Personal Study – Peter Busby

Peter Busby is a Canadian architect with a background in philosophy and a history of advancing sustainable design. Peter uses his two passions: protecting the environment and making a change, to influence him when designing a building. Busby claims he’s “always focused on sustainable design and simplicity" – perkinswill.com. In his book, Busby: Architecture’s New Edges, he states that he was inspired by Dr Ray Cole - former Director of the School of Architecture and renowned for his teachings in environmental topics – and that he “introduced me to the ideas around the precarious future of our planet...He showed us that we could do a lot of good through the environmental design of buildings. That we could make a difference!” Busby maintains a thoughtful nature within each of his designs and believes that buildings should influence the way people treat the environment.

*"Why not challenge ourselves to create physical spaces that motivate people to do and be better?"* – Busby: Architecture’s New Edges.

Through analysing a range of Busby’s designs, I will investigate his design principles and use them to reflect on the importance of environmental design in the present/future world. I will consider how his work has defined modern-day sustainable architecture throughout the world and affected the ways people live.

Firstly, I chose to analyse Busby’s Brentwood Station. *“Transportation is the centre of the world! It is the glue of our daily lives. When it goes well, we don't see it. When it goes wrong, it negatively colours our day…curtails our possibilities.”* – Robin Chase

Brentwood Station uses a simple, streamlined overall shape which highlights its functionality while also being a mainly open structure which eases mobility in keeping with Busby’s inclusive and practical design morals. Similarly, a smooth and streamlined shape indicates the smoothness and speed of the Skytrain, therefore sending a subtle message to potential users. The architecture is entirely modern and incorporates complete transparency-from the repeating glass panels-which exemplifies the stations safety and eases Skytrain navigation for commuters. The extensive usage of glass also allows the interior to remain connected to the surrounding urban area therefore providing a welcoming experience, while simultaneously decreasing the need for harsh artificial light. He includes repetitive steel beams and columns which act as support to the overhead canopy while also adding an element of visual interest without complicating the open space. A distinctive feature of the station is the roof canopy that stretches above the entire platform, intended to shelter users from the elements while maintaining the openness of the design. The innovative use of the timber canopy defines the station’s identity while connecting the urban architecture to nature.

Busby’s repetitive use of floating walkways exaggerates his eco-friendly urban planning strategy whereby the usage of vehicular transport is reduced. Similarly, the station is surrounded by residential and commercial spaces-where it connects directly via footpaths-again highlighting his intent to reduce vehicular traffic. As well as using glass as a form of natural light, the openness of the station allows for natural ventilation. He deliberately uses laminated timber and glass as main material elements to align with the environmental conditions of the Pacific Northwest. Also, he uses reclaimed and locally sourced wood plus concrete containing a high content of fly ash which heavily reduces the amount of Co2 created during production. Moreover, the station was purposefully built above the highway to avoid excessive noise from vehicular traffic, thus enhancing the station’s user experience.

Perkins & Will collaborated with Translink in order to improve the connectivity within Greater Vancouver while reducing traffic conditions and concurrently adding a sustainable transit option. They consulted with numerous people about their designs-some of which included local artists and community members so that the station reflected the local culture. Analysis of transit timings, peak traffic times, passenger capacity was undertaken. Once designed, a preliminary sketch gave a rough idea of the scale and community concerns such as: noise, visual impact and accessibility. Construction was underdone in stages and thorough traffic management plans were created to avoid disturbing pedestrians or local businesses. After testing the safety and accessibility, the station was opened to public use.

Typically transit stations cause me to feel overwhelmed/stressed due to their common complexity. Whereas, when I see Brentwood Station, I feel a sense of serenity as the curved features and vast visibility give me the impression that the station is easy to use. Warm lights in combination with the raised platform allow the station to feel totally safe. Although transit stations are often busy/noisy, Busby’s design creates a quiet and soothing atmosphere which I imagine would enhance the commuter experience. What I enjoy most about the design is Busby’s ability to turn a relatively mundane feature of urban life into a more enjoyable and environmentally conscious piece of architecture.

Translink consulted Busby (and Doble) to design something that could “entice commuters out of their cars and onto transit and help propel transit into the next millennium”. They intentionally designed Brentwood as the main feature of the new Millennium Line with the aim of attracting the travelling public with its unique shape and design. Additionally, the warm glow of the station was intended to act as “an inviting beacon”. Busby claimed the station is “an invitation to commuters stuck in traffic on both Lougheed Highway…and the adjacent Trans-Canada Highway.”

