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## Ski2LRT uses Systemic Design to Transform Winter Community in Edmonton

### Abstract

Edmonton is very lucky for many reasons. Light Rail Transit (LRT) and extensive green space are just two reasons. During the winter months, however, the green belts that surround our neighborhoods and run along our utility corridors become white belts. *We've seen attempts to battle the cold and recreate warm-weather commuting: increased ped-ways, large malls, heated bus terminals, and other mechanisms.* Yet the more we treat winter as something to be accommodated and worked around, the more we retreat, hibernate, and use our cars, the greater our negativity about winter. And so the question remains: How can we shift our thinking around winter and reclaim our abundant public space and corridors in a way that is inherently meaningful for Edmontonians?

What if we could ski to work, or to the LRT? Systems mapping, using rich picture as a design method, helped a group of community enthusiasts understand commuting practices and available green space (white space) in the area. What we found was a vast amount of interconnected white space linked to the train line. The group used causal layered analysis to better understand the systemic causes, worldviews, and mental model underlying why these two transportation systems had never interacted before. As the group dove into an understanding of these two systems, what became clear was a common link around a broader overarching system: winter. The group framed a new mental model for how to tap into this potential. From this premise, a participatory, community based initiative, #Ski2LRT, was formed.

#Ski2LRT launched as an emergent movement that attempted to shift mindsets around three concepts: Winter, cross-country skiing in urban settings and LRT usage. A simple Facebook page was designed and a cross-country ski rack was placed at the Century Park LRT station. What happened next and the unintended ripple effects went beyond the original intention. It was unknown that neighborhood ski enthusiasts felt isolated. Unintentionally, this initiative connected a community and gave like-minded individuals a space to convene. This initiative and shift impacted the identity of the city and a new *municipal group called "SkiWay" formed, connecting the ski clubs in the city, alongside urban transportation initiatives, to reinvigorate cross country skiing in the city.*

### Introduction

Climate change and sustainable transportation agendas have become big business for policy makers globally. Transport accounts for "26% of global CO2 emissions and is one of the few industrial sectors where emissions are still growing" (Li, 2009). Pressure is increasing to tackle the complex systemic issues of climate change via sustainable transportation. But with emissions

still growing in spite of international policy efforts, what will it take to make a real impact? Climate change and transportation are sophisticated and complex issues. Each possesses a layered history characterized by incremental change coupled with unintended consequences, which are further influenced by our ever-changing, emergent human dynamic. Our value judgements, worldviews, and normative societal influences are in constant flux, shaping our thinking and our behavior. Attempts to tackle these complex problems need to be as dynamic and adaptable as the actors that form and sustain the current legacy—the users and navigators of the system.

Climate change alone may not be impetus enough for system users to change their behavior, let alone their values and beliefs. As a normative practice, driving vehicles exposes people to the same set of stimuli every day, which leads to a phenomenon known as hedonic adaptation (Katherine Jacobs Bao, 2012). Driving vehicles thus becomes a compulsive practice that sets a baseline of perceived happiness and comfort. But this level of happiness is intrinsically set regardless of positive or negative circumstances or life changes. Opting to take public transportation might render the same level of happiness as driving over time.

Changing perception of what is prevalent and reinforced either through social or economic structures is not simple and would need to involve a shift in systemic values and aspirations, changing attention and interpretation of a situation. Systemic design provides alternative perspectives, methods, and tools to help appreciate complexity and discover where solutions might support systemic shifts in values, goals, and perceptions about concepts such as climate change and transportation.

### **A Local Approach**

The following example within the city of Edmonton, Alberta, Canada gives insight into how a local community group applied its understanding of systems and interrelationships within a set context and human scale to provide an alternate mode of commuting. The group's intention was to change commuting practices under the assumption that emissions from driving could be reduced in winter if people in the suburbs could begin skiing.

Local policy shifts on energy and climate change emphasized incentivized mechanisms, and recommendations targeting energy usage, a citizen's panel on Edmonton's Energy and Climate Challenges discussion report (Pembina Institute and HB Lanarc, 2013) briefly touches on active transportation but mostly focuses on transportation in conjunction with energy usage. Recommendations from this report discuss changing the "energy mix" outlined by 6 recommendations. A final report (Coates, et al., 2013) summarizing further advice on these recommendations continued down the trajectory of fuel/diesel usage directly linked to vehicles through the following suggested actions:

1. Encourage the adoption of fuel efficient vehicles.
2. Support fleet fuel management programs.
3. Support companies providing electric vehicles, natural gas vehicles, biofuels, and associated services.

