



~~The~~ ~~Union Station~~ ~~UP Express~~ ~~YYZ~~ ~~Network~~

A History and Engineering Perspective

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3 August 2020

Executive Summary

This report aims to look at the history of the Union Station, UP Express, and YYY Transit Network. It starts by looking at the history of each transportation hub separately. Also, to explore their effect on society and the role engineers have played in their development. Then it explores how they connect together into a single network.

The methodology used to create the report was Dual Representational Strategy. Each section will be paired with an image in a dual representational technique. In this dual representational mode, images perform as “spatial evidence” for our research and writings, while simultaneously the same text is positioned as a series of captions which explain the images. Preliminary image research is presented here, alternating between airport and rail hub, and gives an indication of how relationships of proximity between words and image (what critical theorist WTJ Mitchel has called “imagetext”) generates a surplus of meaning, enlivening images with discourse and suggesting the real world objects out there in which discourse is based.[2]

We will also use Some World’s Cocomposition. We strive for academic research and writing relies on the affective and surprise elements of language, what social philosopher Frederic Jameson has suggested in often missing from the writing of history, namely “emergent forms of experience... Including intangible phenomena such as emotions and affect.” [3] Whether this take the form of the experimental fieldwork of French writer Georges Perec or the experimental ethnography of Kathleen Stewart, let us take the risk of approaching the Weird Reality of the UP Express and attempt to produce a text of “surprise contact, an opening onto some world’s cocomposition.”[4]

The conclusions from this report are that: YYY is the busiest airport in Canada by total passenger traffic and the second largest in North America by international travel. Union Station is the busiest multi-modal passenger transportation hub in Canada, visited by more than 750,000 people each day. UP Express connects YYY and Union Station and runs daily every 15 minutes. It takes 25 minutes for a complete one-way trip. YYY, Union Station, and UP Express are part of the larger Regional Transportation Plan by Metrolinx. The goal is to connect the entire ‘Golden Horseshoe’ into a unified transportation system. Engineers have played a major role in the development of each of these 3 structures throughout their history. The latest infrastructure techniques and materials have been used to create and expand these transit hubs to accommodate the expanding passenger demand. Traffic engineers have analysed traffic growth patterns, and this has been used to upgrade terminals at YYY and Union Station. Structural engineers have combined structural integrity with architectural grandeur to build the beautiful structural we have today. This network has allowed the city of Toronto to evolve into a megacity and become the centre of the Canadian economy.





Introduction & Project Scope

Opening in 2015, the Union-Pearson Express [UP or UP Express] connects Lester B. Pearson airport [YYZ or Pearson] and Union Station, linking the two busiest transportation hubs in Canada. [1] It flits between subjects much as it links modes of travel, connecting Union Station with its subway, regional trains and national and international rail while likewise linking those local connections into the realm of international travel.

This research seeks to understand the UP Express as a complicated technical and social artifact by probing the cultural, logistical and economic motivations for its creation. An understanding of how the UP facilitates urban, regional and international flows requires first looking at the life story of the transportation hubs which it unites. To begin, we will develop an understanding of Union Station and YYZ, specifically how they came to become the busiest transportation hubs in the country. Next, we will probe the creation of the UP Express and what social forces resulted in its creation. Finally, we will investigate some of the philosophical questions which have emerged during our research.

Preliminary hypotheses include: What does it mean that Union Station now basically a wing of the airport and YYZ a platform at Union?

Objectives & Methodology

Dual Representational Strategy: Each section will be paired with an image in a dual representational technique which Harvard professor Pierre Belanger has encouraged. In this dual representational mode, images perform as “spatial evidence” for our research and writings, while simultaneously the same text is positioned as a series of captions which explain the images. In his words, this dual mode of meaning can be employed in expressing “positions between design and research, between the inductive and deductive, sliding across the synchronic and diachronic, between the practical and pedagogical.” [2] Preliminary image research is presented here, alternating between airport and rail hub, and gives an indication of how relationships of proximity between words and image (what critical theorist WJ Mitchell has called “image-text”) generates a surplus of meaning, enlivening images with discourse and suggesting the real world objects out there in which discourse is based.

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Union Stations 1873-1927

Union Station is the busiest multi-modal passenger transportation hub in Canada, visited by more than 750,000 people each day. The City of Toronto—the building's current owners—describes it as “the largest and most opulent train station erected in Canada during the last great phase in railway station construction.” The building we call Union Station is the fourth such structure to have that name. The first was a shed on Front Street, and the second was a shed besides that shed. The third, built in 1873, was only 40 years old when construction of (new) Union Station began just to the east.

