

decode

we must decode what it means to live in community to avert a housing crisis

decoding density for community is a **social action**

individual ownership -----> public housing

Introduced boundaries compromise the potential of the land and society.

When land is surveyed and cut up into parcels, divided and sold off; a select few profit. Indigenous worldviews are not predicated upon ownership of land - but built upon community.

The **land** is transformed into individual commodities. We must embrace the inherent strength of **community**.

we must decode our relationship with resources to avert an environmental crisis

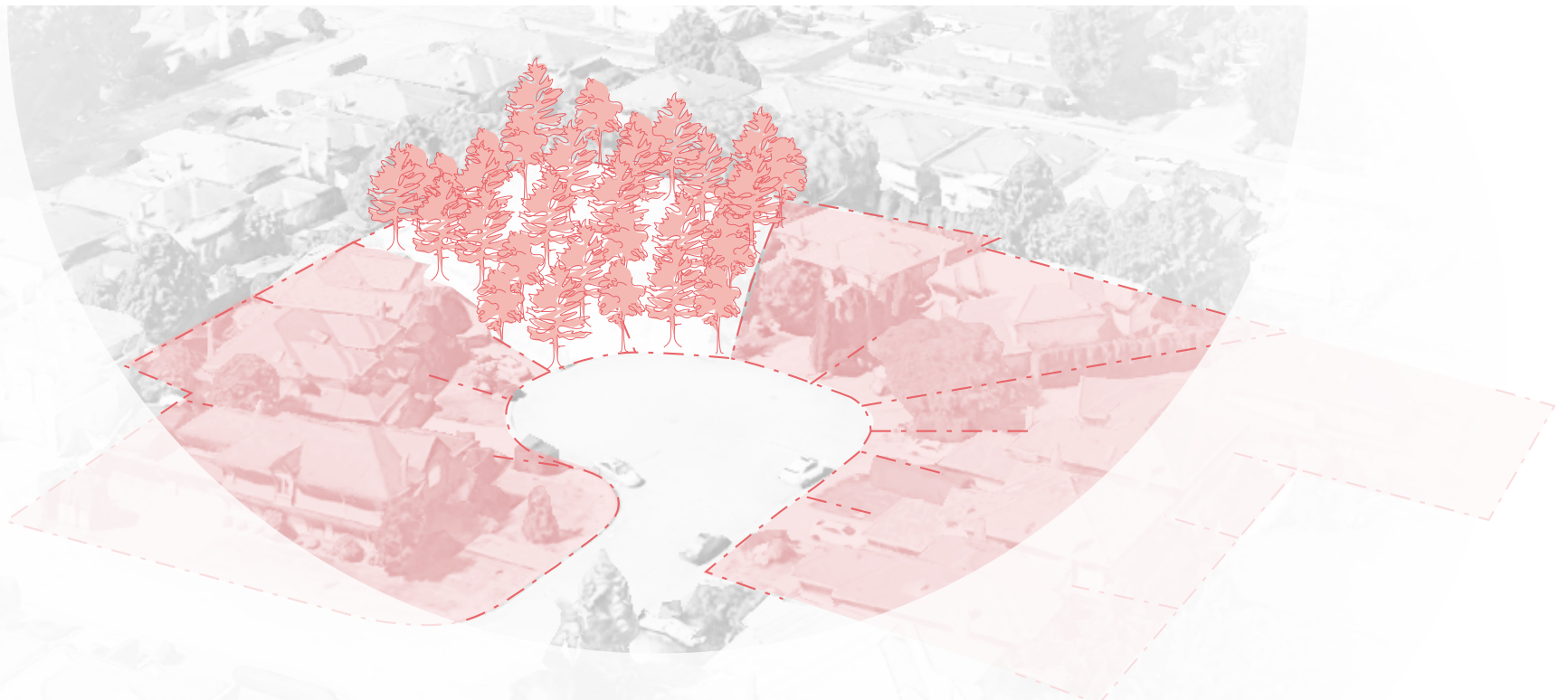
decoding density for sustainability is an **ecological action**

structural round timber <----- milled lumber

Divided segments compromise the structural potential of the material.

When a tree is felled and milled into lumber its integrity is compromised. A log in its purest form has greater structural capacity than the dimensional product that is milled.