4. Encourage, incent, and eventually require the electrification of loading spaces, truck stops, and garages.

Additional policy direction looks at transportation linked to health and recreation (Edmonton, Active Transportation, 2009) and transportation in connection with movement of goods, services, people and urban form, entitled “The way we move” (Edmonton, The Way We Move, 2009). And while the policy context explores a somewhat cause and effect relationship between climate change and transportation, directly linking to fuel/diesel usage, further exploration as to the intersection of these policies from a systems perspective is of interest to the Ski2LRT initiative. Areas of impact or places where systemic shifts might happen should be explored outside the immediate focal point of a system. Cause and effect solutions assume a certain degree of linearity to a problem, when in fact solutions might be found outside the immediate context or system that is traditionally perceived to have strong boundaries.

Change happened over time, upsetting the norm and providing an alternate look at the status quo.

### **The City of Edmonton: Important context**

A winter city of around one million, Edmonton is relatively flat and spread out, burdened by urban sprawl, and surrounded by several suburban communities. One central train line runs through Edmonton alongside approximately 27,000 acres of parkland (111 km<sup>2</sup>), the highest area of parkland per resident in the country (Edmonton Tourism, 2008).

Due to the city’s urban sprawl and some of the lowest gasoline and diesel prices in the country, cars are Edmontonians’ primary mode of transportation (Alberta, 2009). The city is fairly spread out, there are limited routes and the transit system has long wait times with complicated transfer options. Most residents do not regard the local bus network as a viable option for transportation. “More than 80% of commuters travel by personal vehicles in the city and the region, with the significant majority having only a single occupant” (Alison Bailie, 2010) Edmonton is not necessarily seen as a bike-friendly city for work; existing bike paths are seen mainly as recreational, although that is beginning to change.

Edmonton’s burgeoning Light Rail Transit (LRT) is undergoing long overdue expansion, bringing high-capacity public transportation—and an alternative to buses—to new corners of the city. However, many residents live outside walking distance to an LRT station, requiring them to either drive or bus. During the often bitterly cold winter days, the trip merely to the LRT can seem especially daunting. One thing winter accomplishes is transforming Edmonton’s extensive green spaces, which surround neighborhoods and run along utility corridors, into white belts. These white belts are usually ignored until spring.

There are many enthusiastic winter-sport participants in Edmonton, and cross country skiing is growing in popularity every year. Communities are beginning to spring up around this sport. For some it is mainly recreational, with amateurs seeking out alternative space and opportunities to cross country ski in unspecified areas around the city; for more professional skiers, it is a deeply ingrained part of their daily lives. Both the amateur and professional ski communities

are small with growing numbers, seeking opportunities to become more widespread and integrated into Edmonton's identity.

### **What if we could ski to work, or to the train?**

A few individuals convened at a micro funding event aimed at funding small community initiatives. As ideas came to fruition through local projects that were presented, the group perused the difficulties of winter commuting, they began brainstorming and griping about the impending battle with long, snow-covered commutes. One individual expressed her frustration of living so close to an LRT station and not being able to access it because of poor bus schedules and full park-and-ride lots (especially in the winter).

The group soon realized a new way to commute without added infrastructure. A community project began to surface, looking at connecting local man-made ski tracks to the central LRT line. Through an exploration of systems, perceivably different but somehow interconnected, the group demonstrated how changing perspectives and discourse can uncover opportunities and a potential new reality.

### **Systems and Systems thinking**

Using rich picture brainstorming and causal layered analysis as the main technique and method to understand current state and the human systems that shape reality given this small local context, the community group began exploring the systems of winter, health, and transportation by drilling down into four layers of reality that shape our thinking and experiences; litany, systemic structures, worldview, myth/metaphors. The following observations surfaced.

As an overarching system, winter has an interesting discourse. A juxtaposition of beautiful and sunny with cold and dark surfaced. Societal and economic structures supporting primarily the negative aspects of winter. As this dichotomy in thinking surfaced, the community group framed winter as a problem, an idea that drove their thinking. The more winter is treated as something to be accommodated and worked around, the more people retreat, hibernate, and use cars, the more a negative worldview of winter is reinforced.

As a peripheral system, health connects to winter, where on the surface, winter sports emerge as cold climate options for active transportation. Digging deeper, exposes the flip side of winter and health where systemic structures support indoor subsistence lifestyles and a continuation of the negative worldview of winter. There is a never ending flow of new consumption lifestyles for outdoor recreation. These activities and devices begin to overshadow what is naturally available, for more predictable options, involving indoor locals and expertise. Energy consumption here is also linked to climate change as this system of indoor consumption evolves and grows. What about the few fun options winter city dwellers have left? Skiing or tobogganing? Some of these beloved past-times might unfortunately be too dangerous.

Tobogganing has recently been banned in several places across North America, including Hamilton, Iowa, Nebraska, and New Jersey. Health within the context of winter, might to some

assume a net-deficit and a layer of reality or underlying worldview where safety might even be compromised.

