Major Term Project: Livable Cities of the Future

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Abstract

This paper aims to explore a future community situated between the Willowbrook Connector and Muford Crescent. Through innovative designs and investment in **climate-friendly technologies**, this new thriving neighbourhood – titled **Greenburb** – will be a lush area that is **transit-friendly** and a blueprint for cities of the future. To accomplish this vision, this paper utilizes design ideas from previous research papers by Khoo Teng Chye, Egerer et al., and Wang et al. to create reforms that will be implemented in Greenburb. In particular, this paper will discuss how mega blocks, traffic calming measures, rainwater collection, tree-lined avenues, and consultative forums will lead to **a cohesive, green neighbourhood**.

Keywords: Climate change, eco-friendly, green infrastructure, public transportation, pedestrian-centered, superblocks, mixed-use, climate resiliency

Table of Contents

Introduction

Through an analysis of previous literature on how cities are building sustainable living spaces, this research paper can flesh out how Langley can adopt certain policies. In an article by Khoo Teng Chye, the author explores how Singapore developed into a modern city by equally prioritizing economic growth, environmental protection and a high quality of life. The author says that environmental protection and economic growth are not necessarily opposed. The author gave an example of when a Japanese firm wanted to construct a petrochemical plant which caused concern among citizens about the environmental consequences. In response, Singapore said that they must abide by strict environmental guidelines, which they ultimately followed. Published in the journal *Innovation*, this certainly adds to the scholarly conversation about how we should structure cities to make them livable, friendly places to live. The article motivates city planners and activists by reminding them that the goals of economic development and protecting the environment are not opposed.

This study cements the Urban Studies 12 core learning objectives – that urban planning must balance political, economic, and social objectives – through an academic lens. This paper suggests using Singapore as a model for emulation in urban planning, as a result, could suggest that many of the decisions made by Singaporean urban planners could be replicated in a Canadian setting such as promoting economic activity alongside environmental considerations. Although this article has an inherent Singaporean bias by only showing one example of successful urban planning, it has been peer-reviewed and is widely accepted by the academic community. This article will aid the research paper in examining ways to mitigate the environmental impacts of industry.

In addition to research by Chye, another article by Wang (year) discusses road infrastructure and how climate change affects them. In this article, the authors conducted a systematic analysis of previous literature reviews to determine how roads and railways have been adapting to climate change. The authors explicitly state the research paper was to investigate ways for infrastructure to adapt to climate change rather than mitigate the effects climate change has on infrastructure. This specific distinction leads the researchers to accept that climate change will affect transportation; instead of trying to stop it, they want to find a way to build infrastructure that can withstand damage. Through their research, the authors found that as climate change continues to worsen extreme weather conditions, there will be severe economic consequences.

Although this article does not give a solution on how we can construct more resilient public transportation and infrastructure, they underscore the importance of creating new livable cities with building resilient and strong infrastructure in mind. By highlighting how there is a significant gap in knowledge of how we can build resilient structures it incentivizes this research paper to find innovative solutions.

In understanding the importance of building climate change resilient communities, this research paper incorporated an article published in the *Nature Portfolio Journal Urban Sustainability,* where the authors delve into ways cities can adapt to climate change through a comprehensive societal restructure under the acronym SETS (social-ecological-technological-systems). Through an analysis of current methods used to adapt to climate change, the researchers found that often many low-cost effective climate adaptation strategies needed to be more utilized, with large infrastructure projects being preferred. For example, in Fiji, to adapt to rising sea levels, the town of Lami found that low-cost adaptations such as reducing coral extraction and replanting native plant species were viable strategies for

addressing rising sea levels instead of the high-cost building of new drainage systems and sea walls. Likewise, researchers also commented on how climate change adaptation could be an opportunity instead of an inconvenience. In Alcaldia de Medellin, Colombia, city officials instituted "green corridors" where roads were to be surrounded by trees and shrubs to cool the city, while also creating jobs for disadvantaged groups to be gardeners and technicians. As a result of the program, the city became more livable with cooler urban temperatures and reduced crime and poverty rates.

