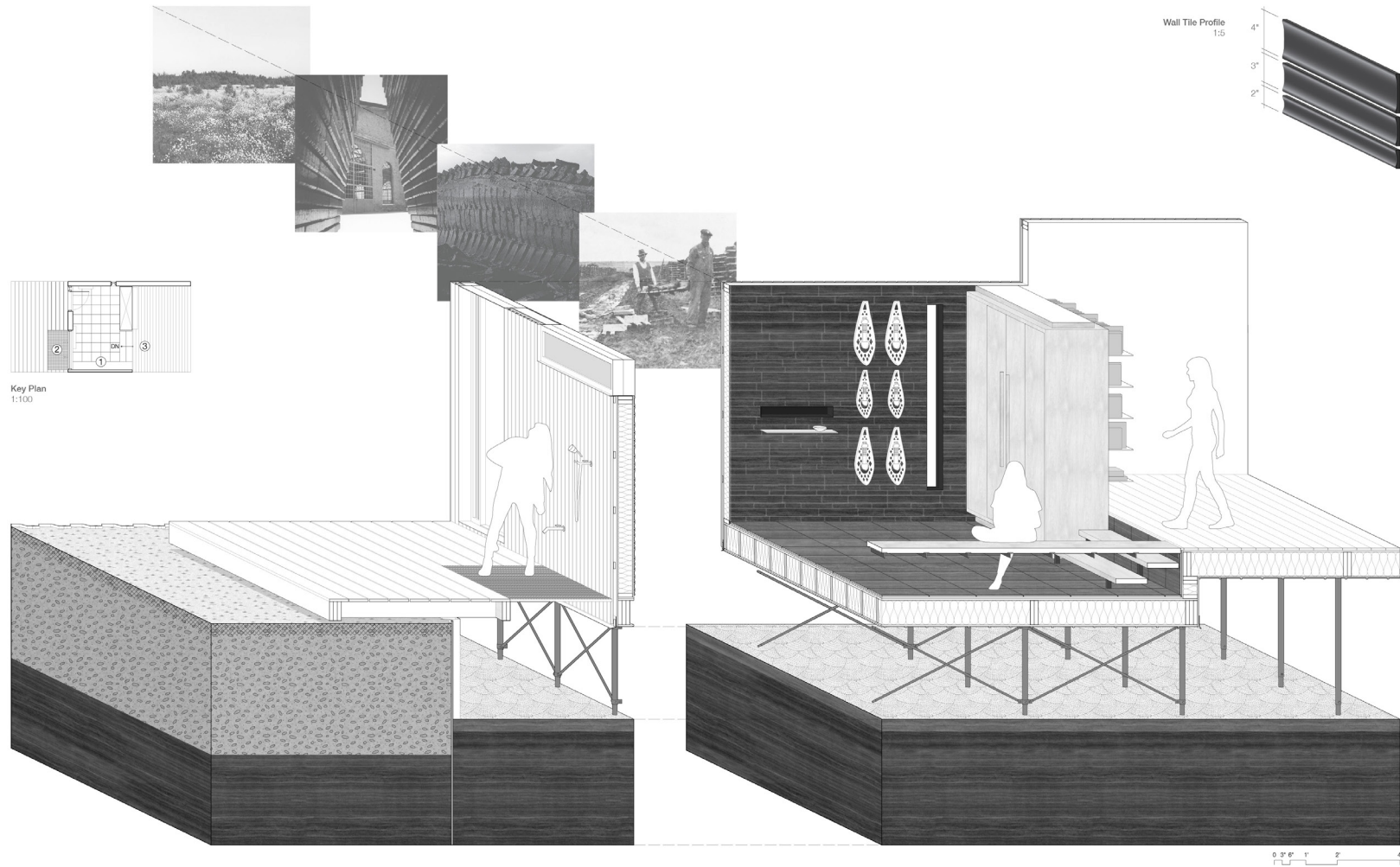


Texture from hand cutting bricks of peat to be dried and used for fuel. (Stein 2019)



Block-cutting peat in the Isle-Verte peatland, Quebec, during the 1940s. (Girard et al. 2002)

The design attempts to bridge the virtual experience of past and present, near and far, seen and unseen. A bench orients the viewer to a tiled wall which acts as a visual cue to recollect the history of this Québécois bog. A lively awareness of the past can be an important facet of one's love of place (Tuan 1974). Next to three sets of hanging bog shoes, a window brings the landscape and peat tiles together, prompting the imagination of peat that exists out of sight in the landscape beyond.



Mudroom Exploded Section: imagining the past and invisible present

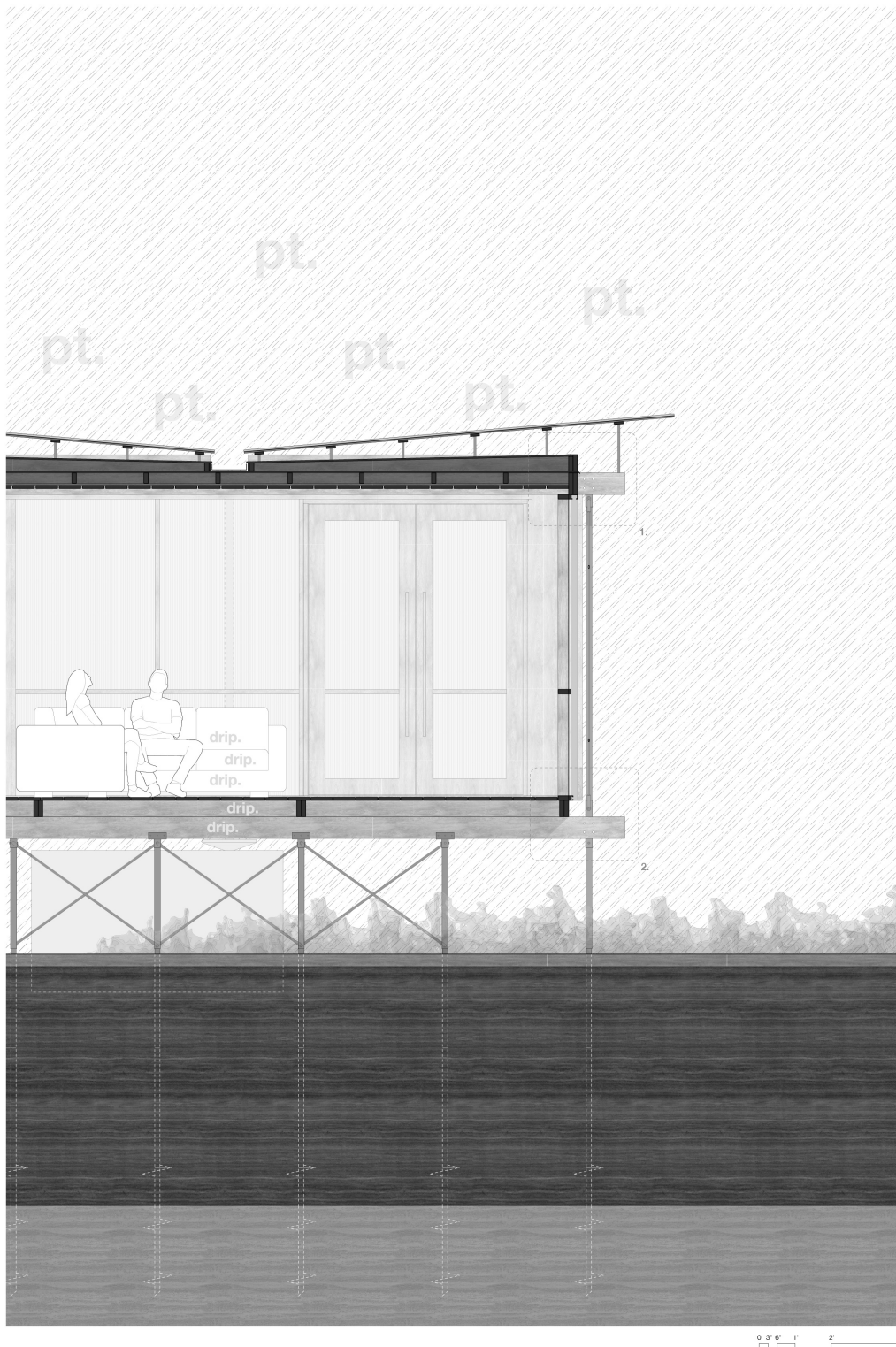
Screened-In Room

Phantasm #	3
Program	Screened-In Room
Location	Ontario
Disturbance	Development Encroachment
Proposed Land Use	Peripheral Residences & Cottages