The **tree** is transformed into individual commodities. We must embrace the inherent strength of **resources**.



problem

Segmentation of communities compromises the potential of land & society

Canadian building codes and practices are rooted in a political and financial system that is creating products for a market, and instruments of investment. Looking for technical solutions to improve housing in a system that is inherently **flawed** will not result in livable solutions.

By taking a problem that is political and making it a technical one - we have made it palatable to the existing societal norm. Technical solutions to reducing the cost of housing usually result in greater efficiencies; smaller living and common spaces, lower net to gross ratios of a building and they may also result in lower construction costs when minimum building code standards are relaxed. The result is that we end up with smaller and less robust homes in the race to the bottom. We already hit bottom some time ago and communities are suffering for it.

The delivery of housing as a commodity requires its process of production to be as standardized and uniform as possible. We sell housing by the pound and there is no incentive to make it of any quality other than the barest minimums set by building codes and CMHC minimum standards. Further, parsing land into small pieces, to be owned individually, has reduced the potential value of that land to society. Our housing needs places for inhabitants to be neighbourly. The single-family home of Neighbourhood Site 'B' is the antithesis of this.

People should feel connected to their neighbours, and their neighbourhood. We need buildings that offer generous communal spaces, such as communal laundries, gardens and outdoor areas. We must provide conditions for connection to take place; and create opportunities to meet neighbours and develop community.

Our social norms and the commodification of land and housing is what needs to be decoded.

Segmentation of resources compromises the potential of a material's utility

The design values for structural capacity of round wood of northern species listed in the document: CSA O86:19, Engineering Design in Wood, states that the round wood tree is much weaker than sawn wood of the same cross section. This is clearly an **inaccuracy**.

The forestry and mass-timber industry in particular has largely overlooked low-tech timber technologies such as structural round timber (SRT) – looking instead to high-tech engineered wood solutions such as glue laminated and cross-laminated timber with a total embodied carbon many factors more than the equivalent SRT. Additionally, design values for black spruce (a species that ranges across Canada) are nonexistent, making the implementation of local material sourced from Indigenous wood harvesters across Canada more difficult.

The practices and perspectives of wood use in Indigenous cultures within Canada has also proven the strength and efficiency of SRT. Mi'kmaq elder Peter Poulet summarized the approach of many Indigenous cultures. He argued that one would never consider making a smaller rope by sawing or shaving down a larger diameter rope. The structural integrity of trees comes from their fibers running continuously from end to end in concentric circles, the most structurally efficient configuration, optimized by nature.

From this perspective, the extraction and manufacturing processes in contemporary wood-frame construction is problematic. The relative strength of milled lumber is significantly compromised compared to SRT and far more carbon intensive to produce. We must aspire beyond a specialized and technocratic role of industry.

Our housing industry and the commodification of limited resources is what needs to be decoded.

solution

Decode Social Norms.

The solutions are not new or untried.

Prioritize conditions that foster a sense of collective ownership and build community

Civic ownership of properties

Rent controlled properties

The social norm of living in social housing is new to **Canada.**

The most expedient way to change a system is to legislate it. The “housing crisis” could be solved if we collectively chose to make housing a truly social endeavour and human right (similar to healthcare and education in Canada) and not a profit centre for investors. It’s not about moving the goal posts of home ownership to within more people’s reach, it is about removing them altogether. Owning a home should not be a sign of success or define one’s class. Homes are places to be proud of, to build families and communities, but not define our socio-economic status

The design product is not novel or never before seen.

It could be fantastic or very “normal”. This is the idea of a new public housing. A new Canadian Dream - a dream of a community and shared existence - not a single family residence in isolation in suburbia.

Good housing should be equitable housing. The housing industry can and must do more to address housing inequality and insecurity. Priority should be given to providers that can give affordable, long-term leases to vulnerable members of our community. This principle should guide us housing solutions.

The product:

A diversity of people living in a mid-sized building. All ages, ethnic diversity, and a range of socio-economic strata - living together.

Decode Industry Norms.

The solutions are not new or untried.

Utilize decades of existing research toward the scaled commercialization of structural round timber (SRT)

Support Indigenous perspectives

Utilize resources more wisely

Black spruce (*Picea mariana*) has a wide range across **Canada.**

Northern Black Spruce is a slow growing tree with tight, straight grain resulting in high strength; as a result its inherent structural characteristics that could be better utilized by the Canadian wood industry. SRT is stronger in bending than an equivalent cross-sectional area of milled lumber due to the wood fiber continuity and preservation of grain orientation.¹ In milled lumber, wood fibers are disrupted and discontinuous, creating stress concentrations and initiate fractures, while wood fibers in round timber flow continuously around knots on the surface.

