

Architecture as an Organism for Human-Nature Mutualism

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

In the Canadian Prairies, collective myopia exists; It is a psychological defence blinding humans of unsustainable conditions like automatic processes, the value of individualism, and economies driven by resources. This thesis explores the impact of these unsustainable conditions, which have resulted in the dichotomy between humans and nature, in Gibbons, a small town in Alberta, Canada. To remove collective myopia and break the dichotomy between humans and nature, self-transcendence is required. This thesis proposes that self-transcendence can be achieved through human-nature mutualism, an architectural concept I derived from ecopsychology, environmental psychology, and ecology, which re-integrates the human social environment and the natural environment within a built environment. Architecturally, a mixed-use collective housing project is proposed to bring these environments together. The design will incorporate human-nature mutualism through a model proposing four key design elements to improve mental and physical health and subsequently humanity's renewal.

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Suncor (Petro Canada) refinery. Edmonton, Alberta (Peak Aerials 2013).

Chapter 1: Introduction

Collective Myopia

In the Canadian Prairies, a psychological defense blinding humans of unsustainable conditions, otherwise known as collective myopia is present. Automatic process, the value of individualism, and economies driven by resources are unsustainable issues that have created a dichotomy between humans, nature, and the built environment. These issues can be attributed to collective myopia and the continuation of monotonous and destructive behaviour (Roszak, Gomes, and Kanner 1995, 202).

Automatic Process

Automatic process can be described as an uncalculated or effortless response to a stimulus (Mazar and Wood 2018). Humans are habitual by nature, and as automatic process absolves awareness of behaviours, control and identification with one's context are abandoned. For instance, the behaviour of adjusting the thermostat is a result of automatic process. When a person perceives a stimulus, such as sweating, "they directly retrieve the associated response" of adjusting the thermostat or opening a window from memory opposed to "effortfully calculating" which strategies are most efficient or appropriate for an activity, which is the case of adaptive thermal comfort (Mazar and Wood 2018, 10). Adaptive thermal comfort is a model that "leans heavily on local heating/cooling sources and clothing insulation" (Decker 2015). It implies the "automatic physiological response of the body [and] people's conscious behavioural actions will alter their relationship to the world around them, ultimately helping to safeguard the core temperature of the

body” (Nicol, Humphreys, and Roaf 2012, 28–9). Unlike the adaptive thermal comfort model, a lack of effort to calculate a response suggests a shortfall in knowledge and awareness of the surrounding context and an individual’s corporeal understanding. To identify with and understand the surrounding environment, humans must become knowledgeable about it, have the resources to control and transform their surroundings and develop a relationship with it.

In fact, it only takes a little reflection to see that we need to relate actively to our environs and to discover their potential, their functionalities, to attach ourselves to places, to appropriate places, to feel good in them. These bonds are articulated through the experiences and meanings that turn a space into a place. (Fleury-Bahi, Pol, and Navarro 2017, 44)

In addition to the lack of control and human-involved transformation in built environments, a lack of regional differences in architectural form, indifference to solar orientation and meaningful migration are all results of automatic processes formed from modern air heating and cooling (Knowles 2006, 16, 72–73). This has resulted in a dichotomy between humans, nature and the built environment.

This dichotomy is destructive because it results in collective myopia, where groups of people become ignorant to issues such as the unsustainable and destructive properties of modern air heating and cooling that are contributing to the instability of humanity and environmental crises.

One particularly destructive property of modern air heating and cooling is acclimatization. The small and consistent temperature ranges experienced throughout domestic architecture have caused humans to become more sensitive and unable to withstand sudden extreme temperature

changes, which may, alongside energy poverty, be a reason for increased deaths during extreme temperature events.

In the literature review, Thermal Adaptation in the Built Environment, it states that “occupants in naturally ventilated buildings had more relaxed expectations and were more tolerant of temperature swings, while also preferring temperatures that tracked the outdoor climactic trends. In contrast, occupants in closely controlled air-conditioned buildings had much more rigid expectations for a cool, uniform, thermal environment and were more sensitive to conditions that deviated from these constant set points. (Brager and de Dear 1998, 94)

It is not difficult to observe the detrimental impacts automatic processes have on humans and the natural environment. People have become blind to their actions as they carry forth with destructive routines; however, automatic processes are not only to blame for collective myopia. Individualism and competitiveness have blinded humans as well.

Valuing Individualism

In western Canada, individualism is valued, but it is the antithesis of self-transcendence, which is needed to reject collective myopia. Self-transcendence is the “realization that [humans] are one small part of a greater whole, and [act] accordingly” (Ackerman 2021).

In the words of Ian McHarg writing in “Man and His Environment” in *The Urban Condition*: . . . no species can exist without an environment, no species can exist in an environment of its exclusive creation, no species can survive, save as a non-disruptive member of an ecological community. Every member must adjust to other members of the community and to the environment in order to survive. Man is not excluded from this test. (Hall 1969, 187)

In western Canada, humans tend to live individually or in smaller family groups within a larger urban area where many people are strangers. This way of living is a modern concept, which opposes history where humans used to live in tribes and clans (Chriss 2020). Tribes and clans helped

sustain life by connecting individuals to human communities and the Earth.

[I]t was the land and the environmental dynamics that influenced the formation of Tlingit ways of seeing the world. For example, potlatches were utilized as a method for the redistribution of resources amongst community members. (Gareau 2017)

To achieve self-transcendence, humans must learn from examples of it, such as Indigenous world views and their philosophy of interconnectedness and belonging. These, as well as their “governing principles of peace and harmony, are highly valued and each person [within the community] is expected to have accountability for their actions and words” (Gareau 2017). Community accountability toward each other and the Earth can be described as self-transcendence.

In Gibbons, Alberta, the value of individualism has caused urban sprawl and disconnection between community members. In addition, a heavy reliance on motorization for physical needs, such as fresh produce and work transportation, has resulted from this value. This reliance causes increased pollution, urban erosion, further disconnection between communities, and safety issues that affect humans physically and psychologically (Jacobs 1961, 120, 349, 370).

Psychological Despair

Joanna Macy, a teacher, scholar, and activist, states that the despair some individuals feel regarding the current conditions of the planet is portrayed as a manifestation of private neurosis (Roszak, Gomes, and Kanner 1995, 244). This further perpetuates collective myopia because it disregards and devalues individual despair as a genuine concern, preventing further action. Since denial and fear

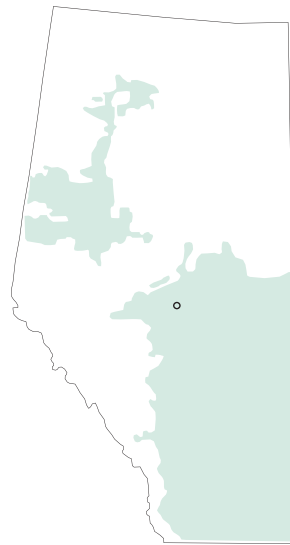
are at the root of collective myopia, and because these are perceived as personal issues, people must achieve self-transcendence collectively, so that these larger issues are validated.

We become numbed to our feelings, to what we might hear and see; in part we suffer from collective myopia. Unfortunately, it doesn't stop there. Our myopic defense blinds us to the urgency and severity of current Earth conditions. Consequently, we continue our destructive and habitual behaviour. We deny the need to change, and the need for radical reevaluation of ourselves. In the midst of collective denial, we further perpetuate the destruction of the biosphere. Our collective myopia thus becomes both cause and effect of the environmental crisis. (Roszak, Gomes, and Kanner 1995, 202)

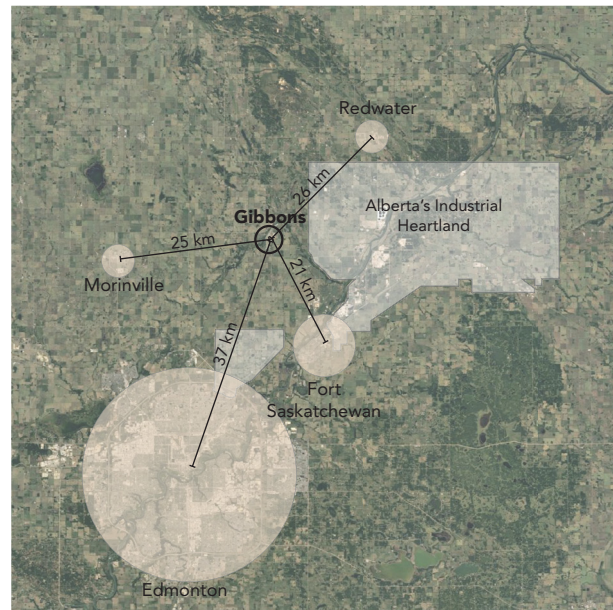
Economies Driven by Resources

The agricultural industry and the oil and gas industry exist within and around the Gibbons area. As a result, pollution, financial instability, and over-reliance on resource extraction are prevalent. 5.6 kilometers east of Gibbons is Canada's largest hydrocarbon energy cluster which provides fuels, fertilizers, power, petrochemicals, hydrogen, and more to provincial and global consumers (Alberta's Industrial Heartland n.d.). These provisions are heavily relied upon for travel and modern air heating in the Canadian Prairies due to urban sprawl and the harsh winter climate, which can range from -30 to -40 degrees Celsius for a portion of the year (Travel Alberta n.d.). This reliance can be detrimental for low-income households as they struggle to keep their homes at a livable temperature. The All One Sky foundation states that "about 455,000 Albertans or one in six households live in energy poverty" (Boyd and Corbett 2015, 2). They classify a household as energy poor if they have an energy poverty ratio equal to or above 10 percent of one's income (Boyd and Corbett 2015, 4). Since the removal of Alberta's energy price cap in 2019, the number of Albertans struggling

- Gibbons AB
- Gibbons Boundary
- Distance
- Agricultural Land



Alberta's Agricultural Land



Gibbons AB Location



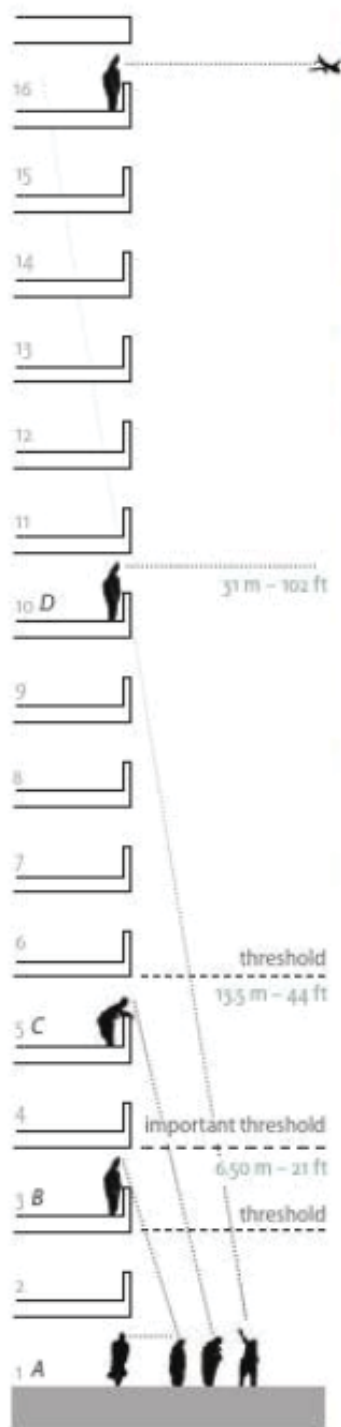
Gibbons AB Boundary

Gibbons, Alberta industry (Google Maps 2022; Land Use Planning Hub 2021).

to afford the rate increases can be expected to grow. To put it into perspective, in 2019, the rate cap was 6.8 ¢/kWh, and since the removal of the cap, rates have been an average of 16.309 ¢/kWh in 2022 (Energy Rates n.d).

While the oil and gas industry has had detrimental effects on Gibbons, the agricultural industry has also contributed to various issues. Gibbons is located on Alberta's agricultural land consisting of fifty million acres, including cultivated land and pastures and are used to support livestock or crops (Land Use Planning Hub 2021). Control and power over nature are apparent in the agriculture industry, and this thinking has resulted in water, air, and land quality concerns. For example, Statistics Canada reported that agriculture is the primary source of atmospheric ammonia emissions, which can have harmful effects on human health and the environment (Statistics Canada 2014). In Gibbons, the water quality of the Sturgeon River is below average due to runoff from agricultural fields that includes high nutrient concentrations from fertilizers and manure applied in excess (CPP Environmental 2019, vi).

As a result of a resource-driven economy in Gibbons, over-reliance on homeownership and under-development of the rental market is prevalent. The article "Young Adults' Perceptions of Life-Course Scripts and Housing Transitions" suggests that "a relatively homogenous housing supply, . . . low densities and a large stock of higher-end housing" have been produced as a result (Severson and Collins 2020). The lack of affordable housing and rentals in the Gibbons area due to "cyclical economic booms driven by oil prices" has created significant housing stress, especially for low-income and young households (Severson and Collins 2020).



A disconnected building (Gehl and Rogers 2010, 40).

While the population in the Town of Gibbons continues to steadily decline by -0.94% percent annually (Alberta Government 2022), most likely due to the lack of affordable housing, it could expect to increase if more affordable rentals, amenities and jobs are made available in Gibbons. If populations increase and consequently density, the town could risk disregarding human health if walkability, solar access, ventilation, and sensory capabilities are not addressed at the urban scale. If the built environment does not consider the human scale, life quality and experiences with the natural world diminish and cause disconnection (Roszak, Gomes, and Kanner 1995, 201; Gehl and Rogers 2010, 214). For example, Jan Gehl notes in his book *Cities for People* that “above the fifth floor, offices and housing should logically be the province of the air traffic authorities. At any rate, they no longer belong to the city” (Gehl and Rogers 2010, 42). This is depicted in the image to the left. When designing a built environment, understanding the human scale is essential because high-density areas elevate health and safety risks with a lack of fresh air, sunlight, overcrowding, and sensory deprivation. These all cause stress on the physical and psychological health of humans (Hall 1969, 184). In psychology, it is understood that mental and physical health needs are required before achieving self-transcendence, especially when observing Maslow’s Hierarchy of needs. For this reason, the human scale must be understood when designing the built environment.

Nature as a Commodity Versus a Need

Within American history, the theme of nature as a commodity versus a need is prevalent. When nature is considered a commodity, such as the establishment of national parks in the early twentieth century due to the tourism industry, personal

pleasure is the objective. From 1933–1943, amid the Depression, nature became a need for humans to reconcile with and repair the landscape (Macy and Bonnemaïson 2003, 3–4, 136). While the objectives are different, nature is maintained and preserved in either situation. Issues only arise when nature is harmed or destroyed for personal gain.

In Gibbons, it is clear that financial gain is the driver for their decisions to preserve or destroy nature. Gibbons is situated along the banks of the Sturgeon River, whose trails were built by the Hudson's Bay Company in 1876. The Sturgeon River hosts the valley, the town's charm; organic life is very prominent. It is a prairie river, fed only by snowmelt and precipitation. North up the river, there is a cactus prairie surrounded by massive clay and gravel sediments, and south-west down the Sturgeon River, beautiful sand dunes have come to rest as overbank deposits. When observing descriptions of Gibbons, it is logical to conclude that the Sturgeon River valley is considered and used as a commodity in Gibbons to attract new families to the town. As a result, the river valley has been maintained.

Conversely, the cactus prairie is not well maintained, and because highways surround the cactus prairie, it suggests that the cacti must have been destroyed due to the expansion of transportation routes. What is concerning is that the prickly pear cacti are predicted to be at risk according to the Alberta Biodiversity Monitoring Institute due to urban and rural expansion, transportation and the agriculture industry (ABMI 2020).

From these examples, it is comprehensible that financial gain is the driver of the town's decisions to preserve or destroy nature. So long as humans continue to harm or

destroy nature for personal gain, the Earth's renewal and, consequently, humanity will slip from reach. Control and disregard for the natural environment lead to disastrous rates of renewable resources to natural replenishment and non-renewable resources to resource depletion (Heinberg 2010, 4).

Human-Nature Mutualism

As Gibbons continues to rely on an economy driven by resources, automatic processes, and individualistic values, an unforgiving cycle of destruction toward the Earth and humanity will continue. I am proposing human-nature mutualism to regain awareness of these issues and reconcile the dichotomy between humans and nature. I define *nature* as the inclusion of human and non-human entities with the exclusion of human behaviour that aims to overpower and destroy non-human entities.

Human-nature mutualism is an architectural concept I derived from ecopsychology, environmental psychology, and ecology, which re-integrates the human social and natural environments within a built environment. This integration improves mental and physical health and is the first step in achieving self-transcendence and humanity's renewal thereafter. My thesis aims to answer this question: How can human-nature mutualism become a model for human health and sustainable action in the Canadian Prairies?

In the journal article "Empathy, Place and Identity Interactions for Sustainability," the authors argue that empathy is a "prerequisite for sustainable interactions with the biosphere" and that "place and identity are key factors mediating the relationship between empathy and sustainability" (Brown et al. 2019). Architecturally, domestic architecture is the

ARCHITECTURE AS AN ORGANISM FOR HUMAN-NATURE MUTUALISM



Wish image (North Saskatchewan Watershed Alliance n.d; Rawpixel n.d; Toffu n.d.).

mediator between human identity and purpose; therefore, I propose collective housing as an architectural premise for testing human-nature mutualism (HNM) because it encompasses personal and shared space, identity and purpose, individuals, and the human community. This encapsulation of the natural and social realm within a built environment, or HNM, creates an organic whole where empathy for nature and the larger human community can be experienced and translated into self-transcendence.

[I]mmersion in nature promotes intrinsic motivations, which in turn leads to ecological behaviour, personal well-being, and cooperative and pro-social behaviour. Further research shows how immersion in nature contributes to mental, physical, and community health and well-being. (Fleury-Bahi, Pol, and Navarro 2017, 47)

Furthermore, collective housing can attain larger plots of land, which increases the ability to connect with nature through sensory experience. While the private ownership of land and natural resources is destructive to nature, collective living instills the customs of reciprocity toward the human community, which can expand toward the Earth, as seen in many Indigenous communities (Roszak, Gomes, and Kanner 1995, 224). In addition, the choice to live collectively is a step towards renewal because it limits sprawl and “dispersed, automobile-dependent development” known to increase pollution and cause physical and psychological stressors (Steiner 2017, 80). Living collectively can also reduce individualistic values by sharing resources, which leads to pro-social behaviours.

[A]ny activity that helps realign our lives from more explorative to more collaborative ways of interacting with our world can be seen as restorative of our “environment,” both inner and outer. Walking or bicycling instead of driving gets us sensuously circulating in the world while it also eases the burden on the Atmosphere needed by owls, oaks, and people alike. Teaming up with neighbours to stop toxic emissions in our neighbourhoods builds a sense of belonging and community

while protecting soil, water, and air. (Roszak, Gomes, and Kanner 1995, 238)

Cooperative housing in Gibbons will provide individuals with the opportunity for financial stability, a support group of like-minded individuals, sustainable action, experience with the surrounding natural environment, and the hope for improvement in physical and mental health.