Screened-In Room Context Legend

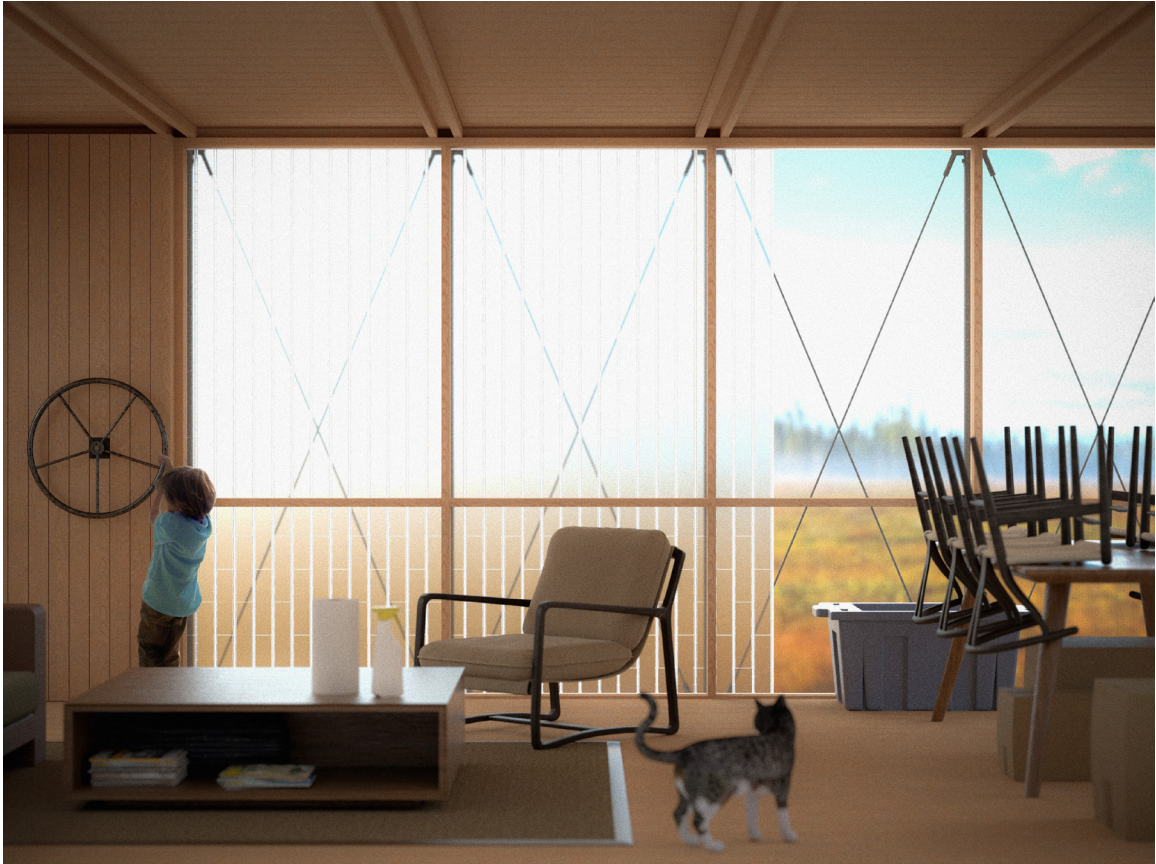
The screened-in-room is a programmatic response to buggy environments that would likely become a part of peatland vernacular. In *A Place to Belong*, Gerald Pocius examines what constitutes “vernacular” in the fishing village of Calvert, Newfoundland. He found that the vernacular of place was less about form and design, and more about spaces and their common uses (Pocius 1991). He also identified a trend towards multifunctional spaces rather than single-use spaces (Pocius 1991). This phantasm mires in the use of the screened-in-room and how it changes throughout the year.

Programmatically, the screened-in room is connected but isolated from the house, with sides open to the surroundings, it acts as a platform in the landscape. Phenomenologically, it is a room that is about atmosphere, where you can feel the air, smell the vegetation, and hear the wind. It is about passively experiencing the outdoors as setting rather than subject. As such, the design of the screened-in room attempts to elevate the experience of atmosphere through sound rather than sight.



Screened-In Room Section: The Auditory Atmosphere of Rain. Water is stored in a cistern and saved for summer droughts, when it is used to wet the ground around the house to prevent peat from oxidizing the ground from subsiding.

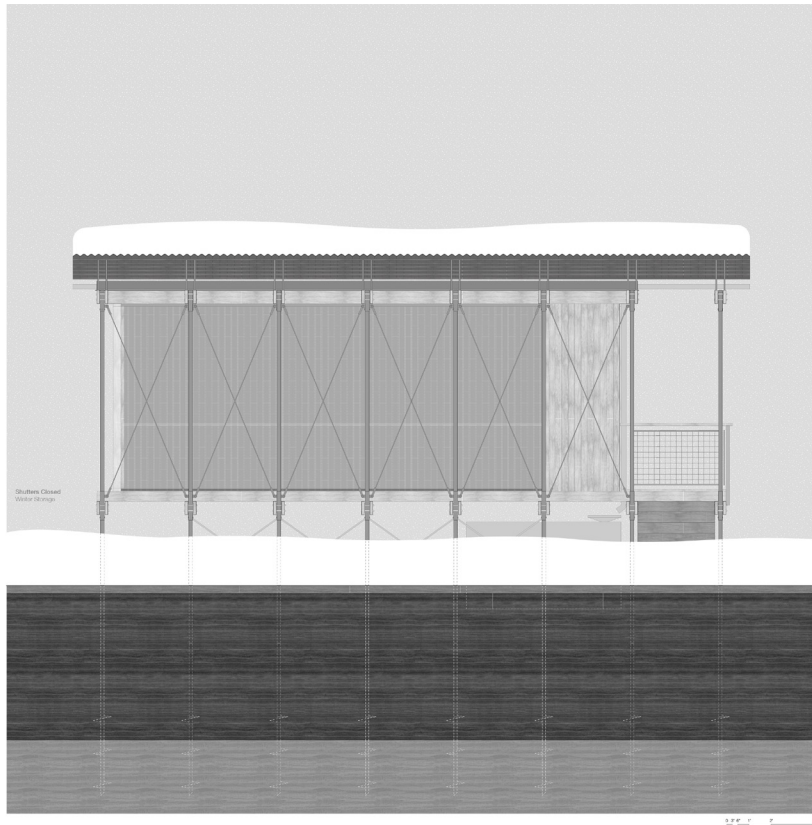
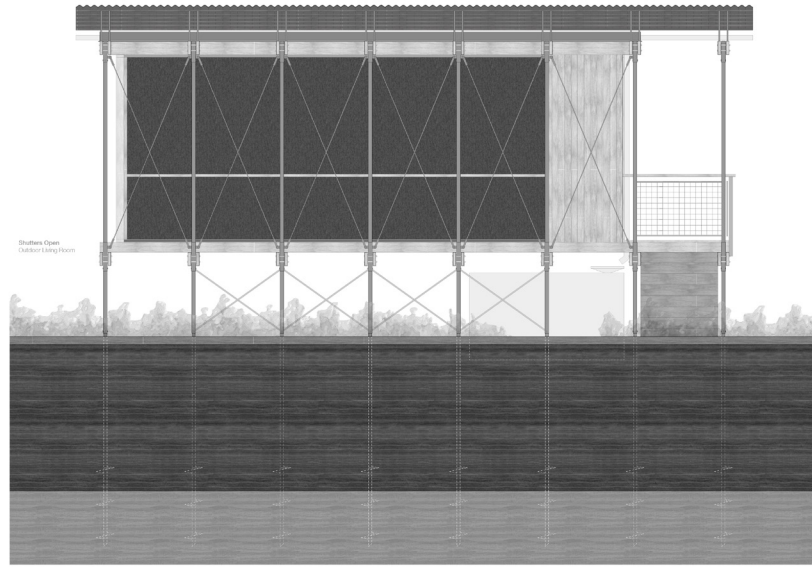
Sound extends space and is always changing, flowing with time (Tuan 1974). Hearing is a passive sense that is constantly running in the background of our experience (Tuan 1974). The screen-in-room is acoustically activated by rain. A metal butterfly roof floats above the structure, free to reverberate with every rain drop, accentuating the pitter-patter of spring showers. The rainwater flows down the rain leader and falls on a drip pan before being funnelled into the cistern. If you sat in the room while it is raining, you would be surrounded by the sounds of water. You would hear the distant “sshhhh” of a million raindrops falling on the landscape, the “pitter-patter” on the roof above you, and “drip-drip” from the cistern below.