The design product is not novel or never before seen.

With improvements in grading methods that can result in significant increases in design values; structural round timber will become a cost-competitive mass timber product alternative.

When less strength is needed, a smaller diameter tree or sapling is used, employing its inherent structure efficiently. This principle guided the construction of Indigenous longhouse structures of the Pacific Northwest. This principle was well familiar to Indigenous builders in Canada’s boreal forests.

The product:

Develop appropriate design values with physical testing to justify design criteria for building solutions with round wood black spruce.

1. Wolfe, R. (2000) Research challenges for structural use of small-diameter round timbers. Forest Products Journal, 50(2), 21-29.



Community Perspective

(Who are we building for and why are we building this way?)



Indigenous geographical names³



Indigenous lands³



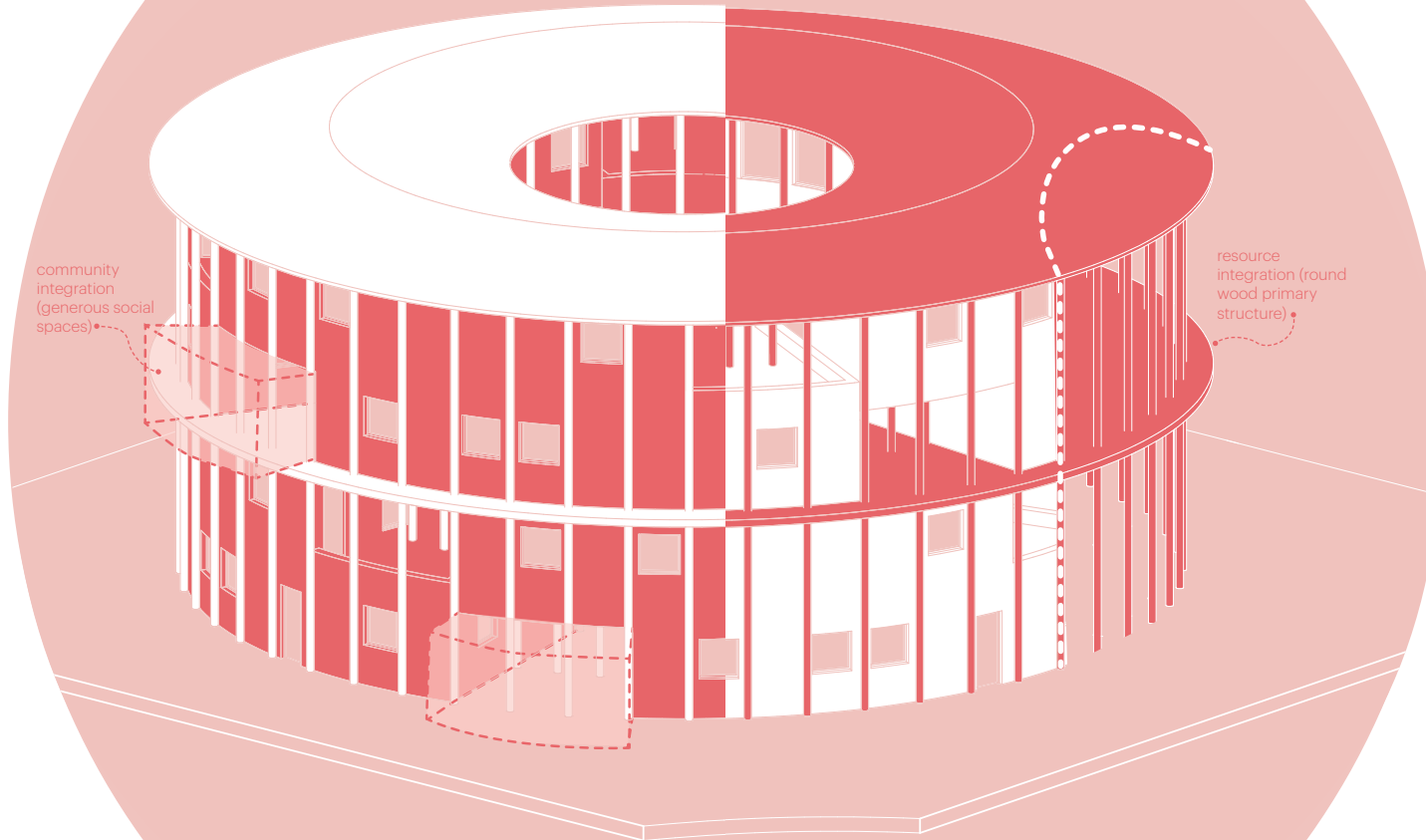
major suburban development⁴

prototype

Etuaptmuk: Two-Eyed Seeing

Two-Eyed Seeing refers to learning to see from one eye with the strengths of Indigenous ways of knowing and from the other eye with the strengths of Western ways of knowing and to using both of these eyes together.²

- Mi'kmaw Elder Albert Marshall



community integration (generous social spaces)

resource integration (round wood primary structure)

The prototype is an exploration of the traditional and contemporary alignments of structural round timber construction to broader national issues such as ecology, regionalism, colonisation and settlement. By examining Canada through the lens of this underutilized construction typology, relationships between traditional and Western knowledges emerge as a working prototype.