My next analysis was focused on VanDusen Botanical Garden Visitor Centre. *“The design and construction and installation of the roof forms, shading forms, daylight attracting forms are all meant to flow together as a composition, that we believe will be beautiful.”* – Busby, BusbyPerkinsWill YouTube channel

The organic structure of the building was inspired by the natural forms of a native orchid with smooth undulating roof ‘petals’. Busby aimed to reflect his environmentally conscious thinking onto its form to highlight the buildings sustainable design. He uses extensive wood and brown tones throughout the design which provides a warm, peaceful environment while simultaneously drawing attention to its connection with nature. The warm lighting, provided by solar energy, acts as an invitation amidst the natural atmosphere. The roof utilises repetitive laminated timber beams which support the complex curves at the edges of each panel with a green roof, designed to coexist among the garden’s rare vegetation. Its purpose was to create a seamless transition from the constructed landscape to nature. Total transparency is employed with all-encompassing glass windows which provides use of natural light and allows the building to be as welcoming as possible. The Centre appears to be divided into surrounding petals and a main atrium, connoting a flower. Located in the centre of the atrium, a large solar chimney provides the building with natural ventilation as well as natural heating whereby an aluminium heatsink converts the sun’s rays into convection energy. As the chimney is positioned in the complete centre of the building, it exemplifies the buildings sustainability through its form and function.

*“It’s the dramatic free-form, organically shaped roof structure that makes people take a second look - its form metaphorically represents petals of an orchid, drooping seamlessly into the surrounding landscape like an extension of the garden itself.”* – perkinswill.com

The building was initially designed to have a seamless green roof which could be seen by pedestrians/ motorists, however the green roof had to be pushed back due to security concerns set by Vancouver’s building code. Therefore, now all that is seen from the ground is the Oculus (Solar Chimney).

In order to envisage the complexity of the roof design, a three-dimensional model was created using the 3-D modelling software ‘Rhino’ and ‘Revit’. The model was used to digitally separate each of the roof’s petals and the central atrium, allowing them to be constructed individually and then assembled later on. It helped them optimise the number of required laminations while keeping costs at a minimum and was also used to identify preferred low points in the structure of the roof – in order for the pipes to effectively drain during the sprinkler system process - while maintaining the continuity of the smooth roof design.

Throughout the process of design, they would revisit the question “How would a flower (orchid) do it?” in order to get a greater understanding of how their building would act/react to its environment.

I enjoy how the building uses form to represent its function. Its organic/floral shape gives an impression to users of its purpose and ethics. Designing this way creates authenticity, hence allowing the building to be perceived as honest and unpretentious. Values of openness and environmental consciousness help users to connect more deeply with the building, thus improving the user experience. Due to its smooth curvature and connection with nature, the structure evokes tranquillity within me – reinforced by the symbolism of it being a “beacon” of light, surrounded by the shadows of the enveloping trees.

Created in response to visitorship declining in the VanDusen Garden Centre, Busby aimed for the visitor centre to revitalise interest in VanDusen as a destination, attracting visitors locally and enhancing the gardens profile internationally. As of now, the centre remains an international icon of sustainability in architecture.

Finally, I analysed Dream LeBreton. Dream LeBreton is a major housing development in Ottawa, with sustainability and social equity as the forefront of the design. The project consists of the LeBreton Flats, Ottawa’s new central library and over 600 new rental units – 41% of which are designed as affordable and offered below market rents. The development revolves around and is adjacent to the Pimisi East light-rail transit (LRT) station; aimed to provide residents access to the wider city without needing a car. The main two towers act as a communal retail space while allowing the community access to amenities such as gardens, a fitness centre and a childcare facility, plus views of Parliament Hill and the Ottawa River. The bold, red colours are used to connect with the seasonal colouration of the Laurentian Forest and the redbrick homes which surround it. The buildings’ distinctive sloped roof design not only adds visual character but demonstrates Busby’s environmentally conscience thinking as it allows for snow/rain runoff-essential for a Canadian climate-which is collected and converted into potable water. The roof was constructed to receive extensive solar exposure, therefore enhancing energy efficiency.