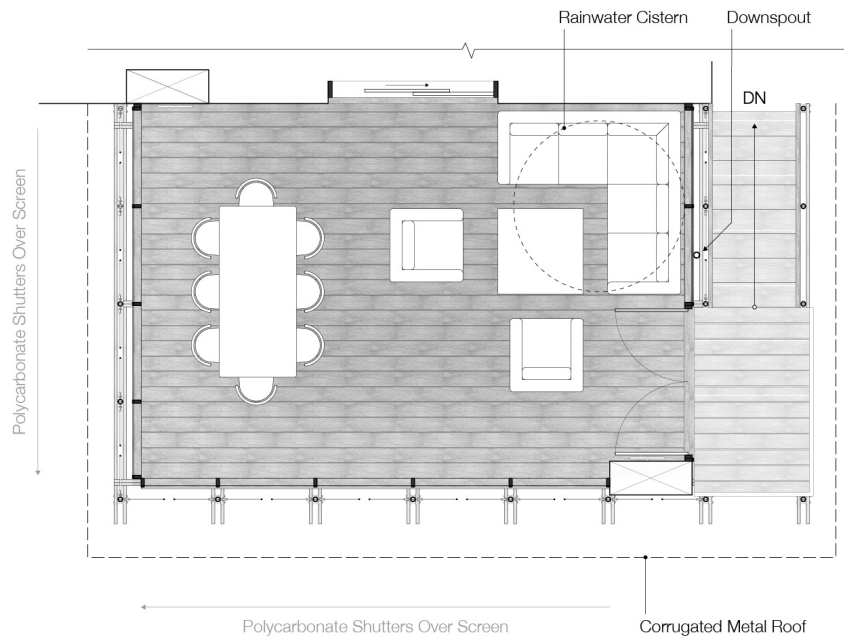
Every May long-weekend, we all pitch-in to set up the screened-in room for the summer. Some are more reluctant to help than others, but there is always a steady flow of people moving things in and out. I never have to ask someone to open the shutters, it's always the first thing that gets done. We let the kids do it ever since they cried the year that I did it without them.

In Canada, during the warmer seasons, the screened-in room functions as a second living room or dining room. It can be a place for gathering, hosting guests or for peaceful solitude. It is a place where people sit down to talk and exchange stories in the company of the bog or fen. In cold weather, the screened-in room is often used as a storage space. It might house patio furniture, holiday decorations, storage bins, bikes, lawnmowers, kayaks or canoes.

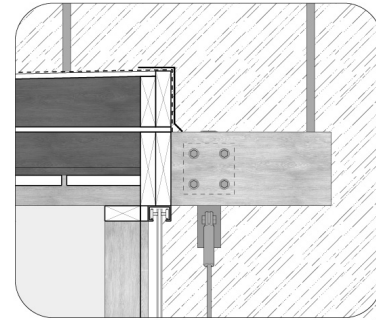
The transition between living room and storage space happens twice a year and it creates a domestic ritual that marks the seasons. The design emphasizes this ritual through the operation of its shutters. A large hand wheel opens and closes a polycarbonate shutter system that extends the space's function as a living room into the shoulder seasons and shelters its contents during the winter. These types of seemingly insignificant rituals are foundational to our sense of place. John Brinckerhoff Jackson believes that we create our sense of place over the course of time through habit and custom (Jackson 1994). For Jackson, it is "a lively awareness of the familiar environment, a ritual repetition, a sense of fellowship based on a shared experience" that we associate with place, not public spaces, architectural forms or monuments (Jackson 1994).



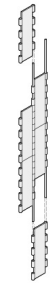
Screened-In Room Elevations: A Warm-Weather Living Room and a Cold-Weather Storage Room



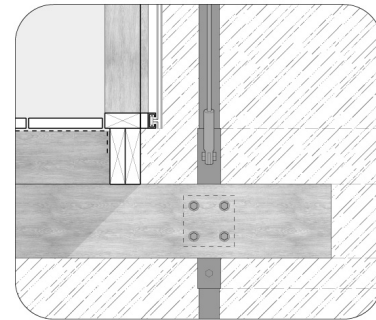
Permanent Polycarbonate



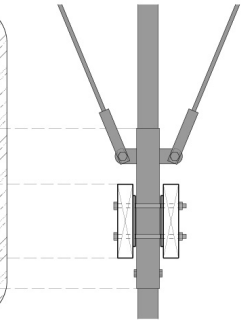
1. Roof to Wall
1:10



Polycarbonate Shutter System
1:20



2. Floor to Wall
1:10



Beam to Post
1:10

Screened-In Room Plan & Details

Patio Deck

Phantasm #	2
Program	Patio Deck
Location	Manitoba
Disturbance	Agriculture & Climate Change
Proposed Land Use	Biomass Paludiculture

Patio Deck Context Legend

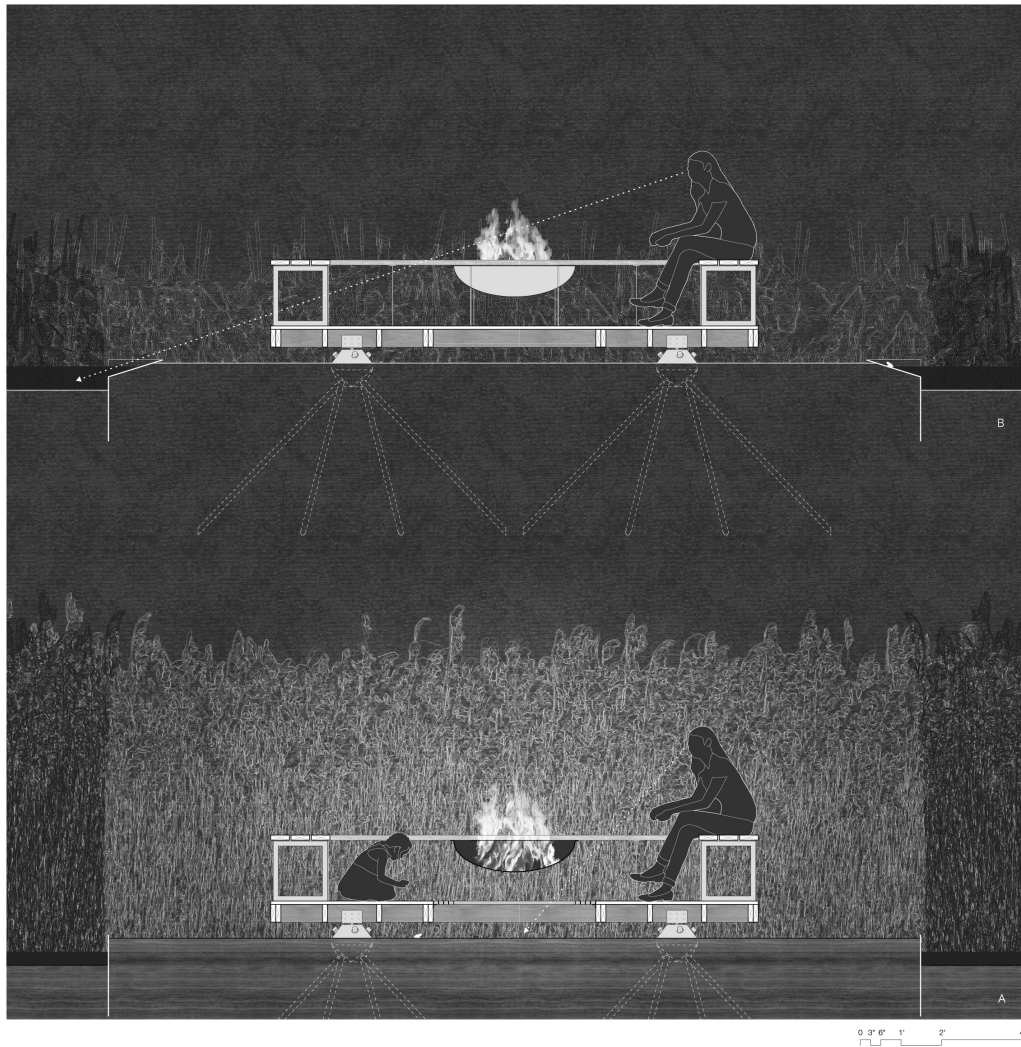


Paludicultural Reed Harvesting (Short 2014)