This journal article provided insight into how cities should utilize nature not just as parks but as tools to address climate change. As this article draws upon peer-reviewed research papers, their credibility is strengthened. This article helps inform this research paper how cities should be utilizing nature to create more livable cities rather than an inconvenience or an afterthought.

According to a report by David Roberts at the media site Vox, another perspective to create economic opportunity while reducing emissions comes from Madrid in Spain. In response to rising pollution levels that were beyond the acceptable EU limit, in 2013 Madrid implemented an Urban Mobility Plan to improve air quality in the urban core. Looking at other cities in Spain, Madrid found that by combining adjacent city blocks and closing traffic in the core of the block only allowing traffic to pass around the superblocks, congestion and noise pollution were reduced while the center of the city block was opened to pedestrian traffic and business. In a study referenced in the report, nearby towns that had implemented the superblock design recorded a 45 percent increase in pedestrian traffic in the superblock zone. Additionally, noise pollution decreased 55 percent, nitrous oxide emissions decreased 42 percent, and particulate matter decreased 38 percent.

Through referencing scientific data, the report by Vox is grounded in reputable literature. Likewise, accessing government publications lends additional credibility to the report. The clear aim of the report is to influence the viewer to have a more positive opinion about pedestrian-centered urban planning and to introduce the perspective of implementing superblocks to increase economic output and decrease pollutants. The report admits that the implementation of the superblock design may not be feasible in all cities given many cities do not use a uniform block grid system. Additionally, decades of redlining and highway construction through the urban core may prevent an effective implementation of the superblock design. The incorporation of this perspective helps inform the audience of multiple perspectives and challenges instead of only showing the positives of the design. Overall, this report is a balanced piece that contributes to the discussion of solutions to congestion and environmentalism in urban planning.

Method

Taking previous literature into account, the creation of a livable neighbourhood in Langley must meet several standards: climate-friendly infrastructure, pedestrian-centric facilities, and limited car use. By addressing these concerns, the end goal of creating a walkable and accessible city gets closer to the sustainable city living model where residents have all their needs within a 15-minute walking distance of their homes.

Taking inspiration from Barcelona's "superblocks' design, and UBC's pedestrian boulevard, Greenburb will implement pedestrian-only streets with a ring road that goes around multiple pedestrian streets (Figure 1; Figure 2). By eliminating curbside parking, and through traffic, pedestrians will feel safer. The goal of this is to have pedestrian traffic that encourages

the patronage of small businesses such as cafes, bookstores, and artisan shops that will be set up along these streets through a mixed-use planning scheme. Given that this neighbourhood is near Langley City, the Costco Wholesale centre, and a busy commercial zone, there will be a large customer base.

In addition to traffic calming measures, the streets will draw inspiration from Colombia's green canopy model to reduce the temperature in the neighbourhood. By planting large trees along walkways, the neighbourhood is more pleasant and encourages people to stay outside longer and visit more ground-level shopping. As a result, the pedestrian-dedicated streets that are lined with trees serve as an economic stimulant.

To further compound the climate-friendly policies, rooftops on each building will be installed with rainwater collection tanks which will be used for non-drinking water purposes such as washing and sewage. Greywater, defined as non-fecal wastewater, will be used to water the trees and landscaping in the neighbourhood. As water restrictions concern metro Vancouver residents, conserving and reusing water is a great way to be eco-friendly. Given that Langley's power generally comes from BC Hydro, a power company that generates power through hydroelectricity, the electricity currently being consumed is carbon-neutral and therefore a focus on conserving water is more pertinent which is why water collection tanks on the rooftops will be prioritized over solar panels for electricity generation.

a very smart initiative!

Results

With these measures in place, the hope is that 'Greenburb' can serve as a model for how the future of Vancouver and Canada should picture urban design. Through implementing a rainwater collection system, the disincentivization of cars, and the encouragement of mixed-use

zoning. Greenburb aims to be an environmentally conscious, yet economically powerful centre in Langley.