As Ottawa’s largest net-zero residential project, it is said to be a model for inclusive, sustainable housing. Busby employed widespread solar panels; integrated directly within the building’s façades and roofing systems in order to generate renewable energy. The building was planned to have optimal orientation so it could maximise solar energy generation and reduce energy consumption through lighting. He wanted native trees/plantations to be integrated all over the building, to create a more relaxing environment while reducing carbon dioxide and water wastage. Regionally sourced materials are set to be used in construction, which exaggerates the overall approach to sustainability. Atop of the ‘podium’-which acts as the base to the towers-are a series of landscape terraces, designed as a space for communal agriculture and gathering. Busby aimed for the development to be an example of a more environmental attitude towards residential architecture.

*“Distinguished by its materiality and the integration of Indigenous principles, the development displays an outward set of ideals about our histories, this place, and our peoples.”* –perkinswill.com

After reading Arts Green Book, I have a greater understanding of sustainable processes, such as heat and light generation. The book clearly identifies all aspects of an environmentally friendly design process using pictures, diagrams and text. The book states that it *“does not set out to reinvent the wheel, but to define common standards and shared guidance that will make the journey easier for everyone.”*

Partnered with KPMB Architects, Busby was tasked by the Dream Asset Management Corporation to develop the vacant LeBreton Flats site. After buying the space from the National Capital Commission (NCC) for thirty-million dollars, Dream Unlimited worked with local non-profit housing provider-Multifaith Housing Initiative-to build the largest zero-carbon residential development in Canada. They adapted their design after consulting the Ontarian public, to better reflect on community requirements and priorities. While designing, they considered accessibility and inclusivity, thus having 31% accessible rental housing units. To promote anti-discriminatory values, affordable units serve priority groups such as: women and children, the elderly, recent immigrants, indigenous people and adults with cognitive disabilities. During construction, public transit connectivity will be prioritised as the project aims to be accessible from Ottawa’s Light-Rail Transit system.

The project creates a sense of tranquillity in my opinion, due to the widespread nature throughout the buildings, which promotes site biodiversity. I am drawn to biophilic design as it enhances colour diversity and improves mental health. The use of biophilic design principles avoids an ‘excessively urban’ building and encourages community and social interaction, which will improve the quality of life for LeBreton’s inhabitants. Due to my passion for the betterment of the environment, I think sustainability should be the forefront of a building’s design nowadays, as 37% of global C02 emissions are produced from buildings and their construction.

The site is located at the confluence of the Gatineau, Ottawa and Rideau River which has been home to many indigenous people for thousands of years. In collaboration with indigenous architects, the site aims to honour its pre-settlement history and identify as a place of community and connection through its public spaces. Renowned artist, Margaret Priest, collaborated with the design of the two towers: representing a beacon of hope of our future as a society.

From the analysed examples, it is clear that Busby strives for his buildings to have a total positive user experience while blending seamlessly with nature/their surroundings. Both Brentwood Station and Dream LeBreton enhance daily life by providing affordable, efficient and eco-friendly travel options, reducing traffic congestion, improving air quality and giving people more time to relax or focus during commutes.

*"We’re designing to incorporate nature in everything we do and to be part of nature in the way we design. We’re designing for the health of people."* –Busby, Q+A with ARCHITECT

In the book, Cradle to Cradle: Remaking the Way We Make Things, William McDonough and Michael Braungart state, *"The goal is not to be less bad, but to create systems that are inherently good—safe, productive, and regenerative."* This quote reflects Busby’s design philosophy, that sustainability should go beyond minimising negative effects; but negate them entirely.

Peter Busby’s approach to environmental design demonstrates the impact thoughtful, green architecture can have on both people and the planet. His integration of sustainable technology emphasises that architecture must not only serve its immediate users, but also address the socio-economic challenges of the current world. His work recognises that design is not merely about aesthetics or functionality, but about responsibility and foresight. This way of thinking is critical in a time where climate change and the exhaustion of resources require advanced solutions. By adopting environmental design thinking, we can create buildings and cities that complement nature, promote well-being and ensure a sustainable future.

Through Paola Sassi’s book - Strategies for Sustainable Architecture - she claims, *“Sustainability is not just about reducing environmental impact; it is about creating buildings that are socially, economically, and culturally viable over the long term.”* The quote reflects the multifaceted approach architects must take, in order to create structures that endure and serve diverse needs.

It is imperative that sustainability in architecture is the path into the future, else there will remain a decline in resources and environmental quality. Climate change would be drastic and severely impact the living conditions for generations to come.