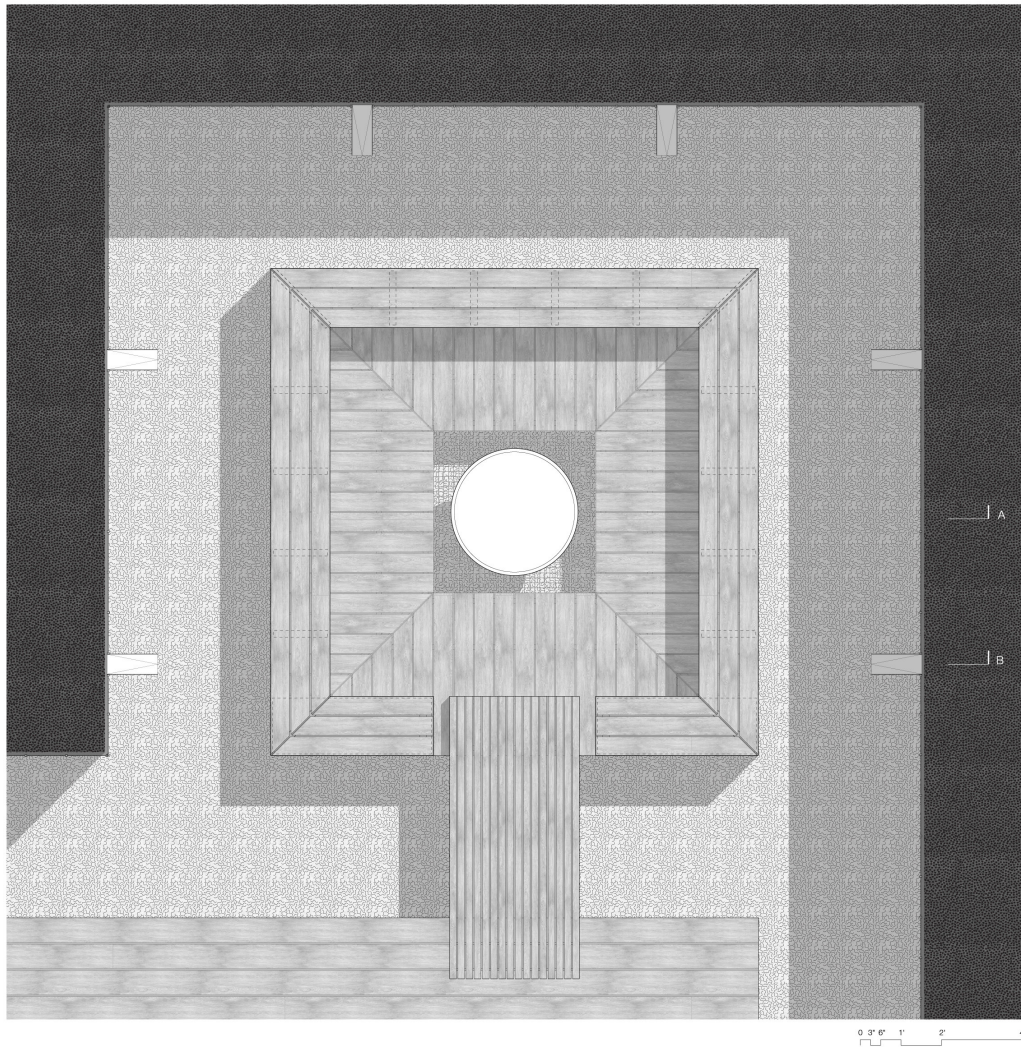
The patio phantasm is situated in Manitoba, on paludicultural land with a biomass crop of reeds that will be used for insulation, thatch and composite construction materials. Transitioning from agriculture to paludiculture is a method of reducing carbon emissions from peat oxidation on drained agricultural land without having to forfeit economic function. This entails rewetting the fields and transitioning to a wetland crop that grows in saturated soil. Paludiculture does not facilitate significant peat accumulation in comparison to restored peatland, but it does help to preserve existing peat that has not yet oxidized.

Programmatically, a patio or a deck is an implied room in a landscape for dwelling, for simply being with the landscape or yard. It has no utilitarian function apart from enjoying being outdoors. The design of the patio deck uses the paludicultural context to create a literal room within the reeds that appears and disappears with the seasons. When seated, the reeds block your view of the horizon, making the room inwardly focused. In the absence of reeds, the deck hovers above a blanket of moss.

The Blackfoot, a native people of the prairies, dug pits on hilltops where they would gaze up at the sky, lying in wait, exposed to the elements, until they experienced a vision. They were called “dream beds”. The intention for the patio deck is to function as a reverse dream bed, where you gaze down at the earth instead of up at the sky, and you envision what used to be, what is, and what might become of the place that you are in.



Patio Deck Sections: a room that appears and disappears with the seasons, a place to dwell with sphagnum by firelight. Deck boards are spaced 3/4" - 1" apart, creating a larger gap than typical to draw attention to the ground below. A girl finds a frog below the deck.



Patio Deck Plan: a reverse dream bed for looking down and envisioning the entangled past, present and future of place. A bench wraps the platform orienting people towards a metal grate with an aperture beneath the firepit.

People do not intuitively direct their attention downward. Of the bodily directions (front, back, side, up and down), there exists a perceptual hierarchy, on which “downward” ranks the “lowest” (Tuan 1977). The design challenge therefore becomes drawing attention to ground, and nothing mesmerizes the eye like fire. A fire pit floats above an aperture in the deck to reveal the moss below, flickering in the ambient light of the flames. Wandering eyes are guided by the deck’s board pattern back toward towards the aperture. At the edge of the room, there are slanted reveals in the retention sheets that separate the moss from the reeds, exposing the water level beyond the room’s extents. These are some of the ways that the design of the deck attempts to draw focus towards the ground condition.

In the spirit of looking downward, the patio phantasm attempts to capture a moment of genuine curiosity about what lies beneath our feet. Looking between the boards of a dock or deck to see what might be hiding below is an experience that some people may remember from childhood. In response, the patio deck boards are spaced 3/4”-1” apart, creating a wider gap than usual in hopes of sparking somebody’s curiosity.



She found a frog under the deck last week. I looked it up, I think it was a wood frog? She's been checking between the boards everyday since.

Path

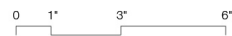
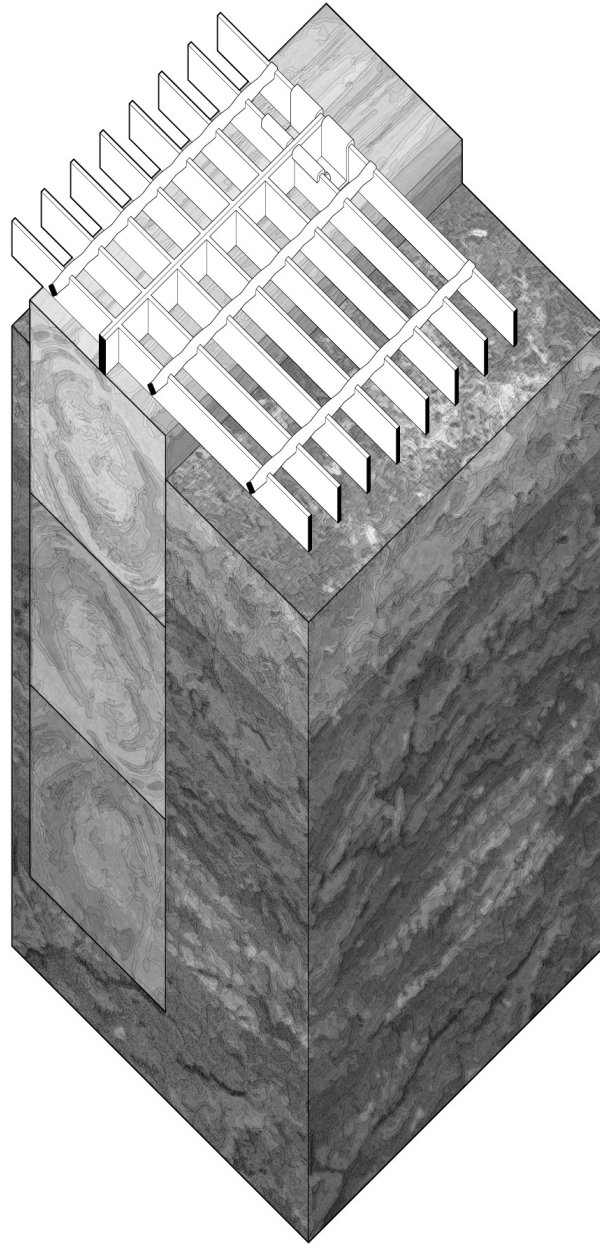
Phantasm #	5
Program	Path
Location	New Brunswick
Disturbance	Horticultural Peat Extraction
Proposed Land Use	You-Pick Berry Patches & Foraging

Path Context Legend

The inconsistent and indeterminable surface of peatland challenges our ability to move across the landscape on foot, due to its soft, watery consistency. Without bog shoes or modifying the environment, walking requires mediation. It is for this reason that built-form should be approached as an interface between people and peatland, it facilitates our interaction while preserving each of our nature. The path is the simplest representation of this philosophy.



Time passes so quickly at my parent's place. The ground is starting to come up through the walkway again. I remember helping my dad raise those grates when I was in middle school. You basically just lay new sleepers on top of the old ones. I bet you could measure the age of their house by the sleepers in the yard.