To translate HNM into architecture, I derived architectural qualities of HNM from an analysis of case studies (Appendix B; page 30) in domestic architecture that incorporated the natural or social environment within their design. As a result, I have created a model by grouping these architectural qualities into elements that result in physical and psychological motives. These elements can be incorporated into this thesis proposal to translate HNM into a model for human health and sustainable action through architecture.

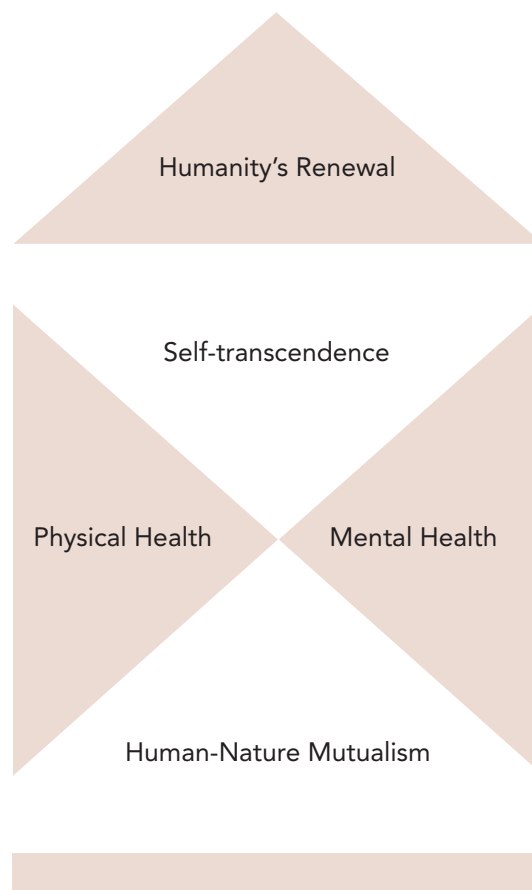
Mapping Scheme

While Chapter 1 described the proposal of HNM in collective housing to address the problems of automatic process, the value of individualism, and a resource-driven economy within the Canadian Prairies, Chapter 2 will describe the HNM model and how it can inform architectural practice. In Chapter 3, presentations of architectural values that exhibit qualities of HNM will be studied and compared against my argument. Chapter 4 will define elements of HNM and depict their architectural translation. Chapter 5 will describe the integration of HNM through collective housing design.

Chapter 2: Human-Nature Mutualism

As stated in Chapter 1, HNM is an architectural concept I derived from ecopsychology, environmental psychology, and ecology, which re-integrates the human social environment and the natural environment within a built environment. I will briefly describe the “Three E’s” and how they led to the derivation of HNM, then I will proceed to describe how HNM can inform architecture.

The diagram below depicts my re-interpretation of Maslow’s hierarchy of needs suggesting that HNM is the first step in achieving self-transcendence and that humanity’s renewal is needed after that.



Human-nature mutualism hierarchy diagram.

Ecopsychology

Ecopsychology, a term invented by Theodore Roszak, a professor of history, is a field that has come to fruition through the partnership of psychology and ecology. Ecopsychologists realize that humans have a profound psychological connection to the Earth and that this relationship needs salvaging to improve mental health and the Earth's renewal (Roszak, Gomes, and Kanner 1995, 202). They believe that humans are in disharmony with the world because humans are in disharmony with themselves (Roszak, Gomes, and Kanner 1995, 152).

Ecopsychology suggests that to renew the human bond with the Earth, humans need to connect with the world through individual sensory experience and “a transcendence of who we are in a relationship to the human community and the [Earth]” (Roszak, Gomes, and Kanner 1995, 151, 201).

The underlying values of HNM are informed by ecopsychology; however, unlike ecopsychology, which argues that the relationship between the Earth and humans needs salvaging to improve the Earth's renewal, HNM argues that humans need to reconcile their relationship with nature through awareness brought forth by the built environment, so that humanity may be salvaged through transcendent behaviours. Since the Earth will thrive without humans, it is the realization that humanity needs nature to survive that will inform these behaviours. Furthermore, HNM argues that self-transcendence can become attainable through individual sensory experiences in domestic architecture integrated with the natural and social environment.

Environmental Psychology

According to the chapter on environmental psychology in *The Canadian Handbook for Careers in Psychological Science*, “environmental psychology is the study of how [humans], as individuals and as part of groups, interact with [their] physical settings” (Ng et al. 2019). It studies “how [humans] experience and change the environment, and how our human behaviour and experiences are changed by the environment”, which includes both natural and built settings (Ng et al. 2019). The goal of environmental psychologists is to understand human and environmental interactions and determine how the built environment can be designed to improve human health. Environmental psychologists use both quantitative and qualitative approaches to their research. Some approaches include field studies, naturalistic observation, behaviour mapping, and logs. Furthermore, environmental psychologists can inform design guidelines or government policies to promote sustainable behaviour (Ng et al. 2019).

The field of environmental psychology has inspired various designers and researchers. Interestingly, environmental psychology became a distinct field in the late 1960s, just before Jane Jacobs and her famous 1961 book *The Death and Life of Great American Cities* was published. The book was an inspiration to designers like Jan Gehl and researchers like William H. Whyte, who are concerned about the built environment and its effect on life quality (Sim 2019, xi-xii). Therefore, it is not unlikely that Jane Jacobs was a significant inspiration for the field itself.

The study of environmental psychology has informed the method of HNM. Like ecopsychology and environmental

psychology, HNM understands the importance of considering human sensory capabilities and their impact on the interactions between humans and their connection to the larger social and natural environment. Edward Hall explains the importance of the environment to humans in his book *The Hidden Dimension*:

Man's sense of space is closely related to his sense of self, which is in an intimate transaction with his environment. Man can be viewed as having visual, kinesthetic, tactile, and thermal aspects of his self which may be either inhibited or encouraged to develop by his environment. (Hall 1969, 63)

Phenomenology

When considering human sensory capabilities and their translation into architecture, phenomenology comes to mind. Phenomenology, founded by the philosopher Edmund Husserl, is the “descriptive science of consciousness and its objects as they are experienced” (Moran 2005, vii). Husserl “believed that experience is the source of knowledge and that through experience one can directly apprehend an essence” (Kahn and Hasbach 2012, 4). Architecture demonstrates phenomenology by manipulating space, material, and light to create memorable experiences, heighten the human senses and enable the connection between humans and their environment.

Biophilic Architecture

In recent years biophilia has become a new way of exploring nature-oriented architecture. Edward O. Wilson, who founded the term biophilia, defined it as “the innate human tendency to focus on or to affiliate with life or lifelike processes and elements” (Kahn and Hasbach 2012, 196). It attempts to provide science-based explanations for human affiliation with nature. Like ecopsychology, biophilia

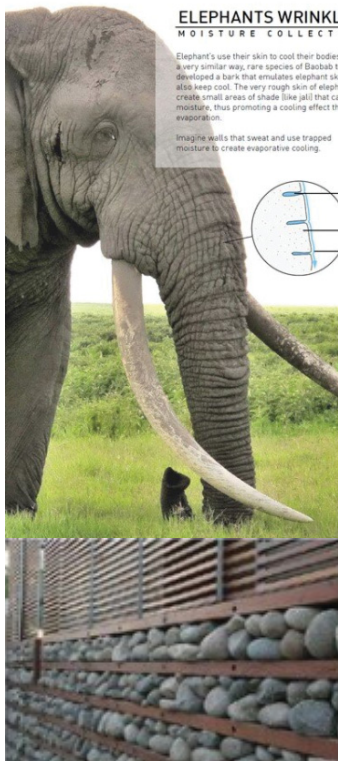


Image depicting the translation of how elephants use their skin to cool their bodies into “walls that sweat and used trapped moisture to create evaporative cooling” (Biomimicry Frontiers n.d).

argues that separation from nature negatively impacts human physical and psychological well-being (Kahn and Hasbach 2012, 197). To address this separation, biophilic architecture aims to integrate “nature or nature-like forms, elements, or conditions into built environments to meet the biophilic needs of humans” (Kahn and Hasbach 2012, 197).

While biophilic design is similar to environmental psychology in addressing the separation between humans and nature through “rigorous psychological studies into human-nature interactions,” its scientific basis is controversial as there are incomplete pieces of evidence within the theory. Therefore, this thesis will not pursue biophilia as a basis for design (Kahn and Hasbach 2012, 197).

To elaborate further, HNM aims to incorporate sustainable architectural practices based on evidence from the field of environmental psychology opposed to biophilic design, which looks at surface-level connections with the environment and architectural translations from biology. An example of biophilic design translated from biology can be seen on the left.

Ecology

According to the Ecological Society of America (ESA), ecology is “the study of the relationships between living organisms, including humans, and their physical environment; [seeking] to understand the vital connections between plants and animals and the world around them”(ESA n.d.). The study of ecology can help improve the environment, manage natural resources, and protect human health (ESA n.d.).

Ecology is an essential aspect of HNM. When designing for a specific context, it is beneficial to understand its nature. The

climate, surrounding ecologies, and social behaviours can all inform contextual design. HNM, for instance, addresses ecological understanding through each of its elements. Moreover, the element of thermal control and element harvesting requires designers to understand a contexts climate, human behaviours associated with thermal comfort, and solar, wind and precipitation occurrences.

Informing Architecture

By incorporating the natural and social environment within domestic architecture, HNM can influence psychological and physical aspects of human health, such as *revival, preservation, belonging, stimulation, identity, and restoration*. These aspects of human health are translated into architecture through the design of four elements: *solar orientation and daylighting strategies, flexible protection, thermal control and element harvesting, and engaging and adorning nature*. These elements will be further defined and depicted in Chapter 4.

Chapter 3: Human-Nature Mutualism and Architectural Values

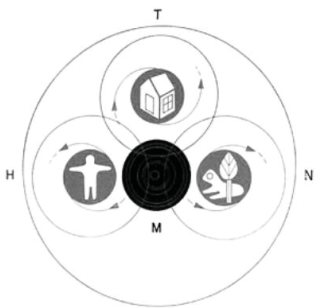
Contributions to Allied Disciplines

This thesis aims to contribute to the field of architecture, ecopsychology, environmental psychology and ecology by proposing HNM as a qualitative measure that can be quantified by the HNM model, environmental psychology research approaches and post occupancy evaluations.

Ideally, the data collected from environmental psychology research approaches and post-occupancy evaluations would contribute to the evolution of the HNM model and be used by architects and designers to contribute toward human and nature mutualism. Below I will discuss concepts similar to HNM and the values of HNM.

Human-Nature Mutualism and Correalism

The concept of correalism is similar to the concept of HNM. The architect Frederick Keisler believed that the environment is made of three elements: natural, human, and technological, and that the dynamics of continual interaction between these elements are correalism, a term he invented in 1939. The image to the left depicts the concept of correalism. Keisler believed that amongst the forces of heredity (human environment) and environment (natural environment) placed upon humans in terms of biology, another environment was created by humans, the technological, to control nature and prolong existence. He believes that these three environments form a total environment. He stated that the control of human health was based on the control of the environment and that "Environment control. . .is control of the human and natural



"Man=heredity + environment. This diagram expresses the continual interaction of both the total environment on man and the continual interaction of its constituent parts on one another" (Braham, Hale, and Stanislav 2007, 4)

environment through [the] technological environment” (Braham, Hale, and Stanislav 2007, 10). He argues that architecture

in the future, will not be judged chiefly by its beauty of rhythm, juxtaposition of materials, contemporary style, etc.; it can only be judged by its power to maintain and enhance man’s well-being—physical and mental. Architecture thus becomes a tool for the control of man’s health, its degeneration and re-generation. (Braham, Hale, and Stanislav 2007, 10)

Like HNM, it is argued that all environments must work together and that architecture is the mediator to control the environment, or in other terms, in prolonging human existence. Different from correalism, which looks at the natural, human, and technological environment, HNM focuses on the natural, built, and social environments. Furthermore, in the case of HNM, psychology leads to the control of the natural, built and social environment, not the technological environment.

Empathy-Sustainability Hypothesis

The empathy-sustainability hypothesis proposes that “empathy reconnects humans and environment, and provides motivations for pro-environmental behavior and action” (Brown et al. 2019, 11). The empathy-sustainability hypothesis is similar to self-transcendence, which HNM suggests is needed to reconnect humans with nature and work towards humanity’s renewal. While self-transcendence is “the realization that you are one small part of a greater whole and acting accordingly” (Ackerman 2021), empathy is “taking the perspective of the other and feeling an emotional bond with that other” (Brown et al. 2019, 11).

Brown et al. suggest that “empathy with the non-human (i.e., ‘natural’) world can provide a basis for overcoming the conventional dualism between humans and nature,

potentially encouraging a more interdependent mode of engagement with the environment” (Brown et al. 2019, 11). While HNM and the empathy-sustainability hypothesis are similar, HNM disagrees with the notion that humans beings are separate from nature and instead aims to involve the social environment as a way to achieve self-transcendence.

Environmental psychologists state that “individuals or groups who consciously engage with nature. . .could amplify the impact of the natural environment on their health and well-being, through promoting. . .social contact (e.g., interacting with neighbours and a sense of community)” (Fleury-Bahi, Pol, and Navarro 2017, 157). Since HNM argues that health and well-being need to be achieved before one can feel empathy or achieve self-transcendence, it is just as essential to engage the social environment alongside the natural environment.

Human-Nature Mutualism and Cold Climate

In cold climates, such as the Canadian Prairies, winter temperatures typically range from -5 to -15 degrees Celsius and drop as low as -30 to -40 degrees Celsius (Travel Alberta n.d.). In addition, daylight hours significantly decrease in the wintertime. As seen in the illustration on the next page, the longest daylight duration during the summer solstice in Gibbons, Alberta, is 17 hours opposed to 7.5 hours during the winter solstice. As a result of these significant changes in temperature and sunlight exposure in winter, people spend more time indoors. These individuals are more prone to psychological issues such as seasonal affective disorder (SAD) and physical issues such as vitamin D deficiency. SAD, otherwise known as “winter blues,” is “a recurrent major depressive disorder with a seasonal pattern

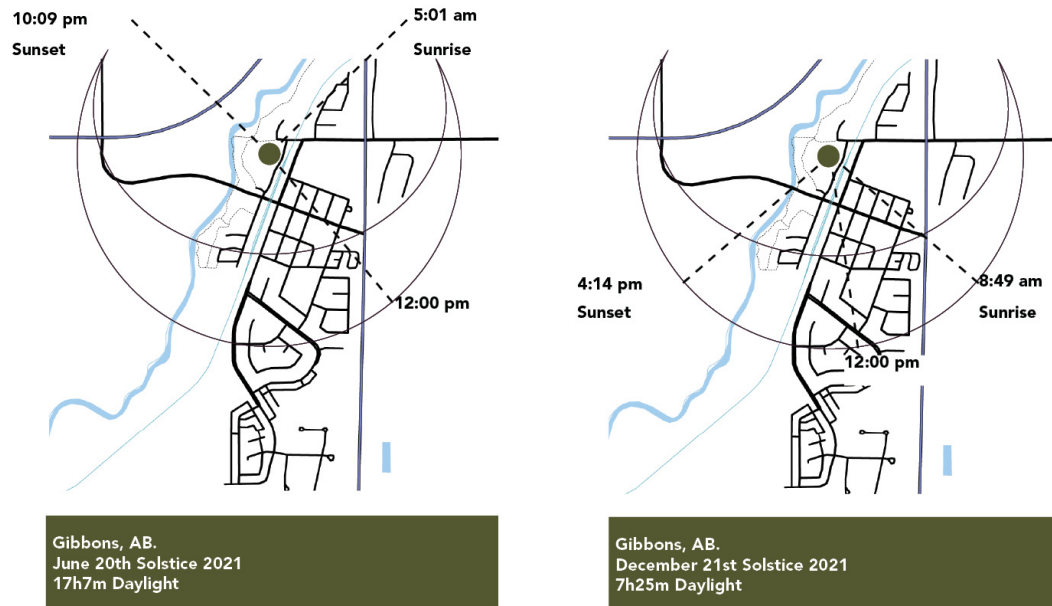


Illustration depicting sunlight duration in Gibbons Alberta during the summer solstice (left) and the winter solstice (right) (Snazzy maps n.d; SunCalc n.d.).

usually beginning in fall and continuing into winter months;” symptoms include “sad mood and low energy” (Melrose 2015). While the number of daylight hours throughout the winter months cannot be changed, the element of orientation and daylighting strategies can drastically improve the quality of spaces through intentional design strategies that increase or decrease sun exposure based on programmatic needs. Orientation and daylighting strategies improve human health and allow humans to act according to nature’s rhythms instead of depending on modern air heating, which results in humans acting indifferently to nature’s rhythms. Acting indifferently produces monotonous designs, which disconnect humans from their environments due to a lack of enriching stimuli (Knowles 2006, 72-73). Many dwellings in the town of Gibbons are homogenous and built without



Typical detached housing in Gibbons, Alberta (Google Maps 2022).

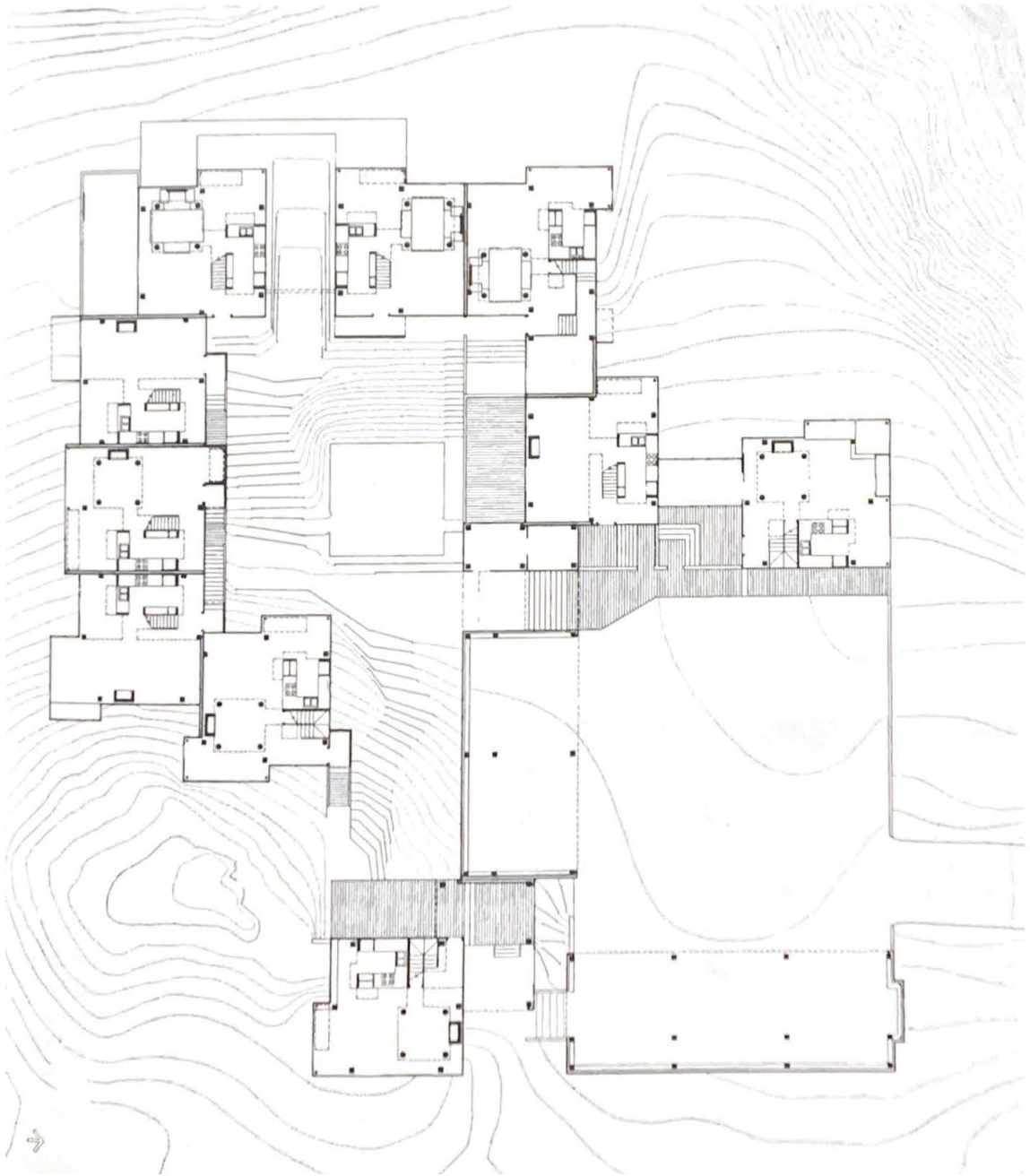
regard to sunlight orientation, increasing the probability of SAD and vitamin D loss.