Resource Perspective

(What are we building with and why are we building this way?)



black spruce cover for Canada³



forests land cover in Canada³



managed forests in Canada³

2. Bartlett C, Marshall M, Marshall A. (2012). Two-eyed seeing and other lessons learned within a co-learning journey of bringing together Indigenous and mainstream knowledges and ways of knowing. *Journal of Environmental Studies and Sciences*, 2, 331-340.

3. Map Source: Canadian National Forest Inventory; Website: <https://nfi.nfis.org/en>

4. Map Source: Canadian Suburbs Atlas; Website: schoolofcities.utoronto.ca/research/canadian-suburbs-atlas/

community

At the heart of the development is a model built upon civic ownership and funded through a not-for-profit approach.

The approach embraces an understanding that people need to feel connected to their neighbours. Critical to this is the shared common spaces that offer unique moments which we hope one day become the norm in multi-family mid-rise housing developments.

The prototype developed is illustrative, it is not a final concept. It shows the potentials of what collective living can look like and how individuals can begin to rewrite society's compulsion for home ownership.

Key to the success and wide adoption of this perspective:

De-stigmatize rental housing. Normalize it, and make it a sustainable way to live.

Adaptable to the changing social 'codes'. The standard house hold is more diverse than ever before and design needs to allow for this diversity.

Housing that is truly multi-generational. Flexible units adaptable for all stages of life.

Provide the platform for collective ownership of land and rent controls that ensure stability and increase housing security.