Path Axonometric Detail: grates fastened to a third-generation sleeper



Bog Bridge With Sleepers
(USDA 2007)

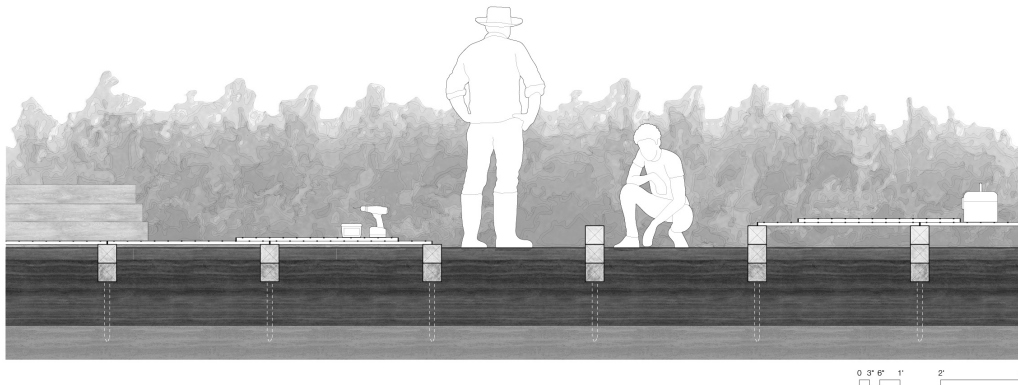
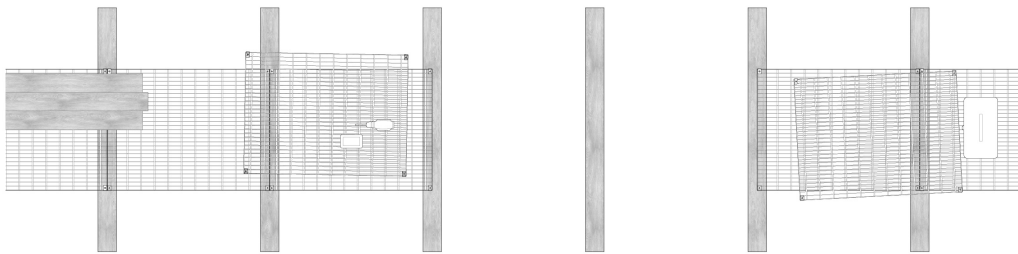
The path design was born of parameters: it had to enable walking, it had to minimize ecological disturbance, and it had to be inexpensive and easy to build. Bog bridges are a peatland trail typology composed of duckboards that are laid on top of sleeper logs. Building on this design, the sleeper logs were lengthened to distribute weight evenly across a greater surface area. Wooded stakes were driven into the ground prior to laying the sleepers, acting as miniature friction piles. The Duckboards were then switched out for metal grates to widen the walking surface, increase longevity, reduce deflection, and prevent slippery conditions.

The open grates allow sunlight to pass through the widened path, allowing sphagnum and other vegetation to continue to grow and accumulate peat at a similar rate to the rest of the ground surface. This will hopefully prevent the formation of a topographic depression that will fill with rising groundwater. The phenomenological result of this design is the marking of time. As peat accumulates and groundwater rises, the ground will grow upwards to meet the grates, at which point the path will need to be raised.



Vacuum Harvesting
Horticultural Peat Moss
(Berger 2023)

This imagined scenario occurs in New Brunswick, in a restored bog that was severely degraded from horticultural peat extraction. It optimistically supposes a peat accumulation rate that will require new 6x6 sleepers every twenty years on average. With time, as the degraded ground rises and the ecosystem matures, the ground will get softer and the path will become sturdier as its foundation gets deeper and deeper. The pathway and its sleepers are a measure of growth and a tether to the passage of time that synchronizes us with the time-scale of peatland.



Path Plan and Section: raising the grates with my dad back when I was in middle school

There was no path back when this place was used for horticultural peat production.

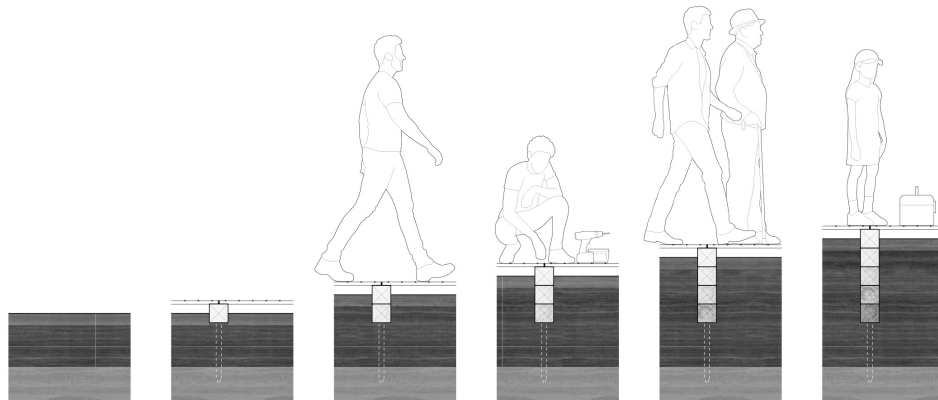
The first homeowners laid the path when the land was re-wetted.

My parents raised it shortly after they moved in.

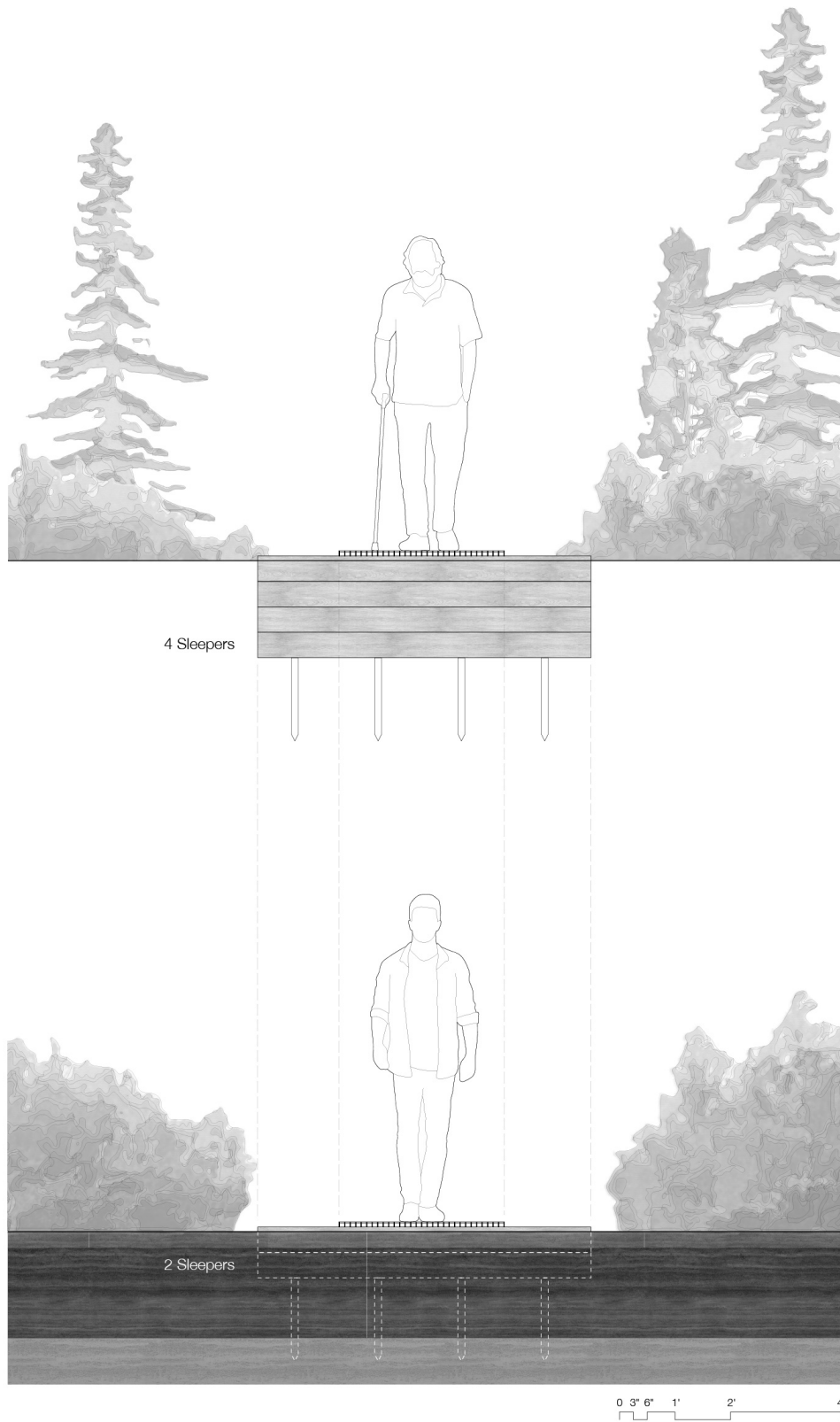
I helped raise the grates for the first time when I was in middle school.