As human life comes to be structured increasingly by mechanistic means, the psyche restructures itself to survive. The technological construct erodes primary sources of satisfaction once found routinely in life in the wilds, such as physical nourishment, vital community, fresh food, continuity between work and meaning, unhindered participation in life experiences, personal choices, community decisions, and spiritual connection with the natural world. In the absence of these we will not be healthy. (Roszak, Gomes, and Kanner 1995, 53)

By addressing context ecology through HNM, dwellings will not only become less homogenized, but human health will improve.

Human-Nature Mutualism and Community

Along the California, coast is a community called the Sea Ranch, which started in 1965. Its development was primarily focused on a limited partnership between the buildings and the land (Moore, Allen, and Lyndon 1974, 32). The designed condominium building was the initial attempt at creating a community (Moore, Allen, and Lyndon 1974, 34). As seen on the next page, “it consists of ten great rooms with tower, courts, bays, and solaria, ranged around two common courtyards – a first layer of ‘inside’” (Moore, Allen, and Lyndon 1974, 34). Interestingly, the inhabitants who live there, called sea ranchers, follow a set of documents to “ensure the preservation of the fragile environment.” When an individual buys a place, individuals also “buy into a [unique] community built to live in balance with the surrounding natural world” (The Sea Ranch Association 2019, 9). They live by the principal value of “liv[ing] lightly ‘with’ instead of ‘on’ the land” by expressing a deep understanding of a “shared co-existence with the natural world” (The Sea Ranch Association 2019, 18). This deep understanding is expressed through their



Plan of condominium one at the Sea Ranch (Moore, Allen, and Lyndon 1974, 35).

“enduring spirit of stewardship and volunteerism that puts the talents and energies of interested members in service to the quality of life” (The Sea Ranch Association 2019, 26).

Like the Sea Ranch in the United States Pacific Northwest, a community resides within Brook Ecovillage. In the book *Ecopsychology: Science, Totems, and the Technological Species*, ecovillages are defined as:

Examples of what it means to live in harmony with nature in a sustainable and spiritually satisfying way in a technologically advanced society. Members of these communities incorporate composting, gardening, shared cars, shared meals, consensus decision making, and community-wide ceremonies and celebrations into their daily routine. (Kahn and Hasbach 2012, 176)

What is unique about this ecovillage is that it resides within city limits. While certain sustainable building technologies such as composting toilets and solar-powered appliances were difficult for the village to administer within the city limits, continued negotiation with the city's zoning department led to a shift in zoning expectations and the legalization of sustainable building practices (Kahn and Hasbach 2012, 180). It is evident that communities can be powerful negotiators in the political realm and can more easily work towards sustainability goals by sharing resources. Also, being a part of a community can lead to an understanding that humans cannot preserve the planet without preserving the social fabric (Kahn and Hasbach 2012, 183).

In the past, humans lived in clans and tribes as a method of survival. In Canada, the Inuvialuit settlement region, Nunavut, Nunatsiavut, and Nunavik, known as the Inuit Nunangat, lived this way. Since the Arctic is a harsh climatic environment, the "Inuit relied heavily upon each other for survival. Each person had value and contributed to the community" (Gareau 2017). As a result of this reliance, codes, ethics, and behaviours, or maligait, were established:

Maligait has many meanings and translations, but to Inuit people it means, things that had to be done, and includes four

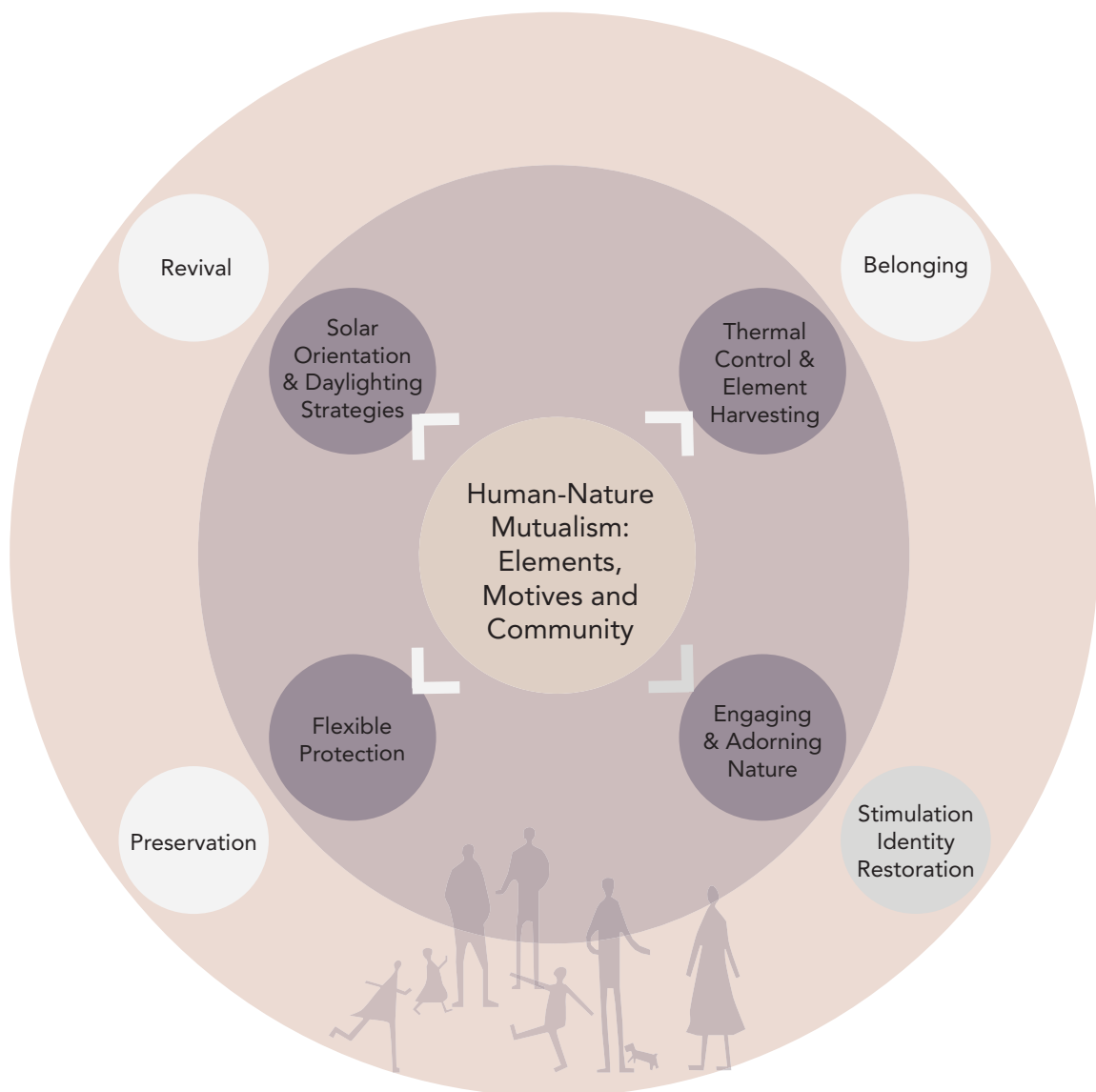
main principles: work for the common good, respect all living things, preserve harmony and balance, plan and prepare for the future. (Gareau 2017)

From these three examples, and in the case of hunter-gatherer cultures, it is evident that a set of understandings, goals, ethics, codes and behaviours needs to be established within a community. While most communities are formed due to shared values, I believe that the built environment integrated with the natural and social environment can lead to communities with shared values, as seen with the Sea Ranch. To avoid the responsibility for the health of the Earth, most people detach themselves from their environment (Roszak, Gomes, and Kanner 1995, 152); therefore, places such as the Sea Ranch must be created to re-attach people and their identities to places. Ecopsychology states that “it is time to go beyond our individual families to attend to the human family” and that “to heal is to make a whole” (Roszak, Gomes, and Kanner 1995, 152).

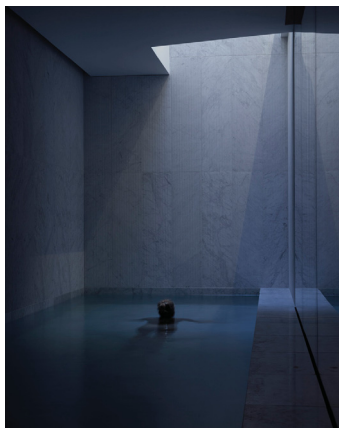
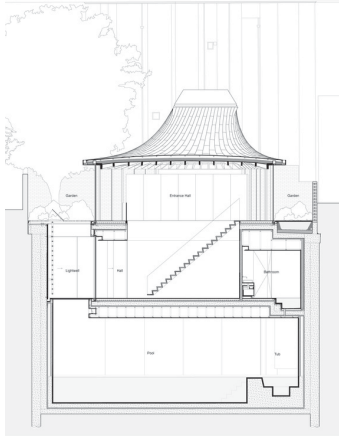
Chapter 4: Elements, Qualities, and Motives

Human-Nature Mutualism Method

Below is a model for HNM, which is used to translate human health and sustainable action into architecture.



Human-nature mutualism model diagram.



House in a garden section and photograph depicting sunlight reaching into the sub-basement (González 2020).

Within the outermost circle of the HNM model diagram are what I call motives. These motives are physical and psychological qualities of human health that are achieved through elements expressed as architectural qualities. I derived the elements seen in the inner circle by analysing case studies of various dwellings that incorporated architectural qualities of the natural or social environment in their design (Appendix B; page 30).

Elements, Qualities and Motives

Solar Orientation and Daylighting Strategies

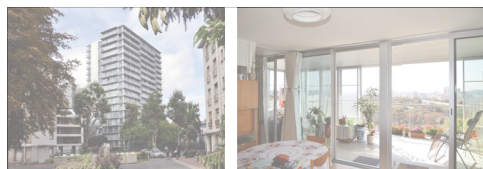
When architects, such as Gianni Botsford and Le Corbusier take the time to understand and design according to a contexts sun path, the result is a well-designed building that focuses on human health and well-being. For instance, in his design, “House in a Garden,” Gianni Botsford connected inhabitants to the sun within the depths of the sub-basement by finding the optimal atrium placement. By thoughtfully placing the atriums, Botsford created the opportunity for inhabitants to revive themselves physically and mentally. Lisa Heschong understands this sense of revival in her book, *Thermal Delight in Architecture*, when she notes, “[w]hen the sun is warm on my face. . .it is good to be alive” (Heschong 1979, 18).

Le Corbusier showed similar intentions of revival in the design of Unité d’Habitation. Thoughtful strategies, such as designing units to receive sunlight from both the east and the west, have allowed for a deeper connection with nature and healthier spaces. Strategies such as these, and knowledge concerning room placement according to sun path can drastically improve architecture for human health. Using the strategies outlined above, technical strategies,

Elements-----Qualities-----Motives



Unité d'Habitation /
Le Corbusier. (Sumner, 2014), (Jewell, 2018)



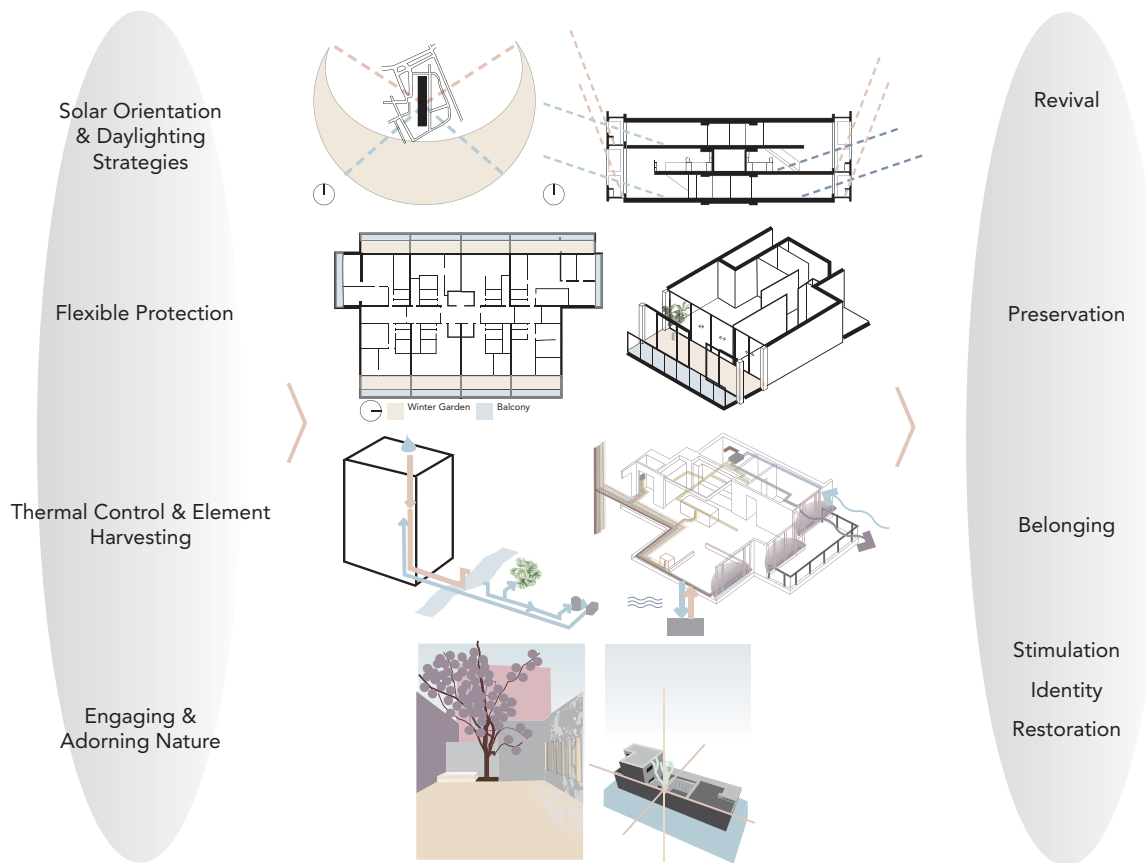
The Tour Bois le Prêtre /
Lacaton & Vassal & Frédéric Druot. (Keil, 2011)



Dockside Green /
Bosa Development. (Victoria and Region Community Green Map, n.d), (Mike Stewart, n.d.)



Casa Gilardi /
Luis Barragán. (Silverman, 2010), (Gestalten, 2021)



Qualities and motives: designing human-nature mutualism. (Bosa Development n.d; Gestalten 2021; Harries 2017; Jewell 2018; Keil 2011; Malighetti 2011; Mike Stewart n.d; Silverman 2010; Sumner 2014; Victoria and Region Community Green Map n.d).

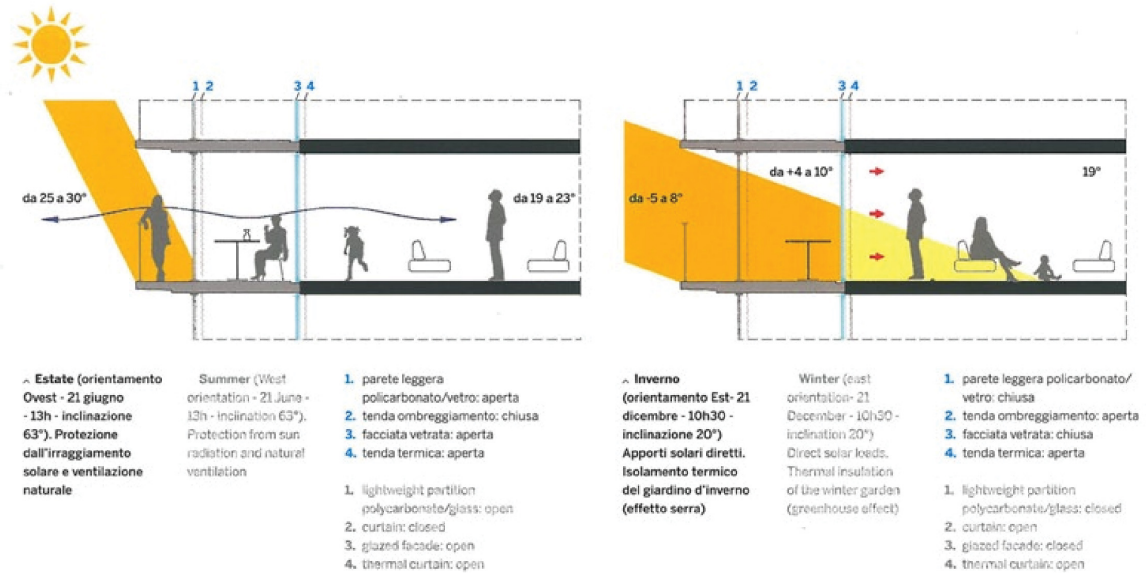


Diagram depicting thermal control of dwellings at Tour Bois-le-Prêtre (Malignetti 2011, 102).

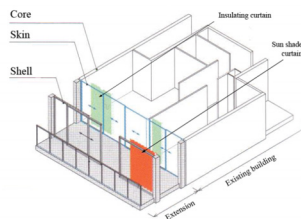


Diagram depicting winter garden extension (Arantes et al. 2010, 281).

like light wells and light shelves, and passive strategies, like vegetation that shades during the summer, the element of solar orientation and daylighting strategies, can be translated into architecture.