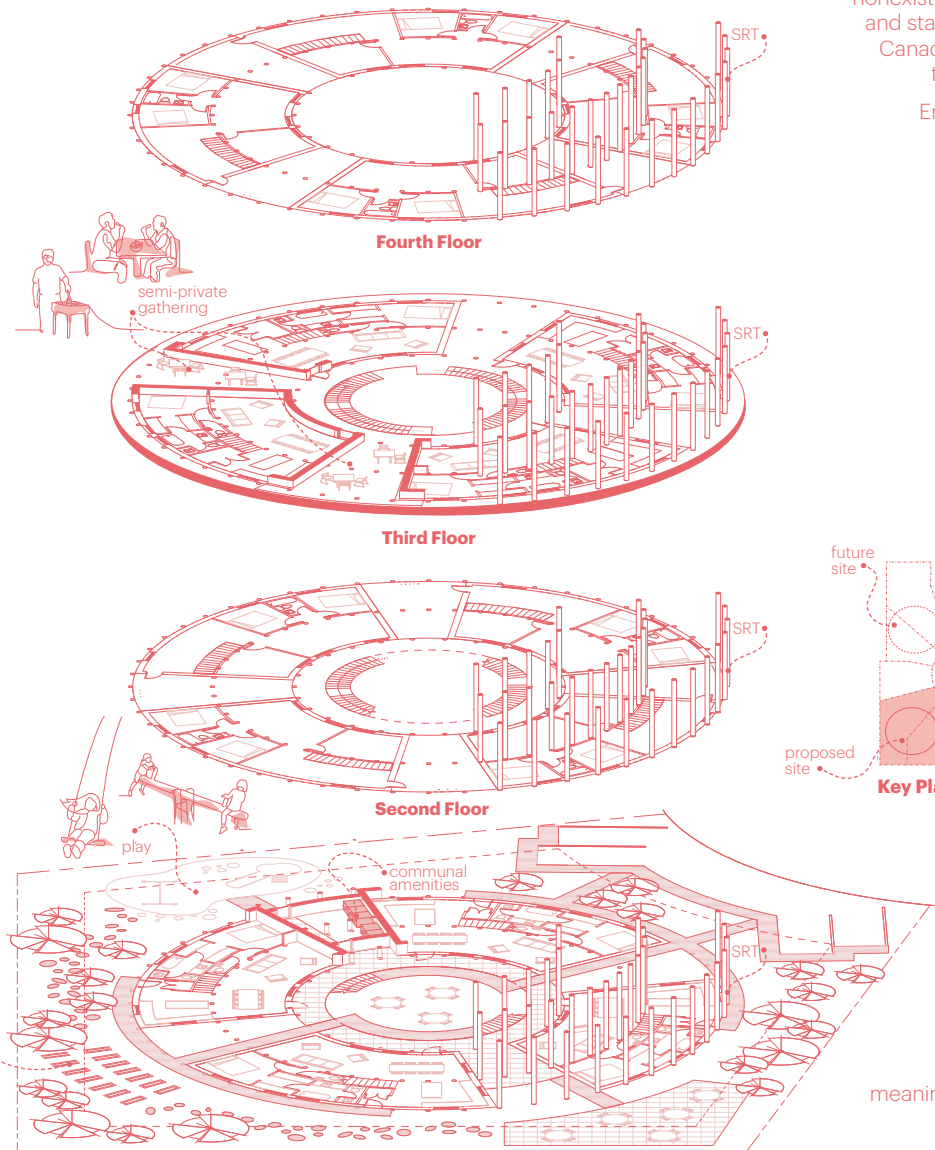
Provide a space for people to be proud of, to personalize, to socialize in, and to live in.

Treat housing as a human right.



community gardens

prototype



Main Floor - Site Plan

resources

Currently round wood black spruce design values are nonexistent in Canadian structural design codes and standards. This is an issue that impacts the Canadian forestry resource management and the timber industry. We can change this.

Enhanced design values can be achieved by in-grade testing with point estimator cohorts and general improvements in grading structural round timber, improving the likely adoption of this alternative mass timber product. This will unlock low-value black spruce logs, providing markets to an alternative structural product. A product that supports healthier forest ecologies and carbon sequestration.

Key to the success and wide adoption of this perspective:

Address Canadian structural design codes and standards shortcomings to unlock an underutilized resource and support healthy ecologies and national climate plans and targets.

Develop design values with point estimator sized cohorts and physical testing to justify design criteria for round wood black spruce by an IAS accredited test lab and third party.

Utilize these design values to bring advanced solution to design and construction.

Utilize First Nations companies in the sourcing of black spruce to construct meaningful structures rooted in traditional and contemporary contexts across Canada.

community + resources

Re-evaluate Canadian societal 'code' valuing home ownership using public housing providing choice, community and quality design to influence a societal shift.

The most expedient way to change a system is to legislate it. Housing should be a universal right and a social endeavor funded through a not-for-profit approach.

With common-spaces and public amenities the proposal promotes formal and informal interactions between the public and residences.

The use of SRT will lower the carbon footprint and reduce maintenance costs. The design of the openings and courtyard maximize natural ventilation.

Prioritize conditions that foster a sense of collective ownership and build community

Provide a replicable model of housing driven by civic ownership and rent controlled properties

de-code Design values for black spruce (a species found across Canada) are nonexistent. Our solution promotes the testing of Black Spruce and revisions to CSA-086:19

affordability The use of SRT requires less resources compared to milled dimensional lumber, thus reducing the manufactured costs required to get an end product.

community Sourcing and harvesting of Black Spruce in a sustainable way should be a collaboration between Industry and First Nations.

climate To create a climate resilient industry we must diversify and find efficiencies. When Black Spruce SRT is used in its raw form it reduces manufacturing.

impact Support indigenous perspectives and utilize resources more wisely.

Provide a replicable example of the integrated use of a national resource in a manner that supports healthy ecologies and Canada's climate plans and targets