When transportation was explored in the context of health and winter, vehicles and associated inconveniences emerge as litany (window scrapers, winter tires, and emergency breakdown kits). Entire infrastructure systems support the vehicle as a main mode of transportation.

The more the vehicle and its enabling features becomes the focal point, the more we presuppose driving over any other alternative. In fact, alternatives may not exist in our consciousness. Driving and the vehicle become normative, our discourse, and we may not think outside that system. Victor Frankl, psychologist and neurologist explains: “Between stimulus and response, there is a space. In that space is our power to choose our response. In our response lies our growth and our freedom” (Frankl, 1946).

So much of how we perceive the world relates to how we show up and behave within that system. Our mental model embodies our values and goals; through these models we interpret what surrounds us in circumstance and event. Interactions and various stimuli are presented to us and digested through our mental model. If for a moment we can pause and select our response, how might our behaviour change and what potential new mental models may we uncover?

Within the context of the three systems we’ve described, we know an alternative mental model exists, so how might we elicit change in thinking and generate openness to new possibilities? When we understand the systems together, as a whole, a pattern emerges. Technology emerges as a tool, enhancer, and enabler, whether to make a circumstance simpler, easier, faster, or timelier. Over time, however, technology can also make things complicated. This effect can best be illustrated with an orange.

Options to consume an orange used to consist of simply peeling and eating it, no questions asked. Over time, with enhancements and technologies, multiple options developed, some seeping into our broader patterns for consumption and forming normative practices. Let’s take the knife as an example. As a tool, a knife can easily be transferred to the act of consuming an orange. But alongside that knife, you might also add a cutting board, then a plate, perhaps you’ll need napkins because things get messy, followed by the need to wash dishes. Technology is generative, yet perpetuated by our response as the hedonic treadmill sets its course. Vehicles are no different; the generative evolution of the vehicle and our need for mobility leads us to where we are today. Let’s presuppose we introduce cross country skiing as an alternate mode of commuting to access the LRT. Might behavior change? Will people adopt or adapt? The following comments came from initial conversations around the idea as the project first emerged:

“I can’t ski, my lungs will freeze.”

“Where will I leave my skis?”

“How will I cross the street at intersections?”

“It’s too difficult.”

“I’ll never ski to work!”

Mental models die hard. Knowing these perceptions were likely the result of an existing mental frame that needed to be changed, there was only one option to determine the validity of this idea: try it.

### **Learning by doing**

A trial run took place at the local pub near the train station, where a few separate groups skied in from neighboring areas. This first attempt was surprisingly successful. What appeared from the street to be boundless mounds of deep snow with un-traversable, steep hills, was skied with ease. An anticipated journey of 60 minutes took only 30. No one's lungs froze, the pub granted us access to their outdoor patio to park our skis, and intersections became known as simple "portages" that required less than 30 seconds to mount/dismount one's skis. The group's consensus was that ski commuting was not only possible, but easy.

From this premise, a participatory, community-based initiative, #Ski2LRT, was formed. #Ski2LRT launched as an emergent movement that attempted to shift mindsets around three concepts: Winter, cross-country skiing in urban settings, and LRT usage. Although energy consumption and climate change were drivers, they did not form the impetus for change simply because the connection between action and result (skiing and witnessing and impact in GHG's) was intangible. A simple Facebook page was designed, with participatory ski track setting, open-sourced mapping, and one simple goal: to build a ski rack at Century Park LRT station (the southernmost station in the city). The rack was to be the stimulus for change, an attempt to shift Edmontonians' mindset and present a new choice that would ultimately change the way we think about winter commuting and the season itself. Six months later, a cross-country ski rack was placed at Century Park LRT station with the support of local community leagues, the Southwest Area Council, City of Edmonton, and others.

The intended outcome was to introduce cross-country skiing as an alternate mode of transportation and shift the way winter is understood. The unintended ripple effects went beyond the original intention. It was unknown that neighborhood ski enthusiasts felt isolated. Unintentionally, a crowd-sourced community map that allowed for participatory online track setting connected a community and gave like-minded individuals a space to convene. This initiative and shift impacted the city's identity and a new municipal group called "SkiWay" formed, connecting the city's ski clubs alongside urban transportation initiatives and reinvigorating cross-country skiing in the city. #Ski2LRT is became part of policy design for Edmonton's Winter City Strategy, introducing the term "white-of-ways" to the city's urban way finding initiative.

#Ski2LRT continues to illicit media attention and attract new skiers, including those new to the sport. While the small, community-based initiative continues, it is unclear how this initiative has seeded long-term changes in commuting practices or broader influences connected to climate change. Both the community and the map continue to evolve.

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