Flexible Protection

The element of flexible protection is expressed through the architectural quality of blur space, which is a term I created to describe the intermediary space between the exterior and the interior. Flexible protection can be described as having control over the thermal or personal gradient of blur space. Blur space will result in the motive of preservation, improving physical and psychological health by sustaining organic life throughout the winter and by providing control over thermal safety and a deeper connection to nature.

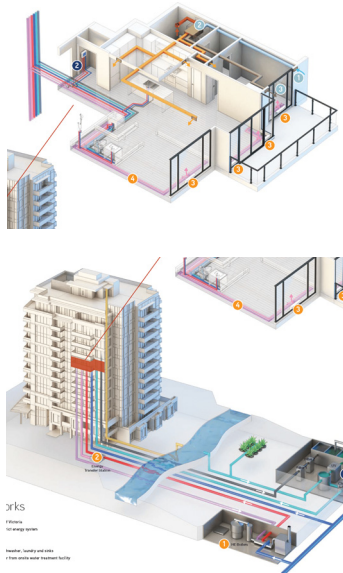
[T]he most positive mental states and the most intense emotional states occur in environments whose high activation generates well-being, i.e. those where mental states of control prevail and, especially, mental states of flow, where



Latapie House. Exterior transformations (Lacaton and Vassal 1993).



Jaracanda tree, Casa Gilardi (Bloglovin 2017).



Sustainability summary (Bosa Development n.d.).

we become most psychologically involved. (Fleury-Bahi, Pol, and Navarro 2017, 48)

This element was derived from Lacaton and Vassal's work, such as their involvement in the Tour Bois-le-Prêtre renovation and the Latapie House. The Tour Bois-le-Prêtre renovation consisted of an extension for a winter garden between the balcony and each residence, as seen on page 31. I consider the winter garden to be blur space where individuals can reside in an intermediary space between the natural and the built environment. The flexible design allows users to have complete control over the thermal properties of space, therefore denying habit automatic process and promoting psychological well-being. While the Latapie house also provides blur space through the attached greenhouse, exterior transformations give control over the transparency of space, providing individuals with the opportunity to preserve indoor activities and physical and psychological safety.

Thermal Control and Element Harvesting

The element of thermal control and element harvesting is derived from projects like Dockside Green by Bosa Development and the Daylesford longhouse by Partners Hill. Within these projects, solar and rainwater collection strategies are used to create sustainable strategy awareness and reframe nature as a mutual ally versus an exploitation. In addition, the motive of belonging can be achieved by providing individuals with control over their thermal environment, which will result in awareness of their actions. With awareness, this element can provide the opportunity for energy savings and act as a safeguard for human health against energy poverty and extreme temperatures, as discussed in Chapter 1.



Drawing of a condominium unit with a four poster (Journey to the Sea Ranch 2017).



Image of a Ciborium from the church of Santo Stefano, near Fiano Romano, Italy (Moore, Allen, and Lyndon 1974, 51).

Engaging and Adorning Nature

The element of engaging and adorning nature is derived from projects like Luis Barragán's Casa Gilardi and the Sea Ranch. Moreover, the modest forms in Casa Gilardi accentuate nature's rhythms through the passage of time, the culmination of colour and projection of light stimulating the human senses. In addition, the design intention of centering the house around a jacaranda tree, the axis mundi of this project, scales humans against their universe, prompting individuals to identify with the natural environment and encourage self-transcendence.

The element of engaging and adorning nature is also present in Condominium One at the Sea Ranch through a "four-poster shelter covering a hearth and supporting a bed chamber on top" (Moore, Allen and Lyndon 1974, 36). Derived from the aedicula, which is a four-poster with a roof added, is a "symbolic house" where "pharos were crowned, and . . . altars or statues of saints were enshrined" (Moore, Allen, and Lyndon 1974, 51). The spiritual derivation of this design move encourages psychological restoration.

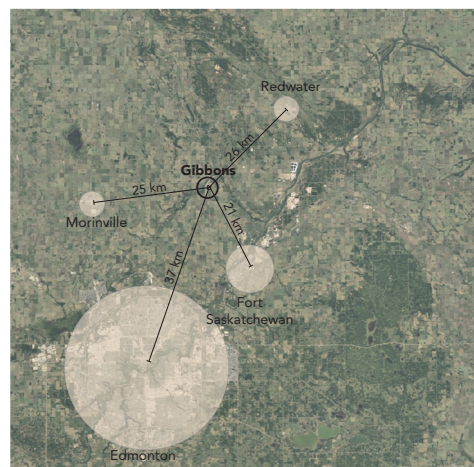
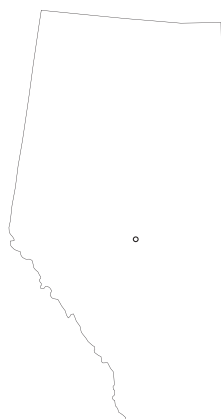
Chapter 5: Human-Nature Mutualism and Architecture

Site

Location

The location I have chosen to test the HNM model is Gibbons, Alberta. Depicted in the image below, Gibbons is located 37 kilometers northeast of downtown Edmonton,

- Gibbons AB
- Gibbons Boundary
- Distance
- Agricultural Land



Gibbons, Alberta location (Google Maps 2022).

and various small towns and cities are nearby. Gibbons, Alberta was formed in 1892 by a pioneer named William Reynolds Gibbons, and since my parents and I moved there in the year 2000, I have observed it steadily grow until 2016. The thriving community I experienced growing up is now being plagued by collective myopia due to automatic processes, the value of individualism and an economy driven by resources.

Industry and Demographics

As discussed in Chapter 1: Economies Driven by Resources, the agricultural industry and the oil and gas industry are present in and around the Gibbons area. Unfortunately, the resource-driven economy in Gibbons has “contributed to over-reliance on homeownership and under-development of the rental market” (Brown et al. 2019). Furthermore, a “relatively homogenous housing supply, characterized by a high proportion of single-detached dwellings, low densities and a large stock of higher-end housing” exists in the area; this is depicted on the next page (Brown et al. 2019). These conditions are detrimental to young adults with few affordable rental or housing options. While various factors could be attributed to the population decline in Gibbons of 0.94% annually, the effects of an economy driven by resources seem to be affecting people aged 20–34 the most, shown on page 37 (Government of Alberta 2022). In 2021, this age group consisted of approximately 16% of the population in Gibbons, compared to 23% in 2016 (Government of Alberta 2022). For this reason, I am proposing a mixed-use cooperative housing program to target young adults aged 20–35 who cannot easily attain affordable housing. I will also be proposing various amenities that the town of Gibbons needs to discourage vehicle commuting and encourage growth.

Proposal Locations and Amenities

Depicted on page 38, I am proposing two sites in Gibbons, Alberta, to test the HNM model located along the main street. The first site I have chosen is for the mixed-use cooperative housing program. I have chosen this location because it is central to various amenities in Gibbons, seen on the next

Population **Main mode of commuting** **Target Market**

3,064 (2021)
-0.94% Annual ↓

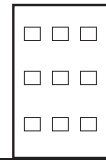
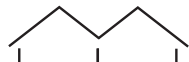
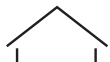


Working Age (15-64):

- Vehicle - driver (90.5%)
- Vehicle - passenger (2.0%)
- Public Transit - (2.7%)
- Walked - (2.7%)
- Bicycle - (0.0%)

Age 20-35 (22%)

Dwelling Characteristics



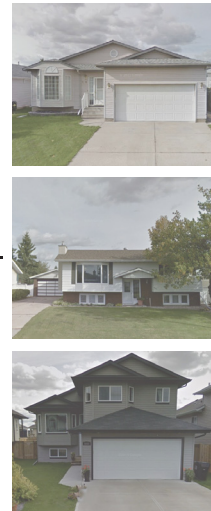
Single Detached
87%

Attached
8.7%

Apartment Units
5.6%

Movable
4%

Typical detached housing in Gibbons AB (Google Maps, 2022).

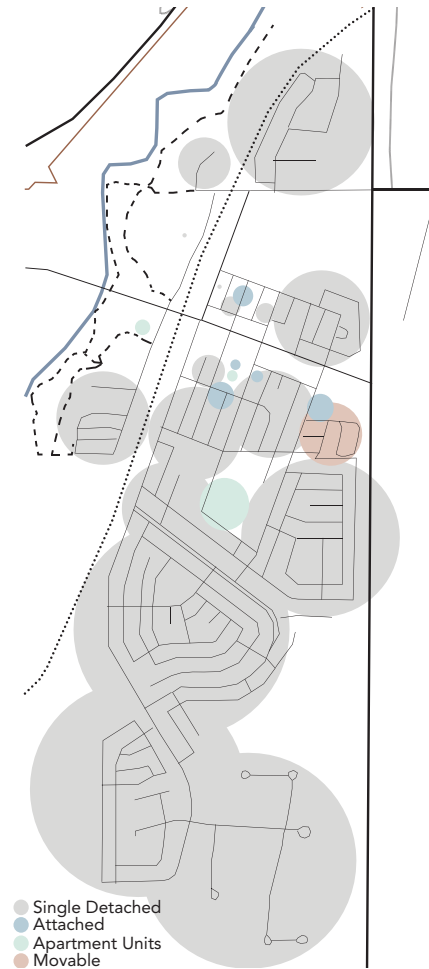
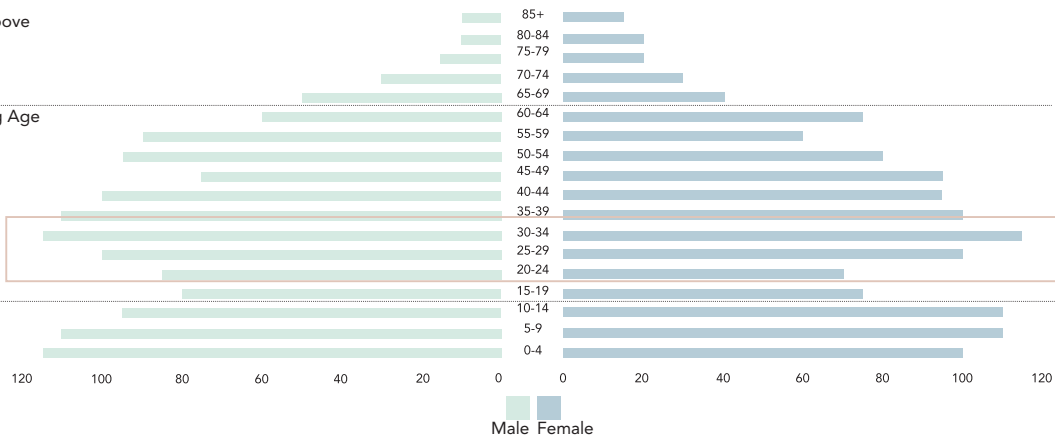


Age Characteristics

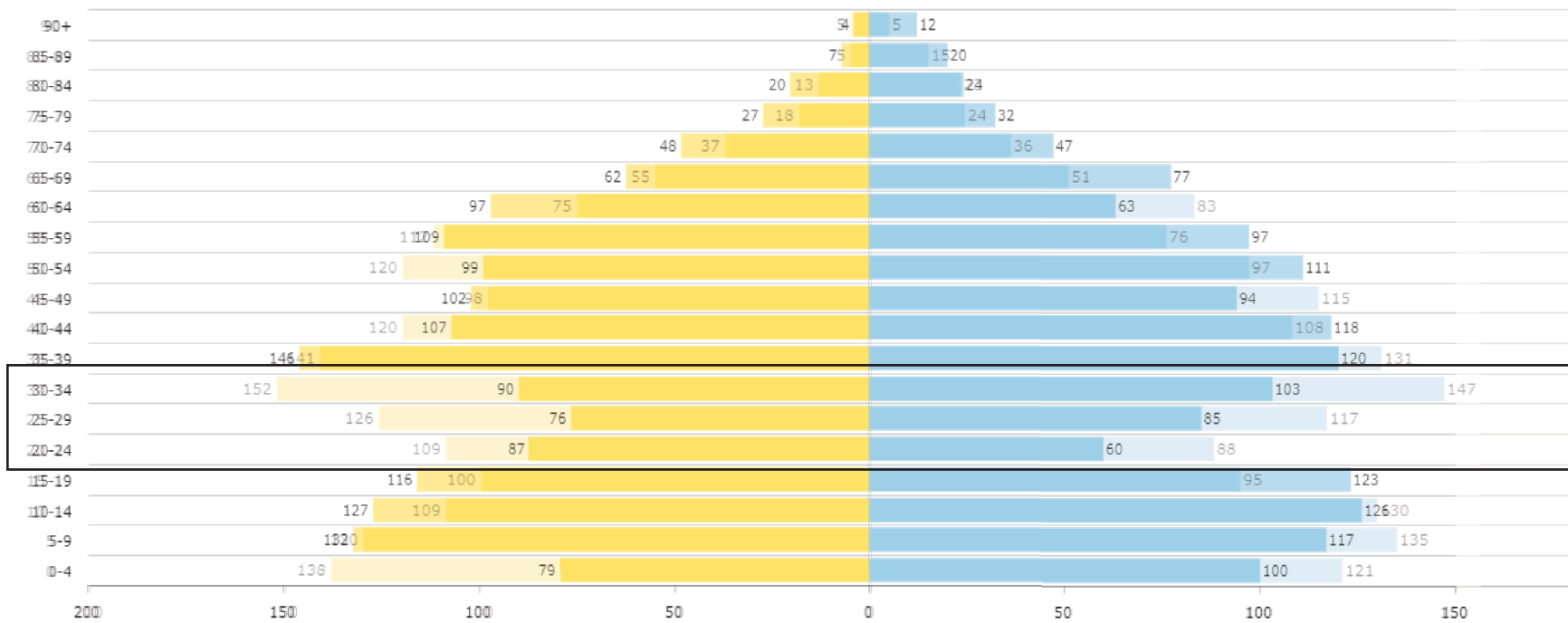
65 & Above
9.2%

Working Age
66.7%

0-14
24.0%



Gibbons, Alberta demographics and target market (Google Maps 2022; Government of Alberta 2022).



Gibbons, Alberta population decline. The lighter colour depicts the year 2016 and the darker colour depicts the year 2021. (Government of Alberta 2022).



Gibbons, Alberta site and ecology analysis (Google Maps 2022).

page, while also being a short walking distance to natural environments such as the river valley and green spaces, like nearby parks.

On the second site, I have chosen to pursue a greenhouse and community garden program. I have chosen this site because it is within walking distance from the mixed-use cooperative, and it is currently used for fruit and vegetable stands in the summer.

Program: Site 1

For the mixed-use cooperative, I am proposing a river model that clusters dwellings with indoor and outdoor amenities, illustrated on page 41. This river model was derived from various co-housing models and the Sturgeon River, a motif for human and nature connections. The mixed-use cooperative will host various indoor and outdoor programs, with the majority of the indoor programs being allocated toward rentable and ownable dwellings seen on page 42. Of the ten rentable units, four will be one bedroom units, five will be affordable studios, and one will be an accessible unit. There are four ownable dwellings, each two-bedroom. The majority of the outdoor space will be allocated toward co-op members and public outdoor space.

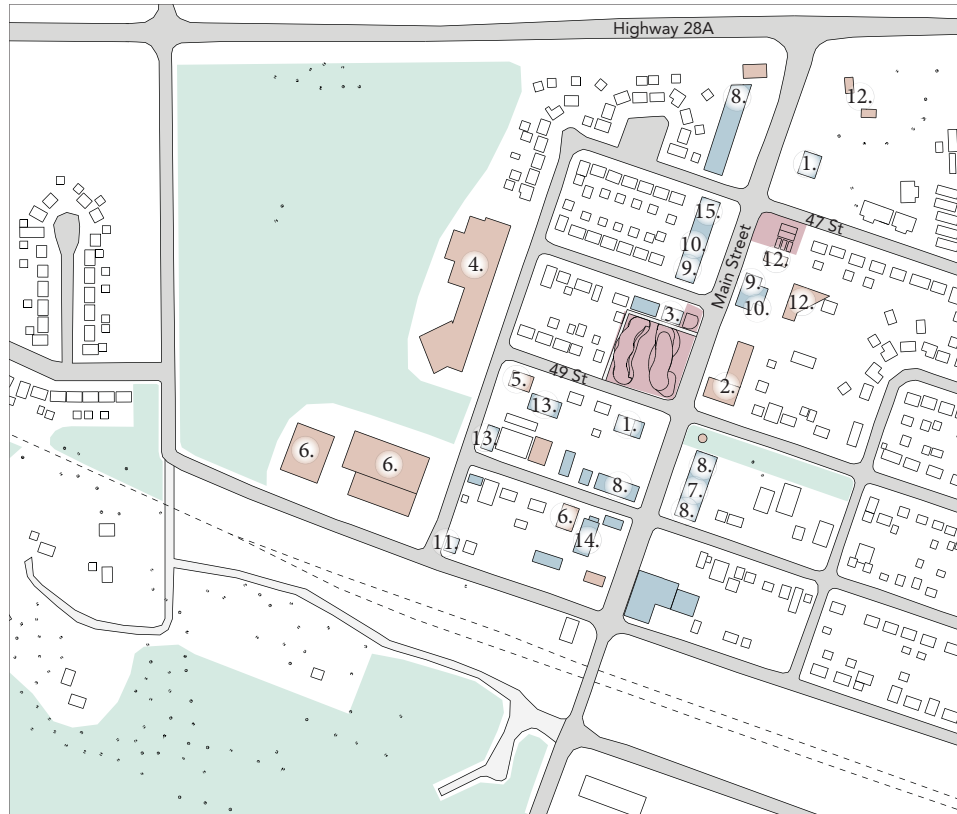
On the ground floor, on page 44, at the corner of the main street and 49th Street, I am proposing a co-op space with various amenities for its members and the public. The co-op building is similar in program to a public library, where anyone from the community can use it as a place of leisure, especially in the wintertime when it is too cold to be outdoors. One could imagine a grandmother watching her grandchildren and taking them to the children's area in

- | | | |
|-----------------------------|---------------------|-------------------|
| 1. Gas Station | 6. Community Center | 11. Daycare |
| 2. Town Office/Fire Hall | 7. Grocery | 12. Church |
| 3. Insurance & Registration | 8. Restaurant | 13. Dental Clinic |
| 4. School | 9. Pharmacy | 14. Hotel |
| 5. Post Office | 10. Medical Center | 15. Vet Clinic |



Site 1 & 2 Locations in Plan











- Proposals

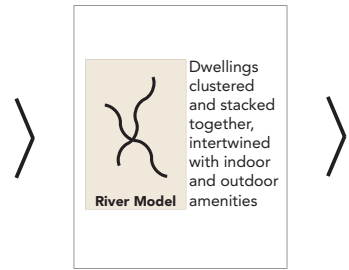


Location and Amenities Diagram

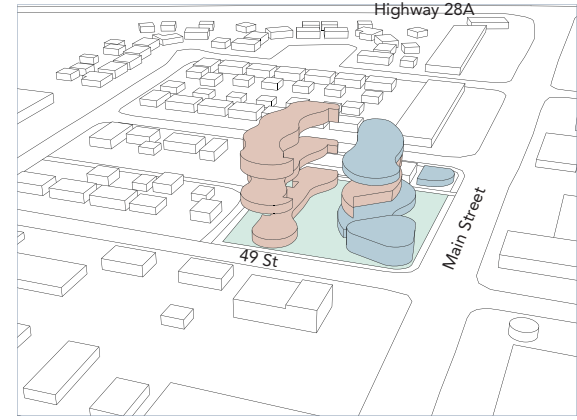
- Proposals
- Institutional
- Commercial
- Park

Gibbons, Alberta proposed locations and amenities (Google Maps 2022).