I made time to go over and help my dad with it, but this time I do the heavy lifting.

My daughter helped me raise the path for the first time.



Path Timeline: generational growth



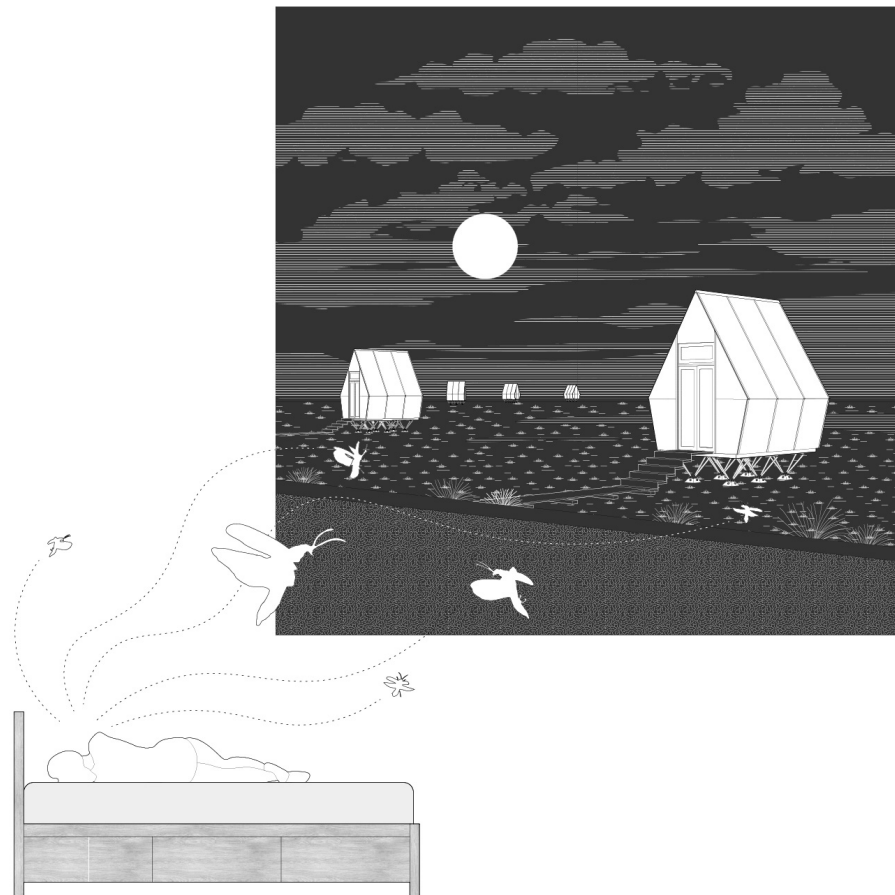
Path Sections: a difference of 2 sleepers

Greenhouse

Phantasm #	6
Program	Greenhouse
Location	Nova Scotia
Disturbance	Mining & Agriculture
Proposed Land Use	Wildlife Refuge

The greenhouse phantasm imagines how the myths of a peatland culture can positively frame environmental perception. There is a degree of balance between myth and science in all societies, and the scales of Western Culture are tipped in heavy favour of science (Gayton 1990). In the Wheatgrass Mechanism, Don Gayton calls for a cultural rebalancing, stating that “new bonds with the earth can now only be forged by personal explorations that go far beyond simple analysis and concern into realms of imagination and myth” (Gayton 1990). It is for this reason that imagining the folklore of restored peatland is an important aspect of mining.

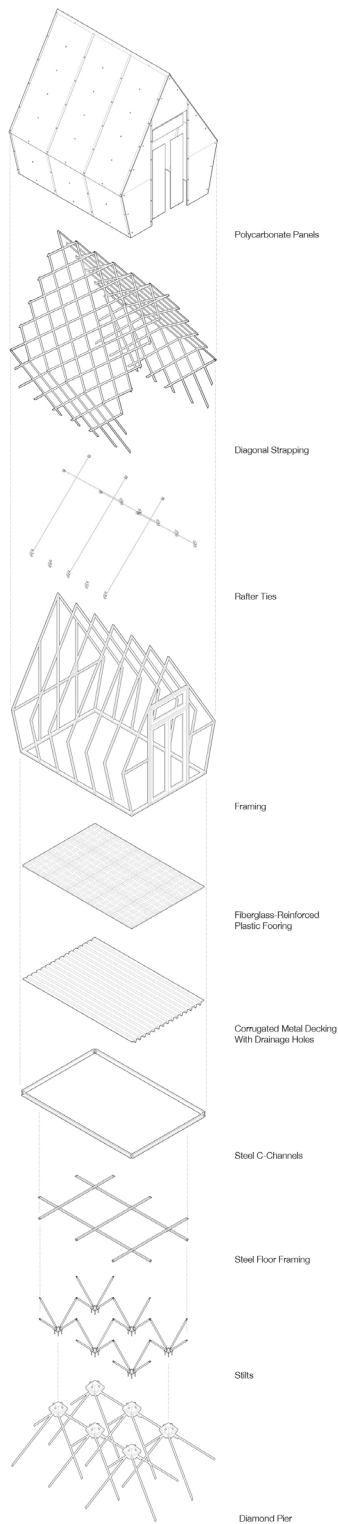
Greenhouse Context Legend



Greenhouse Diagram: dreaming of sun-catchers and fireflies



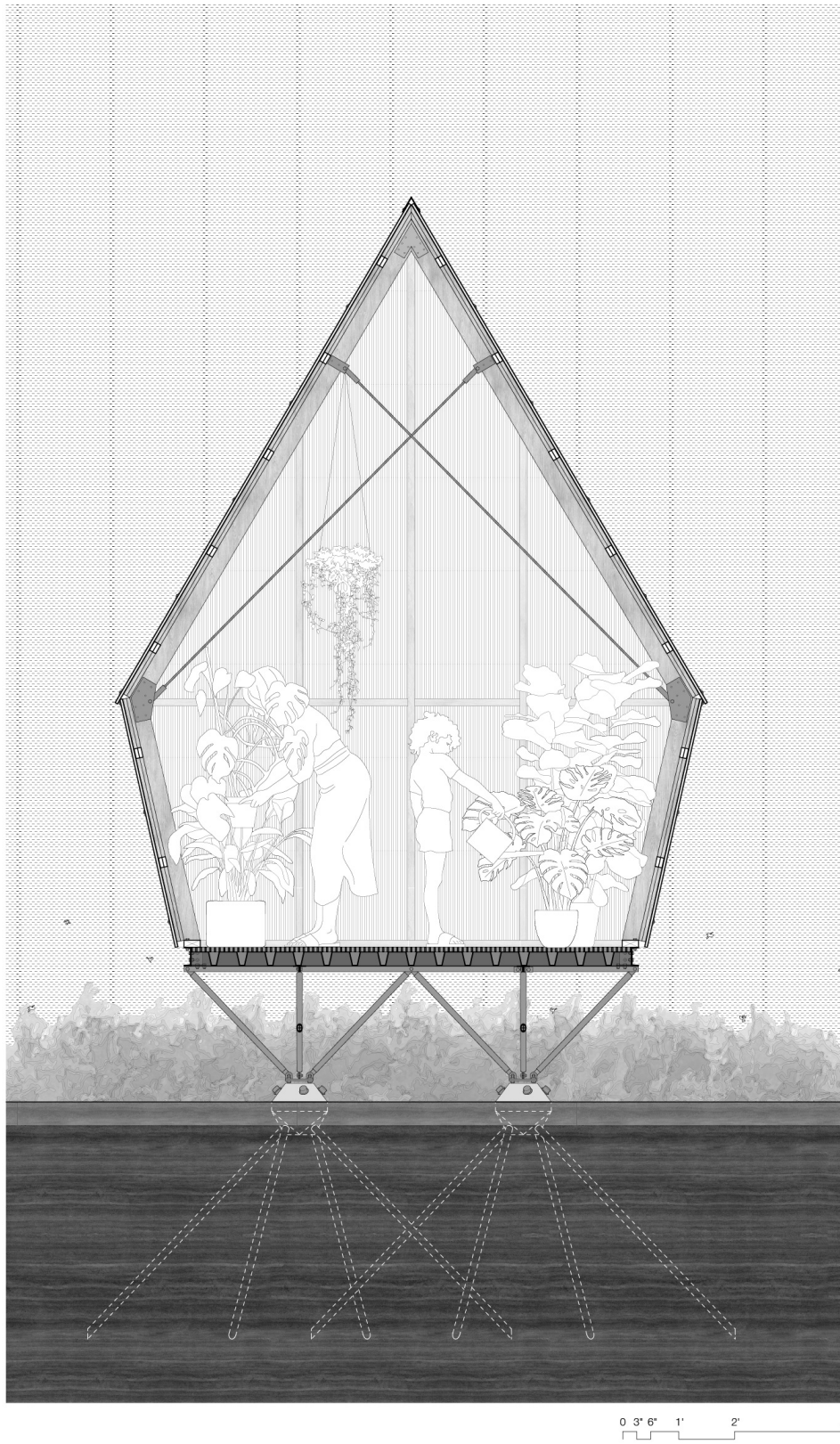
We were always told that greenhouses have a special purpose, and no, it's not for gardening. We build them just right, so they catch the last light of the day. Then we lift them up and balance them atop blades of sedge grass. When the sun sets, they begin to glow, signalling to the fireflies that it's time to wake up. It's our way of thanking them for shining so beautifully and for sharing the fen with us.