To achieve this, however, one must consider some limiting factors and biases that we need to be cognizant of to ensure the project is successful. For example, while this community is ostensibly committed to low-carbon living, its residents must be fully invested in leading such a lifestyle. Implementing interviews of the person's current living standards, and examining their life goals could help inform the selection process of who can live in the community. At the same time, to incentivize such living, there must be an economic incentive for prospective residents. Given this, there must be sufficient employment opportunities to sustain this community whether that be space for entrepreneurship and maintenance jobs reserved for residents. To compound this, the topic of affordability and social housing must be addressed. Contacting the government for environmental and social housing grants, could lower the cost of living for residents and make this an attractive place to live.

Discussion

The successful implementation of this vision could mean that affordability, business opportunity, and environmentalism are balanced and could be the future of a sustainable Canada. If this model proves economically solvent this could revolutionize the future of urban planning and zoning. The success of mixed-use planning in large communities would create a virtuous cycle of more residents, increasing investment, and a more receptive city council.

To ensure that these communities stay relevant and resilient structures, there would need to be further coordination between transportation authorities, job boards, and property developers to continue job creation in a high-transit corridor. This could imply in the future that commute times decrease and more time for families to spend quality time with each other.

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Appendix

Figure 1:

Barcelona superblock design. Traffic within the superblock is limited and pedestrians and cyclists are given priority (Roberts, 2017)

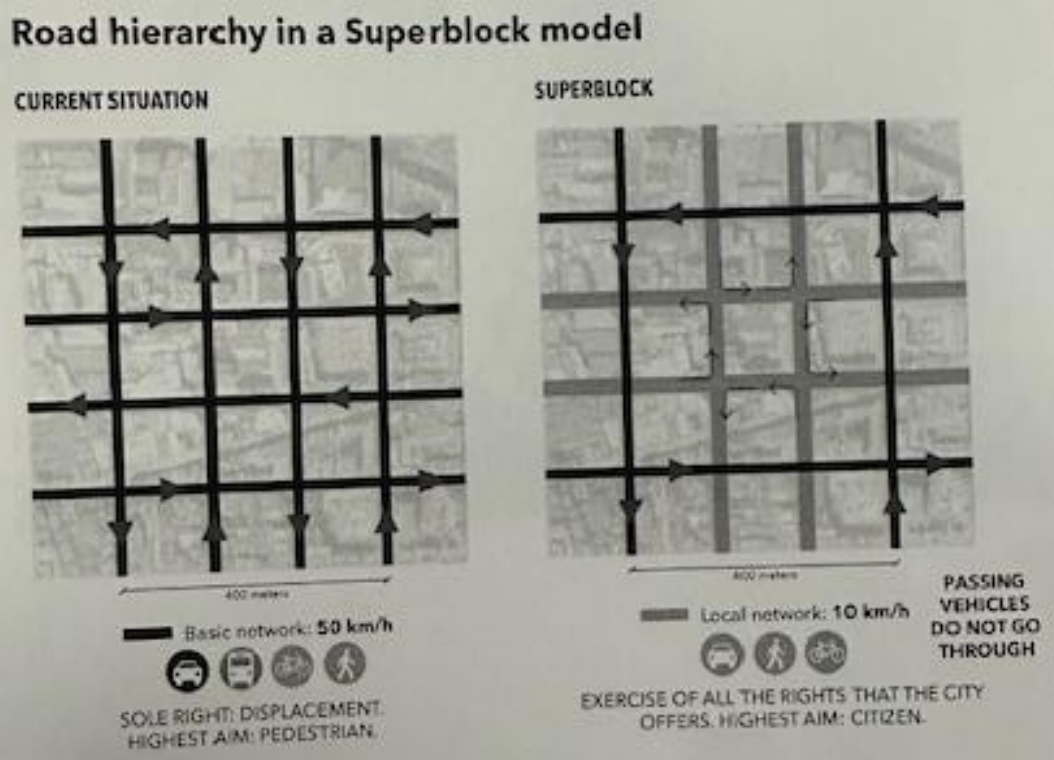

Figure 2:

UBC Main Mall: A walkable pedestrian-centered piece of road infrastructure that increases a sense of community and promotes community gathering (UBC Brand & Marketing, 2016)

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