		Stacked apartments bordering indoor or outdoor amenity
Treehouse Coliving Apartments / Bo-DAA. (ArchDaily, 2020)		
		Single houses clustered together, bordering an indoor or outdoor amenity
The Sea Ranch - Condominium 1 / MLTW partnership. (BrightroomSF, n.d.)		
		Single houses clustered together, no amenities
Nikotama Terrace Cooperative House / Okuno Architectural Planning. (ArchDaily, 2021)		
		Stacked apartments intertwined with indoor or outdoor amenity
R50 - Cohousing / ifau und Jesko Fezer + Heide & von Beckerath. (ArchDaily, 2015)		
		Single house shared. May or may not be an amenity
LT Josai Shared House / Naruse Inokuma Architects. (ArchDaily, 2014)		



I derived the River Model from the architectural references on the left



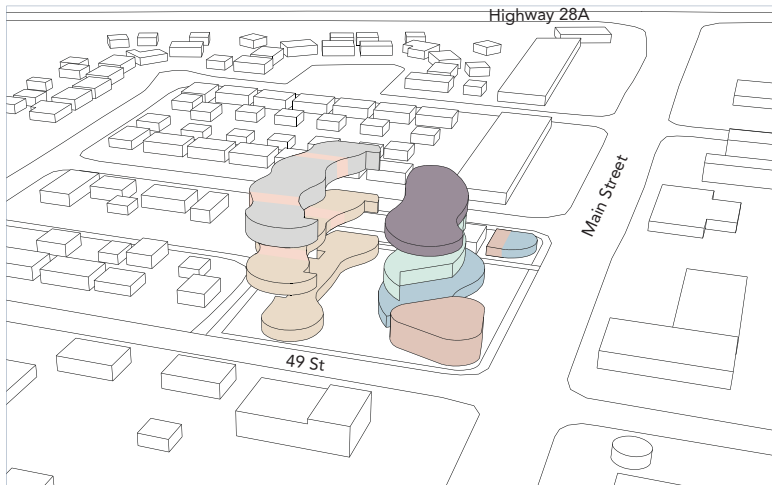
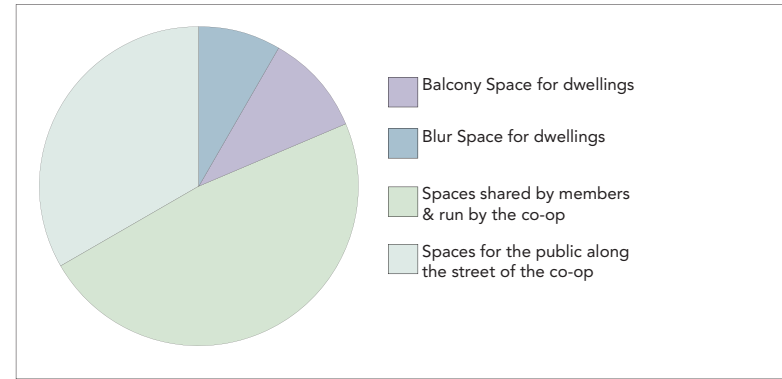
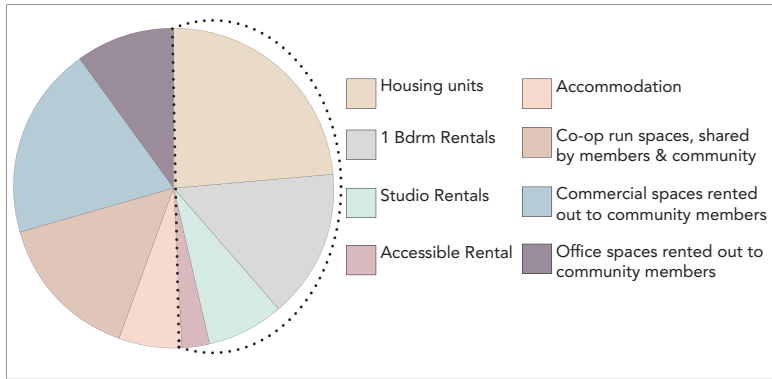
Site 1: Mixed use Cooperative Living Program Diagram

 Dwellings
  Indoor Amenity
  Outdoor Amenity

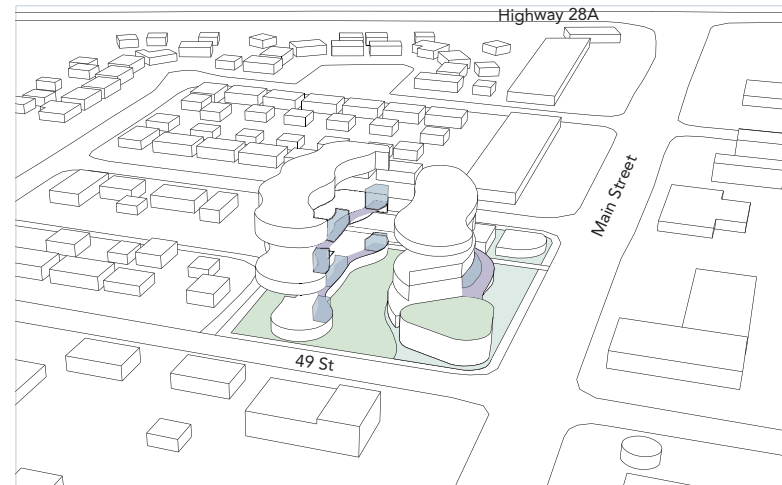


Site 1 Location in Plan

Program analysis - cooperative housing program model (ArchDaily 2014, 2015, 2020, 2021; BrightroomSF n.d.).



Site 1: Indoor Programs



Site 1: Outdoor Programs



Program analysis - mixed-use cooperative housing program.

the co-op to play and enjoy the bright and airy indoor space during the cold winter.

Along the main street, I am proposing a plaza space for the community to encourage social gatherings. In the south elevation perspective on page 53, you can see the plaza, where community members can enjoy lunch and meet with other community members in the summer. Alongside the plaza are commercial spaces run by the co-op and rented out to community members. The commercial spaces, like the co-op, can also be accessed by anyone in the community. They host a variety of amenities that the town of Gibbons is currently lacking, and bringing in these amenities will reduce the need for vehicle dependence. In addition, the design of the commercial building encourages various modes of interaction with members and the greater community by providing cross circulation.

On the corner of the main street and 48th Street, underground parking will be available to all community members, except for a car share program geared toward co-op members. This program will reduce vehicle dependence and encourage financial stability.

At the north of the site are ownable dwellings, and in-between the buildings at the middle of the site is green space for the co-op members with a playground, a dog run, a fire pit, and a splash park. All community members can access the green space, except for the fire pit, which is only for co-op members. Between the green space and the ownable dwelling, there is a semi-public threshold for the inhabitants, and it can be used for activities like barbecuing.

On the first floor of the north building, depicted on the next page, is the second story of the ownable dwellings. The



- ① Splash park
- ② Fire pit
- ③ Dog run
- ④ Playground
- ⑤ Ownable dwelling
- ⑥ Circulation
- ⑦ Co-op
- ⑧ Children's Play area
- ⑨ Plaza
- ⑩ Coffee shop
- ⑪ Hardware/hobby shop
- ⑫ Laundromat
- ⑬ Bicycle storage
- ⑭ Dog wash station
- ⑮ Doggy daycare
- ⑯ Meeting space for teen girls
- ⑰ Flower shop
- ⑱ Underground parking
- ⑲ Surface parking

Mixed-use cooperative housing ground floor plan.

second story hosts private spaces, such as bedrooms and a private balcony, and blur space in the form of a sunroom. In-between the ownable dwellings are accommodation spaces run by the co-op accessed from the second floor. These accommodation spaces are meant for transient workers, visiting co-op family members, or disaster relief. Co-op members can access the balconies and the shared space adjacent to these accommodation spaces to connect to the larger human community.

In the south building, there is an accessible rental unit and five affordable rentals. These affordable units are targeted toward younger adults to encourage financial stability so they can build their way toward a larger unit or ownable dwelling. These rentals are similar to a student residence, where renters have private spaces within their unit but share a large amount of space with others renting this type of unit, like a balcony, a lounge space, and a kitchen located on the first floor of the co-op building. While the co-op kitchen is targeted toward the people renting an affordable unit because they do not have kitchens, it can also be accessed by any co-op member, temporary or permanent.

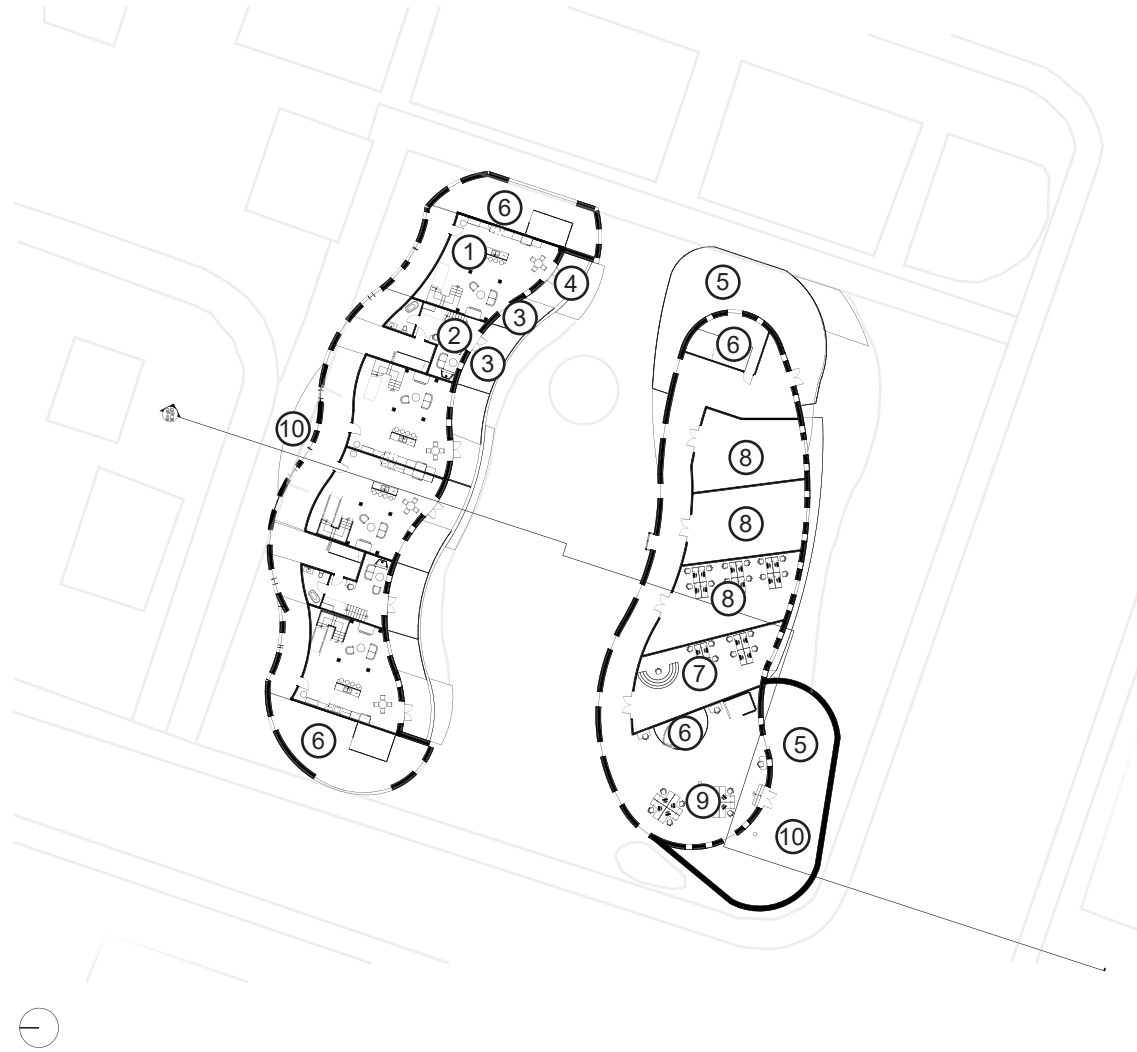
On the second floor of the north building are four rentable units and two more accommodation spaces with private balconies, depicted on page 47. Each rental has a sunroom and balcony like the ownable dwellings.

On the second floor of the south building, there is a workspace any co-op member can use and a large balcony with a green roof, which allows those individuals to take a break and enjoy nature and social connection. There are also three rentable office spaces, rented out by the co-op to any community member, and the co-op office where people



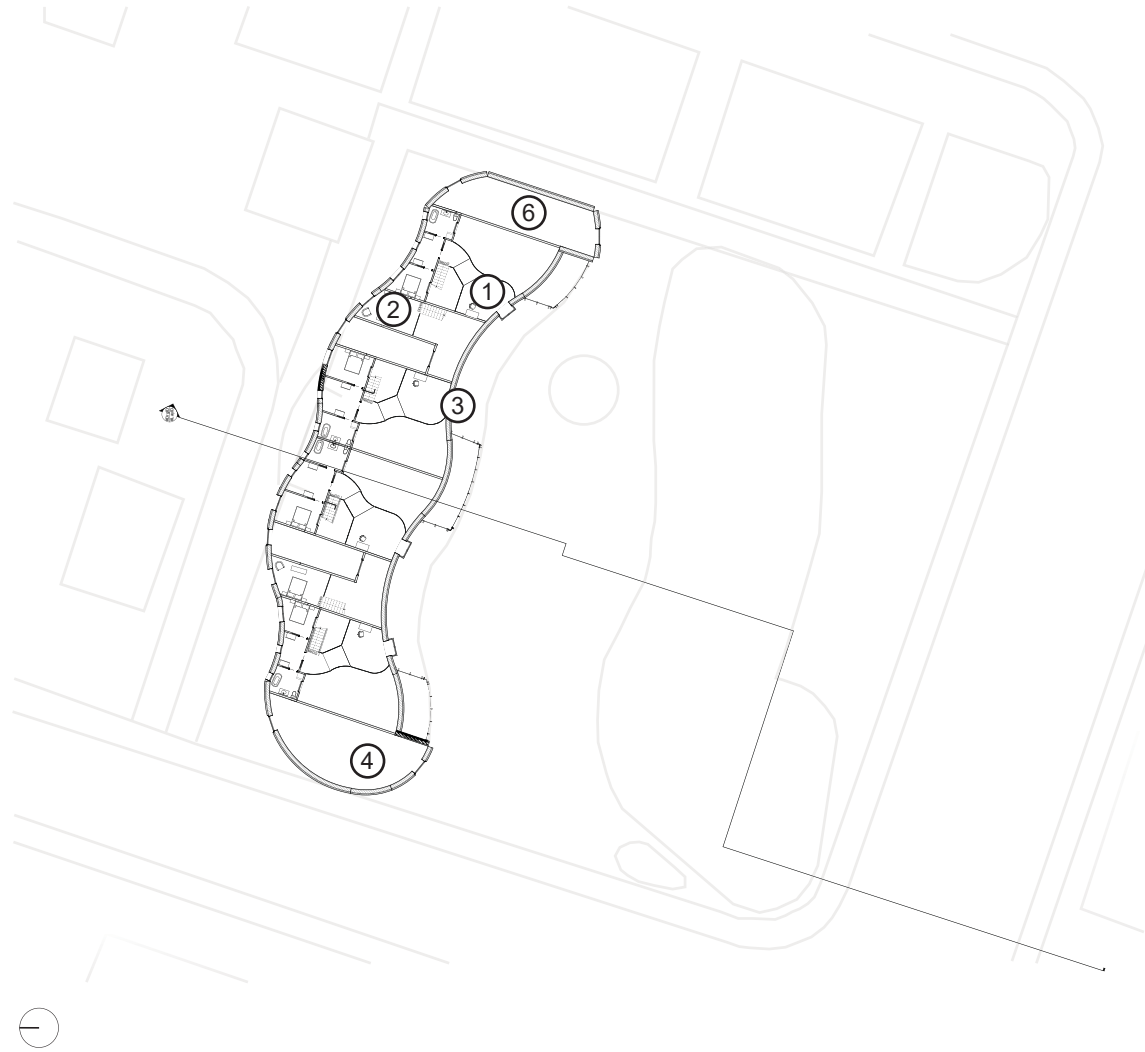
- ①. Ownable dwelling second story
- ②. Accommodation
- ③. Balcony - dwelling
- ④. Sun room
- ⑤. Balcony - co-op
- ⑥. Circulation
- ⑦. Accessible Unit
- ⑧. Affordable Studio
- ⑨. Lounge Space - co-op
- ⑩. Kitchen - co-op
- ⑪. Green roof

Mixed-use cooperative housing first floor plan.



- ① Rentable dwelling
- ② Accommodation
- ③ Balcony - dwelling
- ④ Sun room
- ⑤ Balcony - co-op
- ⑥ Circulation
- ⑦ Co-op Office
- ⑧ Rentable office space
- ⑨ Co-op workspace
- ⑩ Green roof

Mixed-use cooperative housing second floor plan.



- ① Rentable dwelling loft
- ② Accommodation loft
- ③ Bay window
- ④ Circulation

Mixed-use cooperative housing half floor plan.

can go to rent or purchase a dwelling and learn more about cooperative living and sustainable community engagement.

On the half floor, page 48, is the second story of the rentable units, where the bedrooms and den area are located on a loft. The accommodation lofts are also on this half floor. Within the loft area of the rentable units there is a bay window, the second instance of blur space.

Program: Site 2

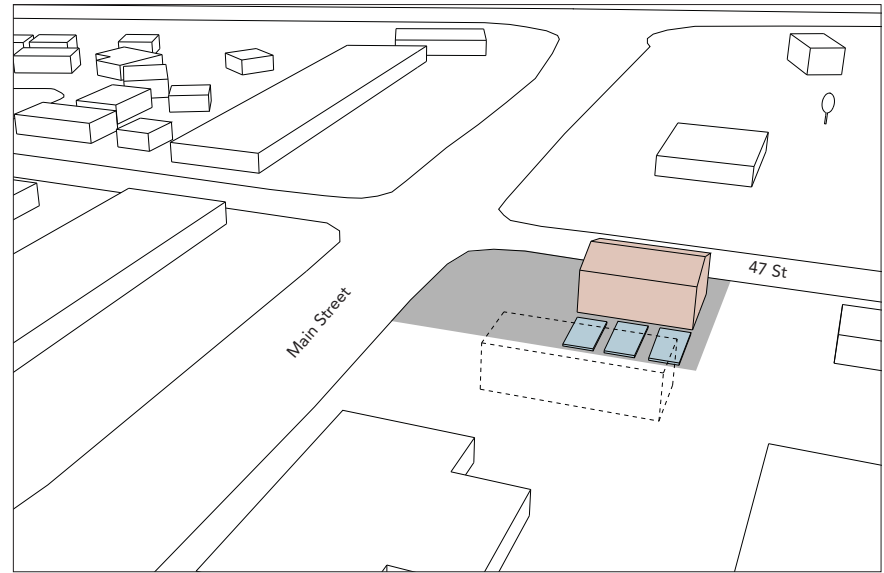
A block away from the mixed-use cooperative, I have chosen to pursue a greenhouse program along the main street, seen on the next page. Currently, there is no option for fresh produce in town, with the closest option being a fifteen-minute drive away. A greenhouse program run by the cooperative will provide the community with fresh produce throughout the year and reduce vehicle dependence. I have also chosen to pursue a community garden program for community members who wish to maintain food stability.