Greenhouse Exploded
Isometric: construction
assembly

The legend of the glowing greenhouse demonstrates how phenomenological interpretation of technically-driven design can contribute to the identity of place and perception of environment. The greenhouse is a purely utilitarian structure, especially in peatland. The nutrient poor, water-logged soils are not suitable for conventional gardening. Inversely, the introduction of nutrient-rich soils and fertilizers would negatively affect local ecology. The translucent enclosure creates a warm microclimate with better growing conditions and an extended growing season. It also provides shelter from mosquitoes while gardening. Since the garden cannot share the same soil, separation is required. The structure is raised off the ground for flood protection and to increase the structure's longevity. This series of technical decisions enables conventional gardening and produces the phenomenological effect of a floating sun-catcher.

Gardens are a common programmatic component of suburban and rural dwelling, so the proliferation of greenhouses in peatland is certainly plausible. These floating sun-catchers could become monuments within the landscape and sources of eco-regional identity. Through myth and legend, a re-framed ecological worldview can be passed down, one that engages the imagination and fosters affection for peatland.



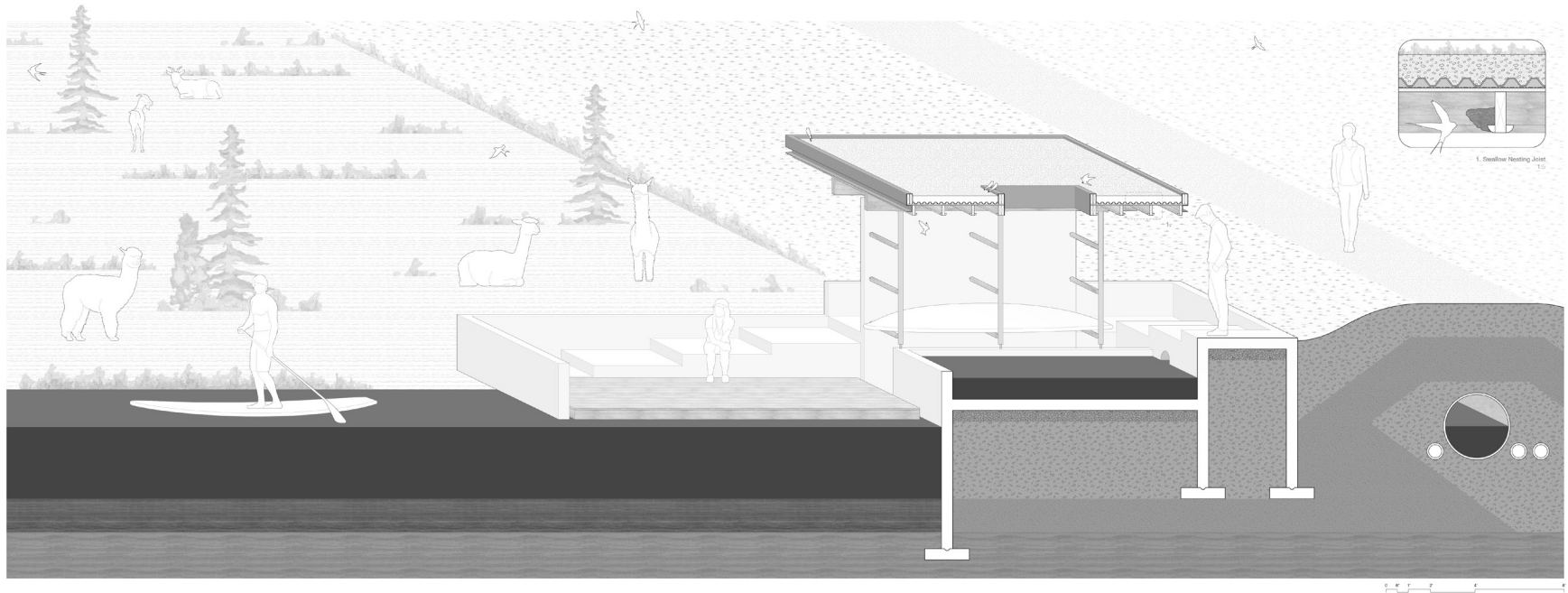
Greenhouse Section: a garden within a garden

Canal Shed

Phantasm #	7
Program	Canal Shed
Location	Alberta
Disturbance	Agriculture & Climate Change
Proposed Land Use	Canal-Irrigated Grazing Moor

Canal Shed Context Legend

The canal shed is located in Alberta, where agricultural land has been rewetted and the farmer receives carbon credits for growing-up the peat. The fen is irrigated with canals that were once used to drained the land. Grazing livestock that are suited to peatland, such as alpacas, sheep and goats, maintain an ecosystem of productive peat-producing vegetation. In the United Kingdom, grazing sheep have played a vital role in creating and maintaining seemingly “natural” moor landscapes for hundreds of years (France, 2023). Goats prefer woody vegetation and can be used intermittently as selective grazers that reduce competition for specialist bog flora (Dinesen and Hahn, 2019). Alpacas are anatomically suited for long-term grazing in delicate peatland with soft padded feet that are less destructive than hooves (Verziji and Quispe, 2013). This information is merely to suggest that there are viable methods of pairing animal husbandry with peatland restoration to improve the regeneration of peat while maintaining economic function.