Mixed-Use Cooperative Housing Design

The mixed-use cooperative housing program and the greenhouse and community garden program provide members with the opportunity for financial stability, a support group of like-minded individuals, sustainable action, experience with the surrounding natural environment, and the hope for improved physical and mental health. Ideally, this model will be used by designers and environmental psychologists to facilitate improvement in human health and encourage self-transcendence and reciprocity with nature within communities for the good of humanity.



Site 2: Location in Plan



Site 2: Greenhouse & Community Garden

- Co-op run spaces, shared by members & community
- Spaces rented out by the co-op
- Spaces for the community run by the co-op

Program analysis - greenhouse and community garden program.

Slow Architecture

Slow architecture is a movement that advocates for sustainability, equality and high-quality architecture (Amstutz and Pankhurst 2020). It opposes fast-paced culture resulting from societies driven by technology. As discussed in Chapter 1, human-centered thinking driven by technology has compromised the health of humans and the Earth. The mixed-use cooperative housing design draws on this slow architecture movement by incorporating affordability, *soft city* principles (Sim 2019), and HNM elements into the design, described in the following paragraphs.

Affordability

Affordability is challenging to define since it is relative to personal opinion and based on life experiences. While young adults in Gibbons are increasingly unable to afford the material and labour costs involved with building a dwelling that can meet mental and physical needs, an organization like a cooperative can make affordability more accessible while maintaining high quality. Moreover, compared to an individual, a larger organization can afford to cover costs associated with the purchase of land, construction and the thoughtful design of a building. However, it is important to note that an organization's values will determine the outcome of the design. Thoughtful design focused on HNM values can provide equality for inhabitants through programmatic financial stability tactics and sustainable and accessible design. For instance, rental suites attached to ownable dwellings can generate extra income for home buyers. A car-share program can reduce pollution as well as vehicle maintenance costs. Designing program space for amenities that are needed can provide community members

with mental and physical needs within walking distance. Solar and rainwater collection can reduce utility bill costs that continue to fluctuate unpredictably. Lastly, various dwelling types, from increased shared space to ones with more personal space, can meet different financial needs. In addition, renting out commercial and office space allows the cooperative to retain income for building maintenance, which sustains the feedback loop between quality and equality.

Soft City

In the book *Soft City*, written by David Sim, soft city is described as a way of designing a densely built environment at the human scale. Soft city design incorporates simplicity, ecology, comfort, sharing, phenomenology, scale, interconnectedness, and responsiveness. While soft city and HNM elements follow similar urban design tactics, HNM focuses more on psychological motives through residential design. Human scale design tactics from *Soft City* expressed throughout the mixed-use cooperative design include smaller built components, building height, and sensory engagement. For instance, the use of brick, expressed in the elevation on the next page, allows humans to experience the building at eye level, and the dimension of a brick relates to the human body since it can be held. In addition, the design tactic of keeping the building below five stories is another way to maintain human scale.

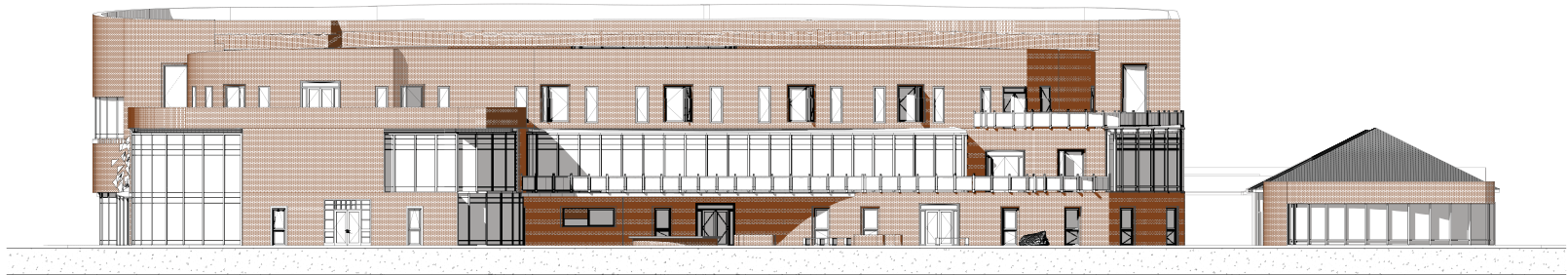
Walk-up-height buildings help maintain a connection between the ground plane and the upper floors. This is the distance at which your eyes can focus and gain useful information, your voice can carry, and your hearing can distinguish different sounds. Buildings up to five stories usually meet this criteria. (Sim 2019, 220)



Key Plan



South Elevation Perspective



South Elevation



Mixed-use cooperative housing elevation.



Mixed-use cooperative housing inhabited site section.

Lastly, to engage the human senses and maintain human scale, the green space between the north and south buildings hosts vegetation, walking paths that encourage slow movement and interaction with elements, such as fire and water through the splash park and fire pit. This can be seen in the ground floor plan on page 44.

The Elements

Within the inhabited section on page 54, the natural and social environment are incorporated within the built environment through various gradients of space, from the most personal to the most shared spaces. In addition, HNM elements are depicted in the section. These elements address issues of sustainability, affordability and human health.

The element of thermal control and element harvesting is depicted in the section below through solar collection.



Inhabited section - thermal control and element harvesting.

On the roof and within the glass railings on the balconies, photovoltaics are used for the cooperatives' energy usage. Furthermore, the thick brick masses will act as a heat sink by absorbing heat from the sun's rays throughout the day and releasing it within the interior of the building at night. This element is also used through rainwater collection from the roof for greywater and vegetation.

The element of flexible protection is used where bay windows and sunrooms blur the indoors and the outdoors. Seen below, flexible protection provides inhabitants with a deeper connection to nature throughout the seasons.

Within each dwellings living space, the element of engaging and adorning nature is used where four posts center individuals around a fire to encourage moments of stimulation, restoration, and identification with nature, seen on the next page.



Inhabited section - flexible protection throughout the seasons.

Lastly, the element of orientation and daylighting strategies is apparent in the section on the next page where the roof



Inhabited section - engaging and adorning nature.

slopes inward toward the green space and where split levels encourage connection to nature through slow movement and open and airy space to improve sunlight exposure. In addition, all sunrooms and public spaces are oriented south to acquire a steady amount of sunlight throughout the day and the seasons. Furthermore, the building's river-like form allows for increased sun exposure from the east and west, and each unit is designed so that inhabitants have access to fresh air ventilation from the north and south sides of the unit.



Inhabited section - orientation and daylighting strategies.

Ecology and Design

To connect to the surrounding ecology, the buildings form and programmatic elements imitate ecological qualities. For instance, the river-like form of the green space mimics the river aesthetically and intangibly. Moreover, the Sturgeon River has a rich history, being used for travel and trade, and it has become a motif for human connection. More literally, the river also creates connections to natural environments when they join larger rivers and bodies of water and act as a source of life for living organisms. Alongside the green space, the cooperative buildings are built up like the sand dunes along a river. The use of bricks mimics the river's clay sediments and forms the organic curvature of the building.

Chapter 6: Conclusion

Reflection and Expansion

Reflection

It is important to note that collective myopia is not exclusive to Gibbons. Psychological blindness toward unsustainable conditions is present worldwide, and humans must work toward human and nature mutualism.

Continually reflecting and questioning the HNM model is an important process for success. Reflecting on my use of terminology, I would reconsider the term blur space as a mediator rather than something that lacks definition. Precision language is crucial when relaying ideas and concepts to others, as language is powerful. In the case of the term human-nature mutualism, instead of reconsidering my use of terminology, I would work toward making my proposal more explicit in addressing how nature can benefit from humans and architecture. I am aware that my proposal is more focused on human benefit, but I see human-nature mutualism as a goal to be reached through architecture rather than an immediate result. Nevertheless, I must find ways that architecture can mediate the natural world and incorporate them into my proposal.

While precision language is essential to the success of HNM, breaking the automatic process habits humans have acquired from technology is just as crucial to its success. When the harmful effects of these habits are broken, only then will humans be able to achieve mutualism with nature. I genuinely believe that an interdisciplinary practice of architecture, environmental psychology, ecopsychology, and

ecology can help humans re-introduce and re-acknowledge the environments around them, which help them thrive.

Expansion

When considering how I could expand upon the HNM model, increasing the system boundary was brought forth by my advisor. Human-nature mutualism is not meant to be exclusive to anyone but rather inclusive and attainable by everyone. For this reason, it is important to find ways to include neighbours, other cultures, and other climates. While the HNM model offers this basis for expansion, further guidance could be offered with specific intentions for inclusion. Some examples may include circular economy principles, working toward changing current policies and laws that work against HNM, and incorporating the field of anthropology to become aware of other cultures and ways of life.

Continuing, I would also like to address the concept of HNM from less of a birds-eye view and more in terms of human sensory experience, including thermal comfort as a mediator between the interior and the exterior. This will bring HNM closer to psychology and human desires closer to nature.

Lastly, I would like to expand on the definition of nature and sustainability continually. I understand that these are ever-dynamic definitions, changing throughout time; therefore, it is paramount that we continue to think deeply about what these words are versus what they are not.

Moving Forward

HNM integrated into domestic architecture is an essential step toward the Earth's renewal. By understanding human behaviour, sensory capabilities, and their translation into the

natural, built, and social environments, designers will be able to create effective buildings that prompt self-transcendence, which is needed in the pursuit toward humanity's renewal.

After this thesis, I hope this method will be further explored and tested by environmental psychologists, architects and designers through post-occupancy evaluations. With these evaluations, designers should be able to question whether or not this method works and what could be done to improve it. Ideally, a feedback loop would arise between design and psychology, leading to the evolution and betterment of this method.

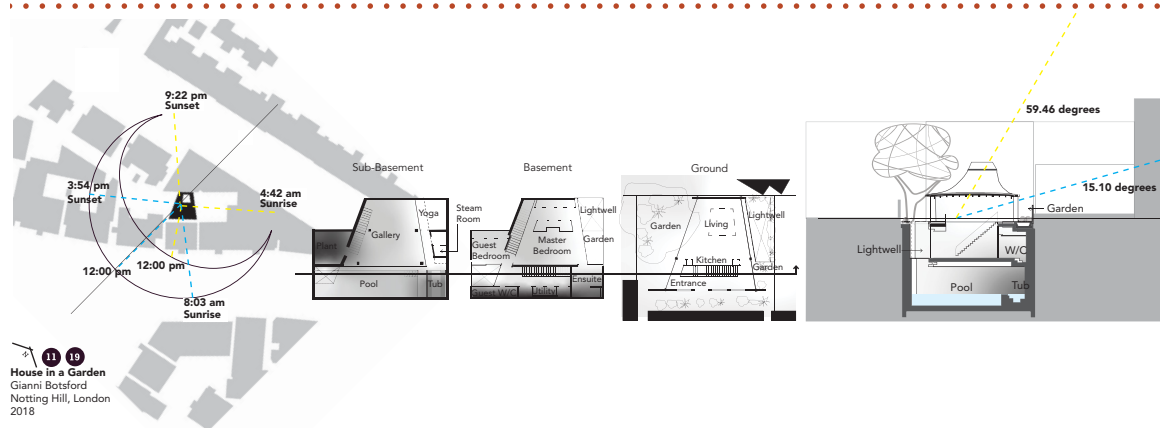
In addition, I hope that an interdisciplinary practice of architecture, environmental psychology, ecopsychology, and ecology will form to increase awareness of this model. In an idealized world, the HNM model would be used as a design tool worldwide so that every individual may achieve self-transcendence and work toward humanity's renewal.

Appendix A: Definitions

- Ecopsychology: A journey towards salvaging the relationship between humans and the earth by understanding and healing the intimate bond between souls. Encompasses psychology, ecology, and environmental activism. (Roszak 1995, xvi)
- Psychology: The study or order (logos) of the soul (psyche) mind behaviour (Roszak 1995, xviii).
- Environmental Psychology: The study of the human relationship with nature in terms of the environment (Nature and built) (Kahn and Hasbach 2012, 7)
- Phenomenology: Edmund Husserl believes that experience is the source of knowledge and through experience one can directly apprehend an essence. (Kahn and Hasbach 2012, 4)
- Mutualism: a relationship between two species of organisms in which both benefit from the association. (Dictionary.com. n.d.)
- Human-nature mutualism:
 - Rekindling of the human soul and the earth soul
 - Belonging and Identifying with the earth
 - Respect for and responsibility to the earth, our bodies, our mind, and our soul
 - Physical and mental restoration through connection and restoration of the earth
 - Conscious awareness of the natural surroundings among the built environment
- Biophilia: “the innate human tendency to focus on or to affiliate with life or lifelike processes and Elements” (Kahn and Hasbach 2012, 196)
- Biomimicry: A practice that learns from and mimics the strategies found in nature to solve human design challenges (Biomimicry Institute n.d.)
- Essence: the basic nature of a thing: the quality or qualities that make a thing what it is
- Ecology: the study of the relationships between living organisms and their physical environment (ESA n.d)
- Emotional Psychology: Study of object oriented emotions: awe, fascination, wonder... (Kahn and Hasbach 2012, 198)
- Human Soul: The spiritual part of a human being that enables connection beyond the physical world.
- Reciprocal: Equal commitment. This includes human and non-human entities.
- Nature: All humans and non-human entities with the exclusion of human behaviour that aims to overpower and destroy non-human entities.
- Genius Loci: Spirit of Place

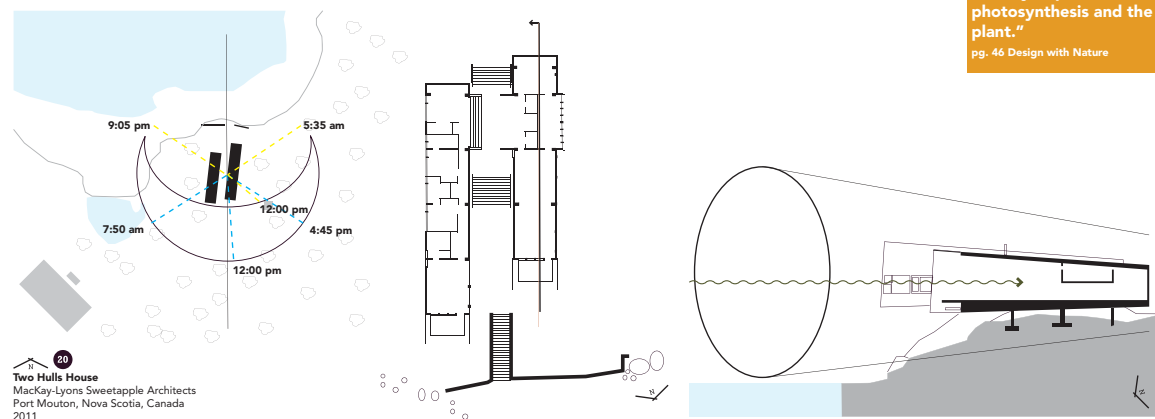
- Shared Space: Public access allowed. For example garden, street, park.
- Semi-Shared Space: Paying tenants and their guests. For example: Kitchen, backyard, living area, courtyard, play area, dog bathing
- Semi-Personal Space: Spaces that are typically used individually but are within the semi-shared realm. For example: workspace, small atrium, nooks (bay window), bathroom.
- Personal Space: Individuals or multiple people in a relationship control the space. For example: bedroom or bathroom.

Appendix B: Case Studies

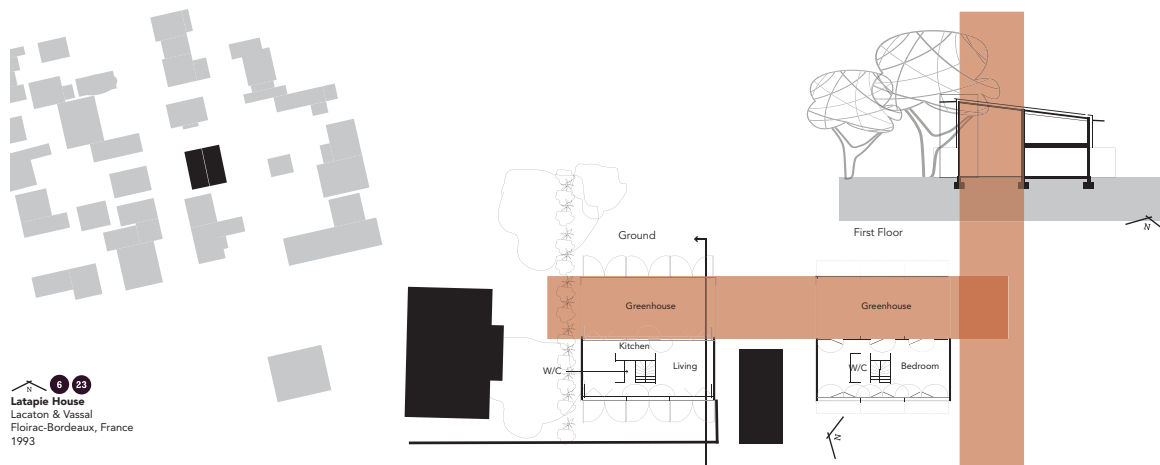


Orientation

"...all life, with minor exceptions, is now, and forever has been entirely dependent on photosynthesis and the plant."
pg. 46 Design with Nature



The first of these elements is orientation. House in a Garden by Gianni Botsford and Two Hulls House by MacKay-Lyons Sweetapple Architects depict the human-nature mutualism element of orientation. In House in a Garden, the intentional placement of horizontal apertures in relation to the sun's path translates into architectural atmospheres of directional linkage and photosynthetic mediation. Through the partnership of orientation and atmospheres, physical health is revived through the sun's energy. Psychologically, the mind is revived through the visual relief and connection to nature by top lighting. In the Two Hulls house, the linear orientation and large viewing planes facing the sea translate into architectural atmospheres of directional linkage and photosynthetic mediation. Physical and psychological revival happens toward the northeast, where the house circulates fresh air from the sea breeze, and the porches and wall glazing provide visual relief (González 2020; Ott 2011; SunCalc n.d).

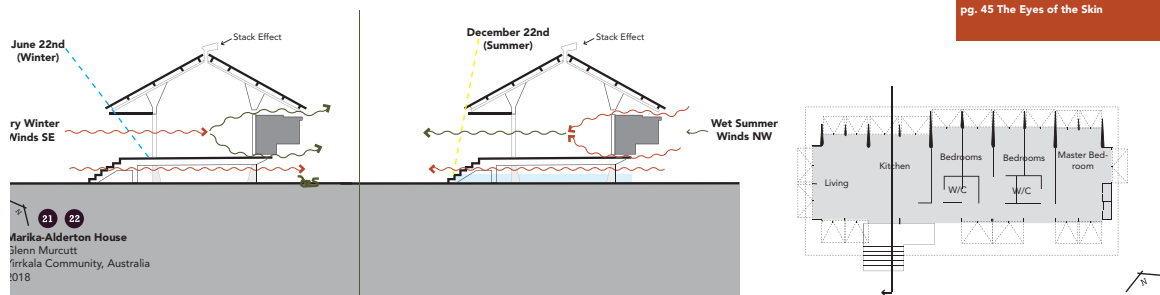




Latapie House
 Lacaton & Vassal
 Floirac-Bordeaux, France
 1993

Transformation

“[Architecture]
 concretises the cycle of
 the year, the course of
 the sun and the passing
 of the hours of the day.”
 pg. 45 *The Eyes of the Skin*

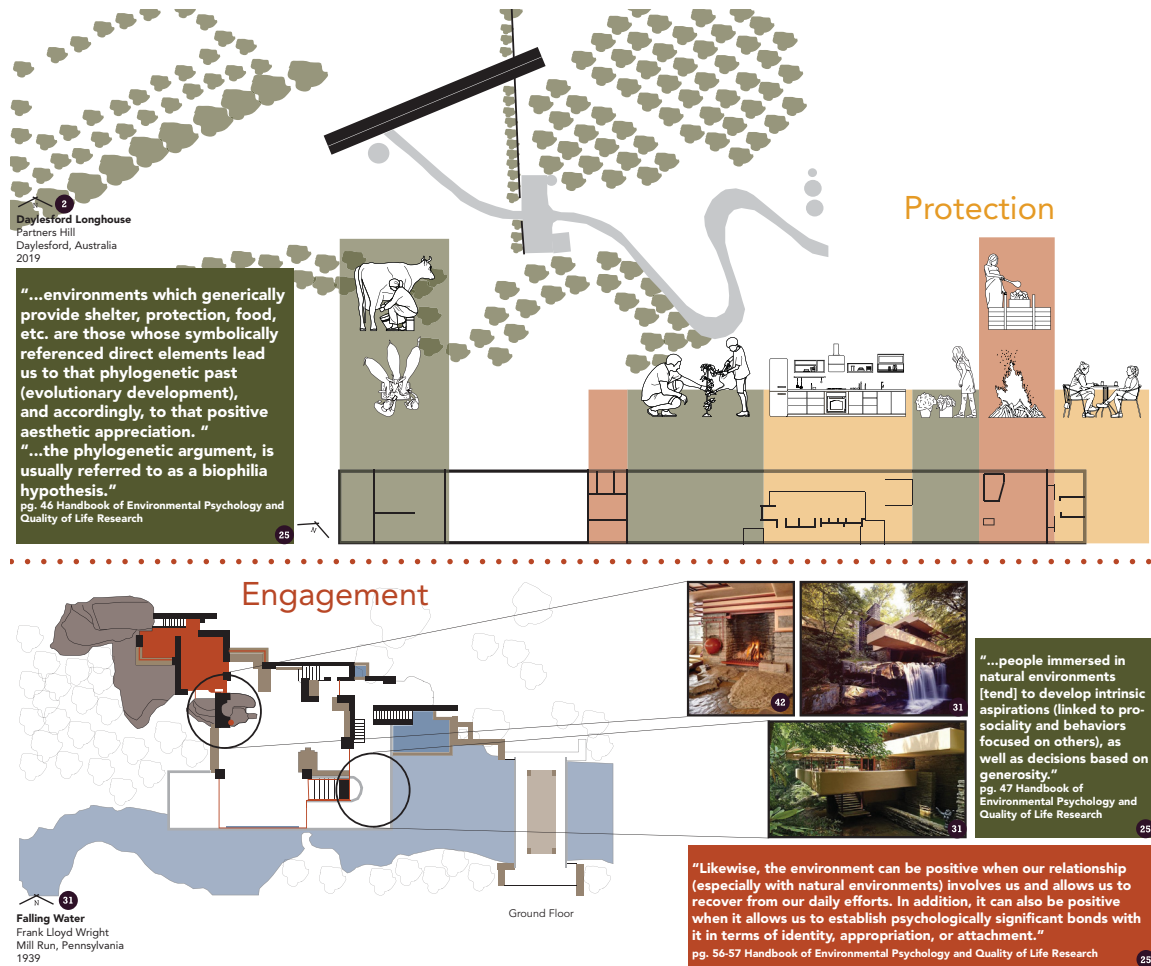




Marika-Alderton House
 Glenn Murcutt
 Mirrkala Community, Australia
 2018

In the Latapie House, the architectural atmospheres of microclimate modification and element harvesting is also apparent through the translation of the house’s exterior. Like the Marika-Alderton house, the exterior can be opened or closed at different gradients to control the interior climate and create a physical and psychological sense of belonging. What could be argued is that these exterior transformations also lend themselves to the element of protection from harsh environments or transparency, and therefore preservation becomes the goal.

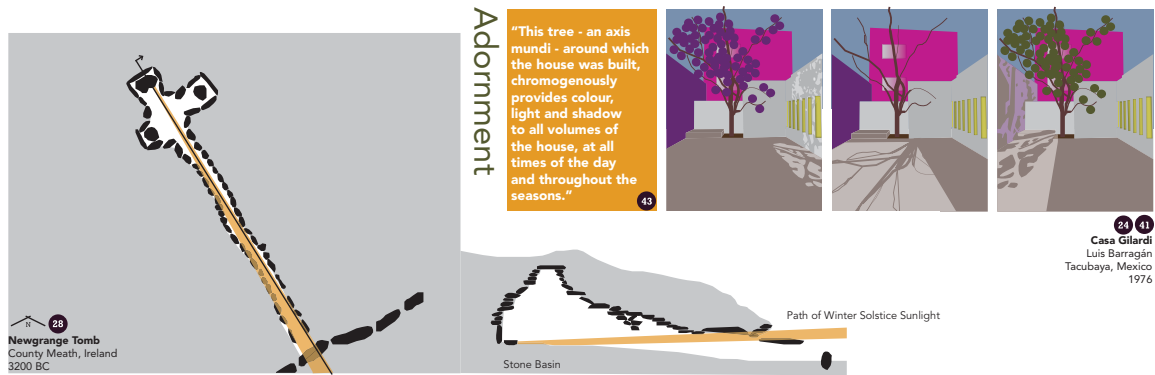
Glenn Murcutts Marika-Alderton House and Lacaton and Vassals Latapie house exude the element of transformation. In the Marika-Alderton house, the screens, fins, and vents that make up the exterior translate into the architectural atmospheres of microclimate modification and element harvesting. The human hand’s modifications to the exterior to adapt to seasonal changes and weather patterns psychologically provide a sense of belonging. In addition, the harvesting of the breeze from the ocean creates a comfortable interior environment and a physical sense of belonging (Delaqua 2021; Lacaton and Vassal 1993; Michelle 2012; OZ.E.TECTURE n.d).



The human-nature mutualism element of protection is apparent in the Daylesford longhouse by Partners hill. Its translucent glass-reinforced polyester skin allows agricultural and hospitality activities to flourish inside. This atmosphere of organic hosting, also apparent in the conservatory of the Latapie House, contributes to the physical act of harvesting, which provides nourishment and builds security through dynamic rituals.

As a result of the human phylogenetic past, we appreciate environments that provide shelter, protection, and food; therefore, preservation becomes a goal of protection due to these architectural translations.

The human-nature mutualism element of engagement is apparent in Frank Lloyd Wright's Fallingwater. Experiences prompted through the senses create an atmosphere of phenomenology, and the neighbourliness between the house and nature creates an atmosphere of amicability. In addition, the lack of boundaries creates an atmosphere of blur space. These architectural translations of engagement provide a physical connection and a deeper understanding and empathy toward place, prompting identification with nature (Fleury-Bahi, Pol, and Navarro 2017; Ia.Iland 2020; Perez 2010; Pintos 2019).

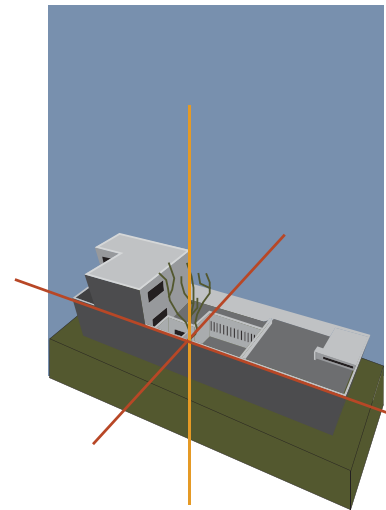
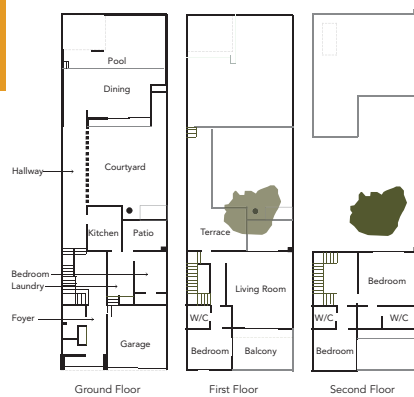


Connection

"Architecture is essentially an extension of nature into the man-made realm, providing the ground for perception and the horizon of experiencing and understanding the world. It is not an isolated and self-sufficient artifact; it directs our attention and existential experience to wider horizons."
pg. 44-45 The Eyes of the Skin



26 41 Casa Gilardi
Luis Barragán
Tacubaya, Mexico
1976



The Newgrange tomb and Luis Barragán's Casa Gilardi exude the element of adornment. Modest forms in Casa Gilardi translate into the atmospheres of form flooding and cyclical capture as they accentuate nature's rhythms through the passage of time, culmination of colour and projection of light. The element of engagement is also prominent here through the atmosphere of phenomenology.

In the Newgrange tomb, the intentional placement of an aperture translates into the atmospheres of form flooding and cyclical capture as it specifies an annual ritual and moment in time, flooding a focal point with sunlight. Both atmospheres prompt the mind's stimulation, bringing one to a psychological awareness through form and nature.

The element of connection is apparent in Casa Gilardi. The axis mundi of this project, the jacaranda tree, creates an architectural atmosphere of element centering. This house's grounding around the tree scales humans against their universe, prompting physical and psychological restoration (Bloglovin 2017; Colm 2011; Durao 2010; Firestone n.d; Shrivastava n.d).

Appendix C: Single-Detached Housing Example - Human-Nature Mutualism







This is an illustration designed in thesis I depicting an inhabited section of a single-detached dwelling using human-nature mutualism elements before the inclusion of the social environment.

Appendix D: The Third Site: The Cactus Prairie and Human-Nature Mutualism

I was originally going to propose three sites for my project. I had the intention of proposing a bridge that connects the community to the other side of the river where the cactus prairie is located since there is currently no access. I imagined the community being able to learn more about the ecosystems in Gibbons this way. I also saw it as an opportunity for community members to sustain and protect the prickly pear cacti since they are predicted to be at risk (ABMI 2020). Unfortunately, building this bridge could open up opportunities for people to step on or remove the cacti, putting them more at risk; therefore, my committee and I decided to omit it as a proposal. That being said, with further research and thoughtful intentions, I think there is still opportunity for this connection to be positive and successful in educating the community.

PROGRAM ANALYSIS - SITE 3

-  Site locations
-  River Trails
-  Spaces for the public
-  Cactus Prairie



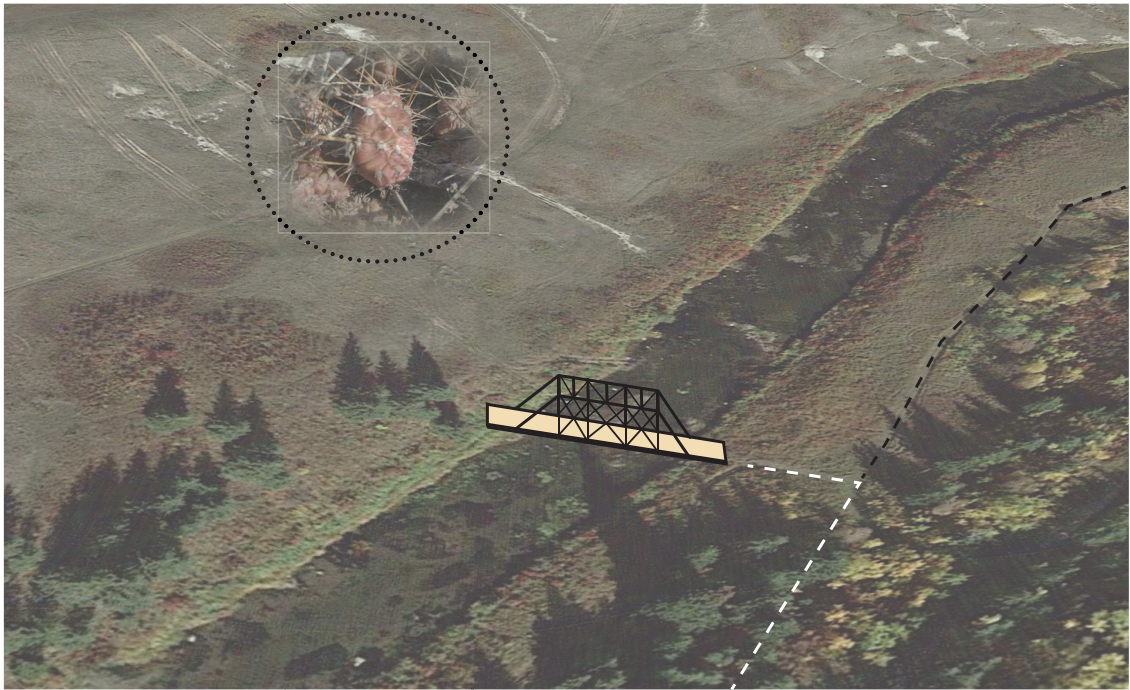
View from Highway 28A (See map)



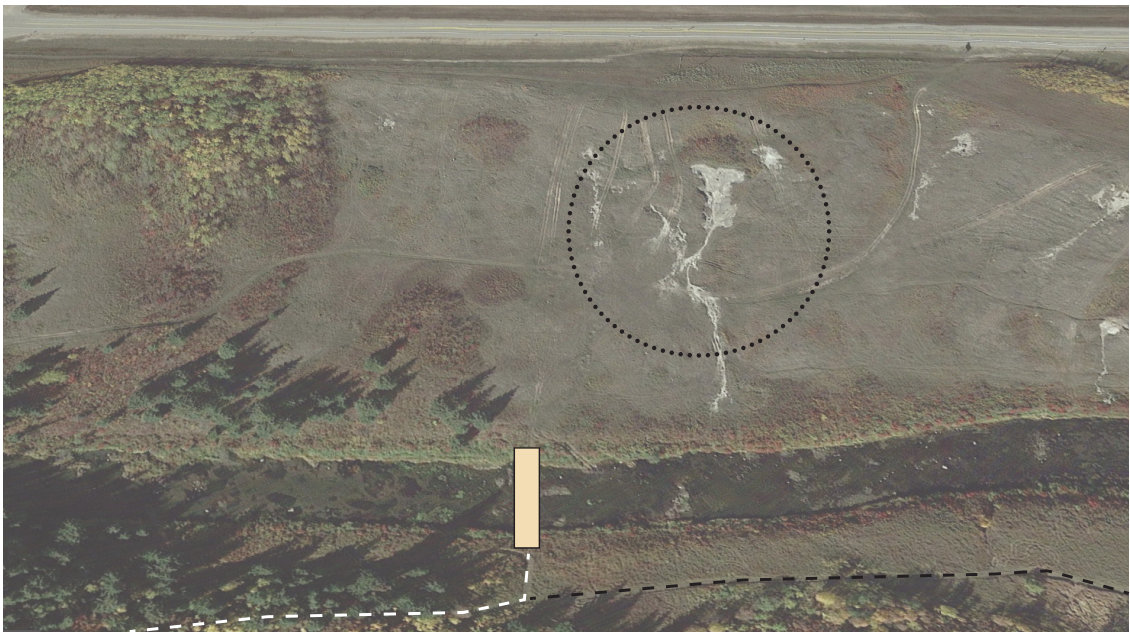
Prickly Pear Cacti




River Trails & Site Proposals (Google Maps 2022).



Site 3: River Bridge & Garden Shed (Google Maps 2022). 



Site 3: Location (Google Maps 2022). 

Appendix E: Annotated Bibliographies

Indoor Nature Exposure (INE): A Health-Promotion Framework

McSweeney J, DG Rainham, SA Johnson, SB Sherry, J Singleton. 2015. "Indoor nature exposure (INE): a health -promotion framework." *Health Promotion International*; 30:126-139.

This article argues that understanding the link between health and Indoor Nature Exposure (INE) can lead to health-sustaining and health-promoting ventures in an urbanized world. The scoping method, which studies various evidence across disciplines, was used to create a framework that captured the outcomes of indoor nature exposure on health.

Keywords:

- Nature
- Health
- Qualitative
- Quantitative
- Sustain
- Psychology
- Wellbeing
- Restoration
- Stress
- Physical
- Indoors

I found this article to be a thorough study of the effects of nature on our health, providing an understanding of opportunities within the research. I believe that my thesis proposal could be a potential contribution to the research of INE through qualitative data over a long period. INE integrated in domestic architecture could provide insight into the link between health and INE.

Quotes:

"INE promotes health when individuals are presented with nature-based stimuli that they perceive as attractive, pleasing and pleasant to all their senses" (pg.3).

"Hinds and Sparks (Hinds and Sparks, 2011) also found that individuals raised in rural settings or with greater experience with nature-based environments reported more joy and less apprehension to nature experiences than participants from urban childhood locations or with less experience with nature" (pg.8).

"[T]he results of the current literature need to be interpreted with consideration to methodological issues, such as the lack of participant characteristics, the issue of exposure realism and little qualitative data to highlight individual experiences" (pg.1).

The Human Scale

Chriss, Shannon. "The Human Scale." Final Cut For Real. September 15, 2020. Documentary, 1:16:27. <https://vimeo.com/458139267>

The documentary, The Human Scale depicts how the modernist movement has caused damage and isolation in cities. It is argued that human-focused design can reverse the harmful effects of the modernist movement. Through explorations, urban planners, architects and thinkers have learned how to re-introduce human interaction into cities based on individualism.

Keywords:

- Modernism
- Organic
- Human focused
- Human Behaviour
- City Planning

This documentary brought a few things to my attention. First, at the beginning of the film, it was stated that people living in small households or on ones own is a modern way of living because historically, humans lived in tribes and clans. Humans are becoming disconnected, and designers must look for opportunities to create human connections, especially in cities where many people are strangers. The second thing that sparked my attention was the idea that architects should make frameworks and invitations opposed to assertions. This makes a lot of sense to me because the inhabitants of a building will be affected by the final design, and they should have the final say in how they will live. This is why community consultations are essential.