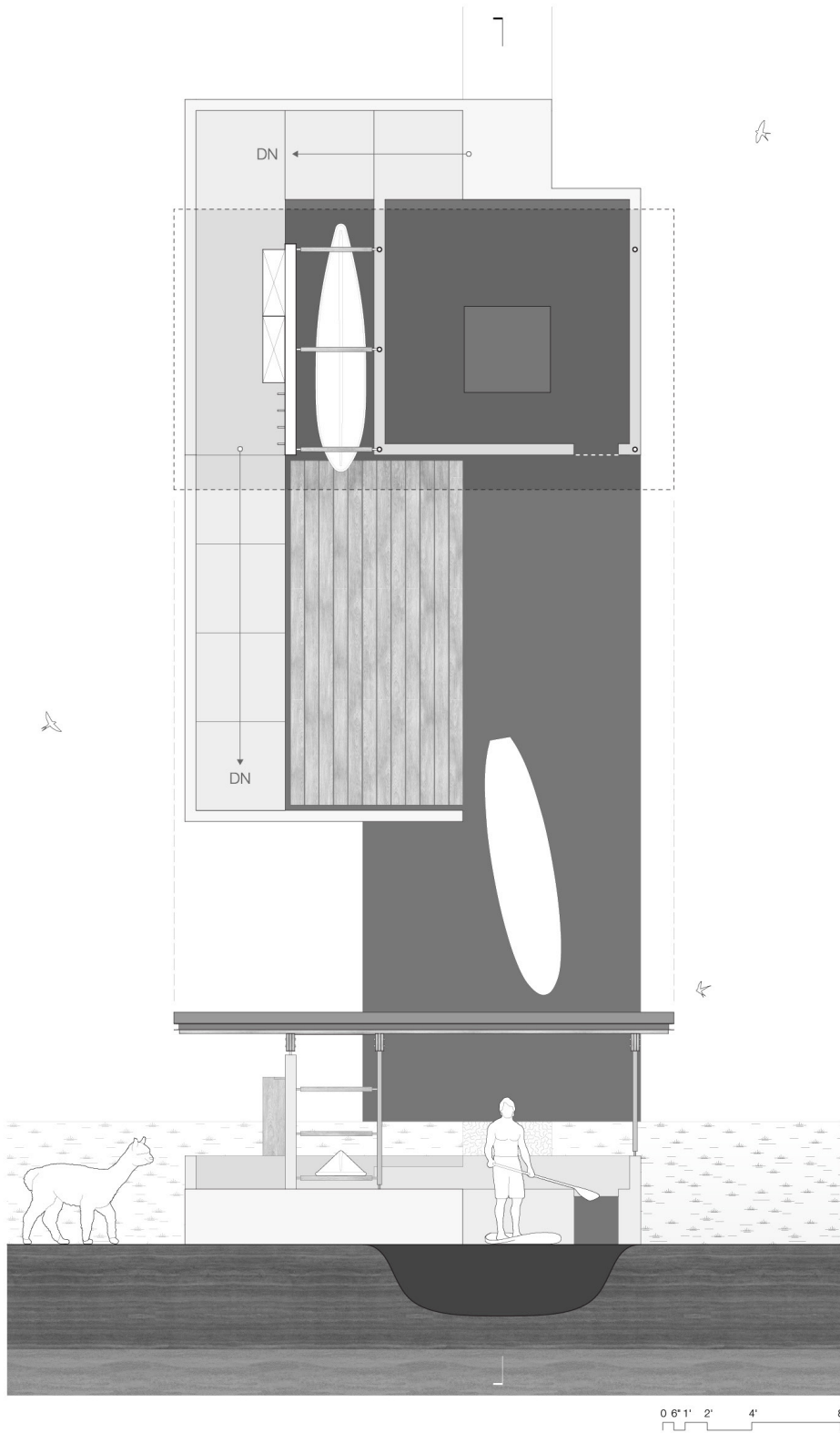


Canal Shed Section: infrastructure responds to seasonal water cycles, wild fauna and domestic animals participate in the same ecosystem, recreational networks follow infrastructure, and economy follows ecology

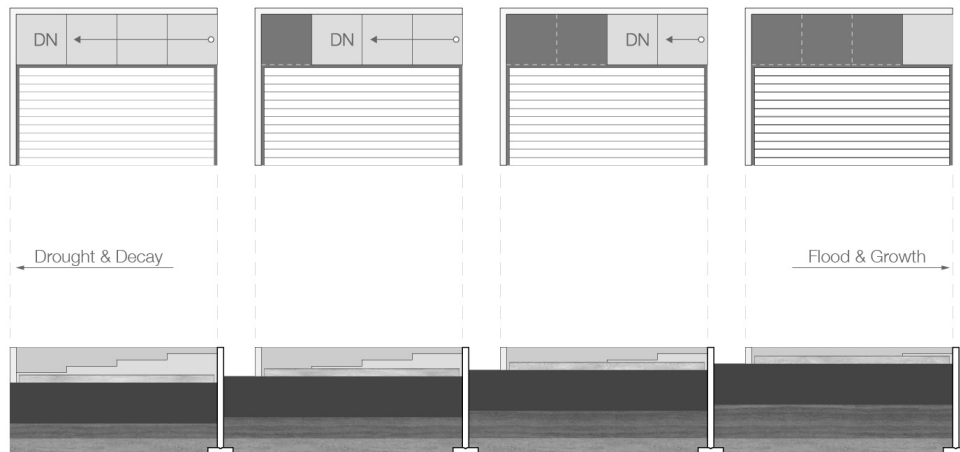


As you walk along the dyke you are eye level with the green roof that meets the fen at the horizon. As you approach the shed, the retention pool goes black beneath the roof, revealing a framed reflection where swallows fly in water and sky. Two seemingly separate cycles are brought together for a brief moment. The migrational return of the swallows is celebrated each year in hopes that they will keep mosquitoes away from the shed.

The canal shed is an imagined program typology that is the product of an imagined eco-economic context. It exists in a scenario that imagines our cooperative participation in the ecological systems of restored peatland, where systems are overlapping and entangled with one another. Infrastructure responds to seasonal water cycles, wild fauna and domestic animals participate in the same ecosystem, recreational networks follow infrastructure, and economy follows ecology. It is a phantasm of “reinhabitation”. Reinhabitation is a model for landscape restoration that represents a way of living in place and existing within an ecological community (Mills 2008). It requires awareness of ecological relationships and an understanding of how to operate sustainably with them. A reinhabitory community can develop ecological economies and cultures in response to a particular place, establishing graceful forms of order and organization without causing harm somewhere else (Mills 2008). This should be the goal of dwelling with Canada’s restored peatland.



Canal Shed Plan and Elevation: paddleboarding along the canal with the alpaca and swallows



Spring showers dimple the surface of the canals and lift the dock with its flooding. The water takes over another step for the time being. One day, long after you and I are gone, the peat and its water will take over these steps for good.

Chapter 7: Conclusion

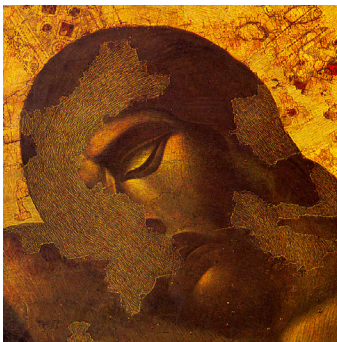
The execution of this thesis assumes the answer to an unasked question: is it possible to design architecture through programmatic fragments or a sequence of moments? Humans experience time linearly, our lives are a one long sequence of moments. Therefore, architecture can never be physically experienced as a whole. You can never see all facades at once, touch every handrail and door knob, walk each hallway and sit in the silence of every room. If the goal is to design for human experience, how can architecture not be designed in moments?

This is not a complete answer, but answering the question was not the goal of the project. The answer does not matter in regards to how “architecture” is being used because the purpose of this project was not to design architecture. The purpose was to use architecture as a framework for an imagined way of life. It is being used as a scaffolding of technical solutions and programmatic structure that contain poetic and phenomenological experiences. The composition of the scaffolding as a whole is not the point. This is what enables the fragmentation of architecture and the ability to jump through geography and time between phantasms.

The word “poetic” was used throughout this project and it requires definition. Within the project, it does not refer to the medium of written poetry, so much as its sentiment and effect. The word intends to mean what Andrei Tarkovsky describes as “an awareness of the world, a particular way of relating to reality” (Tarkovskii 1987). This type of awareness and a particular way of relating to peatland is being created within the phantasmagoria, acting as a common thread between moments. The phantasmagoria also establishes

a particular way of relating known and unknown. The imagination is harnessed by the familiarity of dwelling and the unfamiliarity of the peatland. The particularity of each moment is connected by a common poetic position throughout the phantasmagoria.

Although the moments are disparate, when they are viewed together one cannot help but relate them. Thus creating a mental map across the country through the typical residential program. It crosses the front yard into the mudroom, steps out of the house into the screened-in room, goes down to the patio, along the path to the greenhouse and wanders out into the landscape on top of the dyke until it reaches the canal shed. Regardless of their fragmentation and varying context, they are connected to form a whole. It is an incomplete whole, with missing pieces like the lacunae of an artifactual painting. Despite the gaps and unfilled lacunae, the mind forms a completed image. It is in this way that the phantasmagoria provides just enough information for the imagination to take hold and to imagine life in peatland.



Detail of Cimabue's Crucifix:
The image is completed
in the mind of the viewer,
despite the lacunae.
(Cimabue n.d.)

In Italo Calvino's "Invisible Cities" he writes of 55 imaginary and completely unique cities. He writes of a water city, a city on stilts, a city of memory, a city of opulence and a city of waste. However, it is revealed that they are all the single city of Venice. If we approach the phantasmagoria in the same way, we begin to gain a feeling and perhaps a longing for a place that is yet to be.

On a former agricultural peatland in Canada, we can begin to imagine a place where the homes stand delicately on stilts that grow up from the peat. Passively grazing animals roam in a regenerating fen, meticulously managing the vegetation. Irrigation channels maintain the ground water-

level, patterning the landscape for the swallows to enjoy from the sky. Tracts of land are divided not by property or political boundaries, but by hydrology, ecology and their supporting infrastructure. Rainwater harvesting cisterns reduce seasonal downpours and act as a reservoir for the fen during periods of drought. Residences on wells treat their greywater with bio-filters and nitrogen reduction before returning it to the watershed from where it came.

Within this mutant landscape, new peatland cultures develop from the rituals of place. People go for walks along dykes and boat along canal networks. Greenhouses pop-up in the landscape like cotton grass, housing traditional mineral soil plants safely above sphagnum gardens, blueberry bushes, lambkill and orchids. Spaces for dwelling transform with the seasons and walking paths rise with the peat. Homes are adorned with material finishes and artwork born of peatland. Bog shoes hang in mudrooms and sweaters are knit from the wool of alpaca and sheep. Each generation becomes slightly more attuned with local ecology, an attunement that permeates into their built forms, their daily and seasonal rituals, their stories and their myths.

This is just one eco-cultural imagination for the regenerating peatlands of Canada.

Yes, though you may think me perverse, if it were proposed to me to dwell in the neighbourhood of the most beautiful garden that ever human art contrived, or else of a Dismal Swamp, I should certainly decide for the swamp. (Thoreau 1862)

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