The Hidden Ways that Architecture Affects How You Feel

Bond, M. 2017. "The Hidden Ways that Architecture Affects How You Feel." BBC Future. <https://www.bbc.com/future/article/20170605-the-psychology-behind-your-citys-design>

This article discusses how buildings and cities can affect people's moods and well-being. It is argued that a more significant interaction between architects, designers, engineers, neuroscientists and psychologists would result in better building design and urban planning. Through analysis, human behaviour studies have unveiled the importance of human interaction, connection and control of place.

Keywords:

- Connection
- Control
- Well-Being
- Social Bonding
- Design
- Cities

The article states that when "residents have a decent view of the mountains, forest and ocean" and "restorative, green space," health seems to improve. These quotes remind me of an article from National Geographic titled, "These are the World's Happiest Places." The article discusses how one woman, Ruth Wright, In Boulder, Colorado, fought for the view of the mountains. In the film Human Scale, a similar scenario happened when there was a fight against high rises in Christchurch, New Zealand. This tells me how important it is for people to feel a sense of place, belonging, connection, and control over space and how essential it is to design at the human scale to avoid damaging these psychological needs.

Quotes:

"Psychology-based insights could change how cities are built." - Alison Brooks.

"Living among millions of strangers is a very unnatural state of affairs for a human being..."

Architecture and Health: How Spaces Can Impact Our Emotional Well-Being

Equipe ArchDaily Brasil. 2021. "Architecture and Health: How Spaces Can Impact Our Emotional Well-Being." ArchDaily. <https://www.archdaily.com/967003/architecture-and-health-how-spaces-can-impact-our-emotional-well-being>

This article explores the impact of built environments on the well-being of humans. The article argues that while designers are familiar with strategies such as natural ventilation and sunlight to promote healthier living environments, they lack an understanding of the psychology behind spaces and how they affect human behaviour and mental health. Studies of human behaviour and the field of psychology can help designers create spaces that improve well-being.

Keywords:

- Spatial Experience
- Isolation
- Interaction
- Creativity
- Biophilia
- Health

This article reminds me that I am headed in the right direction in the field of architecture. It is imperative to understand the effects of environments on human behaviour because this can influence our mental health, which can have a ripple effect on the world's health.

Quotes:

"psychology is essential to build healthy and pleasant spaces to live in"

According to Jan Gehl, "the experience of comfort and wellbeing in cities is closely tied to how city structure and city space harmonize with the human body, human senses, and corresponding space dimensions and scale."

Psychology of Space: How Interiors Impact Our Behavior?

Harrouk, C. 2020. "Psychology of Space: How Interiors Impact Our Behavior." ArchDaily. <https://www.archdaily.com/936027/psychology-of-space-how-interiors-impact-our-behavior>

This article discusses how the study of environmental psychology, "the interaction between people and the spaces they inhabit," allows designers to understand the impacts of the built environment on human behaviour and emotions. It is argued that it is the responsibility of architects to apply this understanding to design.

Keywords:

- Psychology
- Emotions
- Space
- Physical
- Physiological
- Well-Being

Designers have a significant responsibility toward the inhabitants they design for and the natural environment; therefore, designers must understand the impacts of their decisions. By integrating the field of psychology and architecture through environmental psychology, designers can assess the needs of humans and start to weigh them against the needs of the earth.

Quote: (Factors that architects should pay attention to)

"safety, social connectedness, ease of movement, and sensory stimulation"

"light, colours, art, ventilation,"

"balance, proportion, symmetry, and rhythm can introduce a sense of harmony"

"Colours...can also evoke feelings of comfort or stimulate communication."

"Natural light stimulates production and recovery."

Design With Nature

Ian L. McHarg. 1969. *Design With Nature*. New York: Natural History Press.

In this book, Ian McHarg aims to enlighten practitioners, planners, and designers about the importance of designing with nature and treating nature as an ally. McHarg uses his background in landscape architecture and regional planning and his knowledge of ecology to explain the innate connection humans have with nature and how natural occurrences in nature support and protect life. As a warning, McHarg uses case studies to explain the detriment humans have caused to nature for private greed. He believes irreversible consequences have come of this and that this damage can only be avoided by following suggestions on designing with nature.

Keywords:

- Nature
- Ally
- Innate
- Ecology

This book serves as a foundation for my thesis investigation. My interest in creating spaces that benefit mental and physical health resonates with McHarg's teachings on the importance of designing with nature and humans' innate biological connection to it. This book will serve as a reference, supporting the why of designing with nature. It is a good reminder that humans need nature for survival and that it is not always something we need to protect ourselves from. I would love to research ways to incorporate nature into housing situated in cold climates that need protection from the environment. I would also like to note that the thoroughness of this book will help direct me to related topics throughout my research, such as economics and ecology.

The Place of Houses

Moore, Charles, Gerald Allen and Donlyn Lyndon. 1974. The Place of Houses. Berkeley: University of California Press.

The Place of Houses is a non-typical pattern book on house design. It describes housing patterns and explains why housing has become homogenized over time. Instead of prescribing how a house should be designed, a survey allows readers to make their own decisions concerning their preferences related to patterns of daily life. This book analyses the purpose of housing, architectural quality, failures and lessons, the organization of houses, the machines they hold, and their inhabitants.

Keywords:

- Place
- Room
- House
- Merging
- Claiming
- Enfronting
- Surrounding
- linked
- bunched
- core
- inhabitation
- machine
- order

This book has helped me think further about purposeful organization within a house and has reaffirmed the importance of the inhabitants. A house is a special place where its inhabitants can express their identity and truly belong to a place; unfortunately, many houses are homogenized to a standard design. Endless rows of similar houses prevent individuals from imposing themselves into the space. A house should allow freedom, excitement, curiosity, and comfort. I believe that by incorporating natural rhythms into a house, people will experience excitement when sunlight floods a room and comfort knowing there is a pattern to this rhythm. There can also be comfort and freedom in being able to change and move things in a house to accommodate the seasons. This can also be an exciting ritual.

Quotes

The Place of Houses

“what we have built does scare us. Most of it has no message for us. We can’t claim it as our own, and we can’t comfortably inhabit it” (Moore, Allen, and Lyndon 1974, 49).

“A good house...speaks not just of the materials from which it is made, but of the intangible rhythms, spirits, and dreams of people’s lives” (Moore, Allen, and Lyndon 1974, 49).

“...we have held to the belief that houses must be special places within places, separately the center of the world for their inhabitants, yet carefully related to the larger place in which they belong” (Moore, Allen, and Lyndon 1974, 50).

“We believe the image of “house” holds great power over the human mind, and that a house should seem the most important place in the world for its inhabitants” (Moore, Allen, and Lyndon 1974, 51).

“There are, after all, a great many things they can tell us about the people who care for them” (Moore, Allen, and Lyndon 1974, 66).

“...a house was becoming less a place for generations to live and more a place where a family would spend only a part of their lives and then move on” (Moore, Allen, and Lyndon 1974, 79).

“To accommodate the machines we have given up the clear and gracefully proportioned rooms...of our ancestors’ houses” (Moore, Allen, and Lyndon 1974, 81).

“In a very small room it can seem surprisingly high; but in a more-than-moderate-size room, eight feet can feel discouragingly low” (Moore, Allen, and Lyndon 1974, 91).

“Light, as it enters rooms, has variations of the most compelling

sort...a room whose light comes in from one side only will be filled with glare, the objects and people within it will throw disconcerting shadows...dark inside...bright outside, the eyes's effort to adapt will cause some pain (Moore, Allen, and Lyndon 1974, 96–97).

“Repose is encouraged by a single focus, which collects attention, organizing the room around a center of interest...” (Moore, Allen, and Lyndon 1974, 99).

“Bay windows, porches, and solarium take outlook one step further, allowing the inhabitant to move outside the enclosure of the room” (Moore, Allen, and Lyndon 1974, 104).

“I built the house in sections, always following the concrete needs of the moment. It might also be said that I built it in a kind of dream. Only afterwards did I see how all the parts fitted together and that a meaningful form had resulted: a symbol of psychic wholeness” (Moore, Allen, and Lyndon 1974, 129).

“More blameworthy are dwellings whose imagery is so totally controlled that there is no chance for the dwellers to make changes over the years, or even in the course of their daily lives. Such houses are unsuccessful” (Moore, Allen, and Lyndon 1974, 140).

A house tight up against the street “...eliminates the token front and side yards of American suburbia, which often serve only to give the owner exercise with a lawn mower.” (Is it important to have front and side yards in suburban areas? I live in the suburbs and have never seen anyone use their front yard...what is the point? It would be nice if people were better connected to the street, but how? (Moore, Allen, and Lyndon 1974, 199).

Ritual House

Knowles, Ralph L. 2006. *Ritual House: Drawing on Nature's Rhythms for Architecture and Urban Design*. Washington: Island Press.

This book draws attention to the lack of responsibility in present-day towards maintaining a sustainable relationship between human beings and the natural environment regarding the built form. The author, Ralph Knowles, argues that modern culture has disassociated the homes we inhabit from nature's rhythms and the rituals developed in response to these natural rhythms. As a collection of a lifetime of research, writing, and teaching, this book focuses on maintaining comfort and joy in built forms by analyzing policies and designs that reconnect the lives of human beings to the rhythms of nature.

Keywords:

- Environment
- Sustainability
- Rhythm
- Ritual
- Reconnect
- Natural

This book relates to my interest in designing homes that reconnect humans to the rhythms of nature by weighing the need for security and protection from elements against the innate connection needed between nature and human beings through physical and mental relationships. The term rhythm and the focus on the sun's movement in this book have led me to realize that there is a need to analyze movement within a home to understand subconscious and unconscious moves made by human beings to connect with nature. This has also led me to think about buildings as fluid and changing rather than solid and permanent. This could mean that parts of a building physically move along with nature's rhythms, or it could mean that the building's envelope is designed sustainably to adapt to nature's rhythms while allowing nature to step inside the built form.

Homes in Alberta: Building, Trends, and Design

Wetherell, Donald G. and Irene R.A. Kmet. 1991. *Homes in Alberta: Building, Trends, and Design*. Edmonton: The University of Alberta Press.

In this book, the authors Donald Wetherell and Irene Kmet study the history of housing in Alberta from the eighteenth to the twentieth century. Research on the economic conditions and government housing policies in Alberta informed housing conditions, the volume of house building, and standards of servicing and construction.

Keywords:

- Alberta
- Housing
- Material
- Design
- Modern
- Government

It is my hope that this book will help me discover the “why” behind house design in Alberta. Understanding the “why” will allow me to effectively assess housing patterns in Alberta which I can then apply to my design.

The Poetics of Space

Bachelard, Gaston. 2014. *The Poetics of Space*. New York: Penguin Books.

In the book *The Poetics of Space* by Gaston Bachelard, the reader is taken into the poetic realm of domestic space. The spaces within a home are explored in an artful, poetic, phenomenological, and psychological manner. Readers are reminded of the dreams within the sheltering and protecting house.

Keywords:

- House
- Home
- Space
- Poetics
- Phenomenology
- Psychology

While this book can be hard to understand without embracing the art of poetry, I am hoping that this book will inform me on the phenomenological experiences of space within a home. By gaining a deeper understanding of these experiences, I will have more success in designing human-nature connections.

Handbook of Environmental Psychology and Quality of Life Research

Fleury-Bahi, Ghazlane Enric Pol and Oscar Navarro. 2017. *Handbook of Environmental Psychology and Quality of Life Research*. Switzerland: Springer Nature. <https://link-springer-com.ezproxy.library.dal.ca/book/10.1007%2F978-3-319-31416-7>.

The Handbook of Environmental Psychology and Quality of Life Research aims to discuss research findings on environmental psychology and quality of life at various scales, including the neighbourhood, the city, the society, and the planet. Provided in the handbook are extensive bibliographic resources on various disciplines and fields of study surrounding quality of life research.

Keywords:

- Environmental Psychology
- Well-Being
- Quality of life
- Ecology
- Environment
- Sustainable
- Health
- Urban
- Residential
- Experience

This handbook will support the psychological aspect of my thesis investigation. Since I want one of my main focuses to be on designing spaces that support psychological and physical needs this book will be a fantastic resource to refer to with quality information.

Ecopsychology: Science, Totems, and the Technological Species

Kahn, Peter H., JR and Patricia H. Hasbach. 2012. *Ecopsychology: Science, Totems, and the Technological Species*. Cambridge: MIT Press.

This book aims to make the reader think about the effects scientific culture and technology have had on our daily lives and our connection with the environment. This book consists of multiple essays written by professors, researchers, psychotherapists, ethnographers, writers, doctorate students, paleontologists, and biologists contributing to the argument that science has led to the separation of the mind and the body, nature and spirit. They suggest that we must find our totemic self, kinship with the other, not by eradicating technology but by learning how to use technology in a healthy and helpful manner. Some authors also note that the traditional societies, such as Indigenous people that have experienced daily and innate contact with the land, are people we should be learning from as we journey towards giving nature a chance.

Keywords:

- Ecopsychology
- Physical
- Psychological
- Science
- Technology
- Environment
- Nature
- Indigenous

I have found that this book mirrors my thoughts and values surrounding architecture and the environment. This book will be very helpful when describing these thoughts as it has provided me with a new set of terminology that will help me write my thesis. Not only has this book helped me in describing my thoughts and values, but it has provided me with new perspectives on how technology can reunite the kinship between humans and nature instead of separating it. This has allowed me to think of architecture and the environment in a more positive light.

Quotes

Ecopsychology: Science, Totems, and the Technological Species

“The topophilia hypothesis represents...a proposed engagement) of evolutionary psychology and ecopsychology, offering a model of how a built-in bias to bond with nonhuman nature may have arisen within the human lineage” (Kahn and Hasbach 2012, 33).

“Topophilia, an innate propensity to establish affective bonds with local nature, may have evolved to aid in the learning and sharing of knowledge by fostering an affiliation with place” (Kahn and Hasbach 2012, 32).

“For example, Richard K. Nelson (1993) writes that according “to Koyukon teachers, the tree I lean against feels me, hears what I say about it, and engages me in a moral reciprocity based on responsible use” (Kahn and Hasbach 2012, 6).

“Ecopsychologists can bring forward these beliefs in at least two ways. In one, the natural world is imbued with supernatural qualities. In a second, experiences in nature lead to transcendental experiences and knowledge, which then becomes a form of transpersonal ecopsychology” (Kahn and Hasbach 2012, 6).

“The [5] orientations [of ecopsychology] also sometimes differ in their ontological and epistemological commitments. For example, the transcendentalist view necessarily commits (1) to the existence (ontology) of a spirit world that exists beyond the material world, (2) perhaps to the existence of parts of the self (such as the soul) that continue to exist beyond a person’s physical death, and (3) in terms of epistemology, to intuitive ways of accessing such knowledge” (Kahn and Hasbach 2012, 6).

“...much of our affinity with nonhuman nature--from pets to houseplants to mountain vistas--may not stem from an inherited desire to affiliate with life generally, as postulated by the biophilia hypothesis, but rather from an innate propensity to bond with local place. Similarly, the commonly observed human bias toward forming emotional connections with the places we inhabit--from forests and farmlands to urban environments and prison cells (Tuan, 1990)-- could be derived from an ancient genetic bias to form affective bonds with our immediate surroundings” (Kahn and Hasbach 2012, 38–39).

“...architecture and landscape design should follow in the tradition established by Frank Lloyd Wright, with the built environment forming an extension of the surrounding natural environment to foster a strong sense of place” (Kahn and Hasbach 2012, 40–41).

“As a species, we are both natural (that is, of the earth) and cultural (deeply intertwined with technology). We find ourselves early in the 21st century as an innately topophilic, sensuous species disconnected from our natal places and asked to adapt to globalized sameness. If we are to achieve the “great turning” (Macy, 2007) and reinsert humanity inside nature, we must buck the homogenization trend and connect in meaningful ways with our local places” (Kahn and Hasbach 2012, 45).

Ecopsychology: Restoring the Earth Healing the Mind

Roszak, Theodore., Mary E. Gomes and Allen D. Kanner. 1995. *Ecopsychology: Restoring the Earth, Healing the Mind*. Berkeley: Counterpoint.

This book addresses concepts of mental health and the environmental movement. A collection of essays analyse human psychology and ecology and their connection to each other, which forms the field of Ecopsychology. These essays seek to explain why western society is disconnected from nature, and it proposes how humans might heal their relationship with nature.

Keywords:

- Ecopsychology
- Psychology
- Ecology
- Soul
- Mind
- Earth
- Nature
- Relationship

In this book it mentions several addictions that humans have, capitalism, industrialism, consumerism, technology, etc., and how adults in an industrialized society are displaying characteristics of autism. Some of these characteristics include: “qualitative impairment in reciprocal social interaction” and a “restricted range of interests” and “obsessive routines” (Roszak, Gomes, and Kanner 1995, 59–60).

This is something I can feel in my soul. I do not feel like humans are meant to be a part of a monotonous daily routine and I know this when I take the time to observe my surroundings. Everyone is moving so fast that no one questions these addictions. I can see that people are lost, irritated, and defeated. I think we need to recover from these addictions by slowing down and re connecting with nature.

Quotes

Ecopsychology: Restoring the Earth Healing the Mind

“Moreover, an individual’s harmony with his or her “own deep self” requires not merely a journey to the interior but a harmonizing with the environmental world” (Roszak, Gomes, and Kanner 1995, xix).

“Psychology always advances its consciousness by means of pathologized revelations, through the underworld of our anxiety. Our ecological fears announce that things are where the soul now claims psychological attention” (James Hillman, *The Thought of the Heart and the Soul of the World*) (Roszak, Gomes, and Kanner 1995, 5).

“In Shepard’s view the ecocidal habits of our species are far from a contemporary aberration on the part of industrial society. He sees them as rooted in a form of “ontogenetic crippling” that reaches back to the invention of agriculture—the crucial point at which human culture achieved a false sense of separation from the natural habitat” (Roszak, Gomes, and Kanner 1995, 21).

“Such a something could be simply greed. Maybe the whole world is just acting out the same impulse that brought an 1898 cattlemen’s meeting in west Texas to an end with the following unanimous declaration: “Resolved, that none of us know, or care to know, anything about grasses, native or otherwise, outside the fact that for the present there are lots of them, the best on record, and we are after getting the most out of them while they last” (Hervey Kleckly, *The Masks of Sanity*) (Roszak, Gomes, and Kanner 1995, 22).

“Among those relict tribal people’s who seem to live at peace with their world, who feel themselves to be guests rather than masters, the ontogeny of the individual has some

characteristic features. I conjecture that their ontogeny is healthier than ours (for which I will be seen as sentimental and romantic) and that it may be considered a standard from which we have deviated. Their way of life is the one to which our ontogeny has been fitted by natural selection, fostering cooperation, leadership, a calendar of mental growth, and the study of a mysterious and beautiful world where the clues to the meaning of life were embodied in natural things, where everyday life was inextricable from spiritual significance and encounter, and where the members of the group celebrated individual stages and passages as ritual participation in the first creation" (Roszak, Gomes, and Kanner 1995, 26).

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