The construction of Union Station was a joint venture between two private railway companies the Canadian Pacific Railway and the Grand Trunk Railway. Union Station was designed in what the city describes as “the grand manner of the Ecole des Beaux-Arts in Paris,” by a team consisting of Montreal firm of G.A. Ross and R.H. MacDonald, Hugh Jones of the Canadian Pacific Railway [CPR] and John M. Lyle of Toronto, the latter of which did attend the Ecole des Beaux-Arts in the flesh. The appeal of the Beaux-Arts style for Canadian transportation infrastructure was a tactic of endowing some of the pathologies of settler-colonialism (trains, and the power of movement) with the sophistication, grandeur and material opulence. Construction began in 1913 but was interrupted by Canada's involvement in The Great War, and (new) Union Station was not completed until 1927.

How is a Station a Cathedral?

At the centre of Union Station is the Great Hall, a massive four-storey barrel vault with windows opening up the east and west sides. High above Tennessee marble floors in a herringbone pattern, halfway up the enormous Zumbro stone vault are the names of the cities served, alternating side to side, naming cities in their order from east to west.

The Great Hall opens onto Front Street, where, the exterior walls are Indiana and Queenston limestone, the city-greeting north façade dressed with 22 Bedford limestone columns, each 40' tall. Union Station was designated a Parks Canada national historic site in 1975 as "the country's finest example of a classical beaux-arts railway station."

At a grand unveiling in front of a large audience on August 6, 1927, His Royal Highness, Edward, the Prince of Wales (who later would become King Edward VIII) accompanied by the Duke and Duchess of York as well as the British and Canadian Prime Ministers cut a ceremonial ribbon with a pair of gold scissors and bought the first ticket ever sold at Union Station, a \$71.20 ticket to Alberta. The Prince of Wales famously remarked, "You build your stations like we build our cathedrals."





From Malton to YYZ, From Farmland to Sprawl 1938

Pearson International Airport (YYZ) is Canada's largest airport based on total passenger traffic. It is the second largest in North America in terms of international traffic. It has daily non-stop flights to more than 150 destinations. It is truly a 'Global Hub Airport.' [14] The vision of the Owners of the airport is that they want it to be "The best airport in the world – the entry point on the continent". YYZ has five runways, two terminals, over 110 gates, and serves 35 million passengers annually. [15]

YYZ came from a humble beginning. Back in the 1930s, Toronto transportation officials decided that the city would be best served by two airports. One was built close to downtown on the Toronto Islands. It is called Billy Bishop Toronto Island Airport (YTZ), it is the local hub and home of Porter Airlines. [16]

Later, large plots of farmland were purchased for the second airport near the town of Malton, a then-remote distance of 32 km north-west of downtown Toronto. This was visionary, because later in a few years due to the space restrictions Island Airport would not be able to expand to handle Toronto's future air travel needs. [17]

Malton's first official landing was on August 29, 1938. The original terminal was an old farmhouse, which was soon replaced with Malton Airport's first purpose-built terminal. Now long-gone, it was a twin of the original terminal built at Toronto Island Airport. That building, designated a National Historic Building, now sits in the infield at YTZ while historians and airport officials decide where it should be displayed. [18]



The Subway and the Tower 1954-1972

On the top floor of the east wing of Union Station were the offices and shooting range of the Canadian National Recreation Association handgun club. The shooting range on the roof was intended to allow CPR and CNR police to hone their skills, but it was later opened to the public and only closed in 2008 due to a rise in Toronto gun crimes.

In 1954, Union Station was designated as the fulcrum of the new subway system, and the first journey of a subway in Canada occurred on the Yonge Route, starting from Eglinton Avenue and ending at Union Station.

At its opening and until the 1970s, Union Station was also the main sorting station for Canada Post. Regular mail trains had existed since 1856, twenty years before the previous Union Station, and Union Station was the location of most of Canada Post's sorting until the implementation in the 1970s (and associated move to Mississauga, closer to the airport) of mechanized mail sorting.

These and other changes in the usage of rail resulted in a period of redevelopment of the "railway lands," which started in earnest with the construction of the CN Tower in 1973-1976, the Skydome in 1989, the Air Canada Centre a decade later in 1999, and more recently, the expansion and redevelopment of Union Station itself.

The Age of Aeroquays: Terminal 1 and Terminal 2 1964-1984

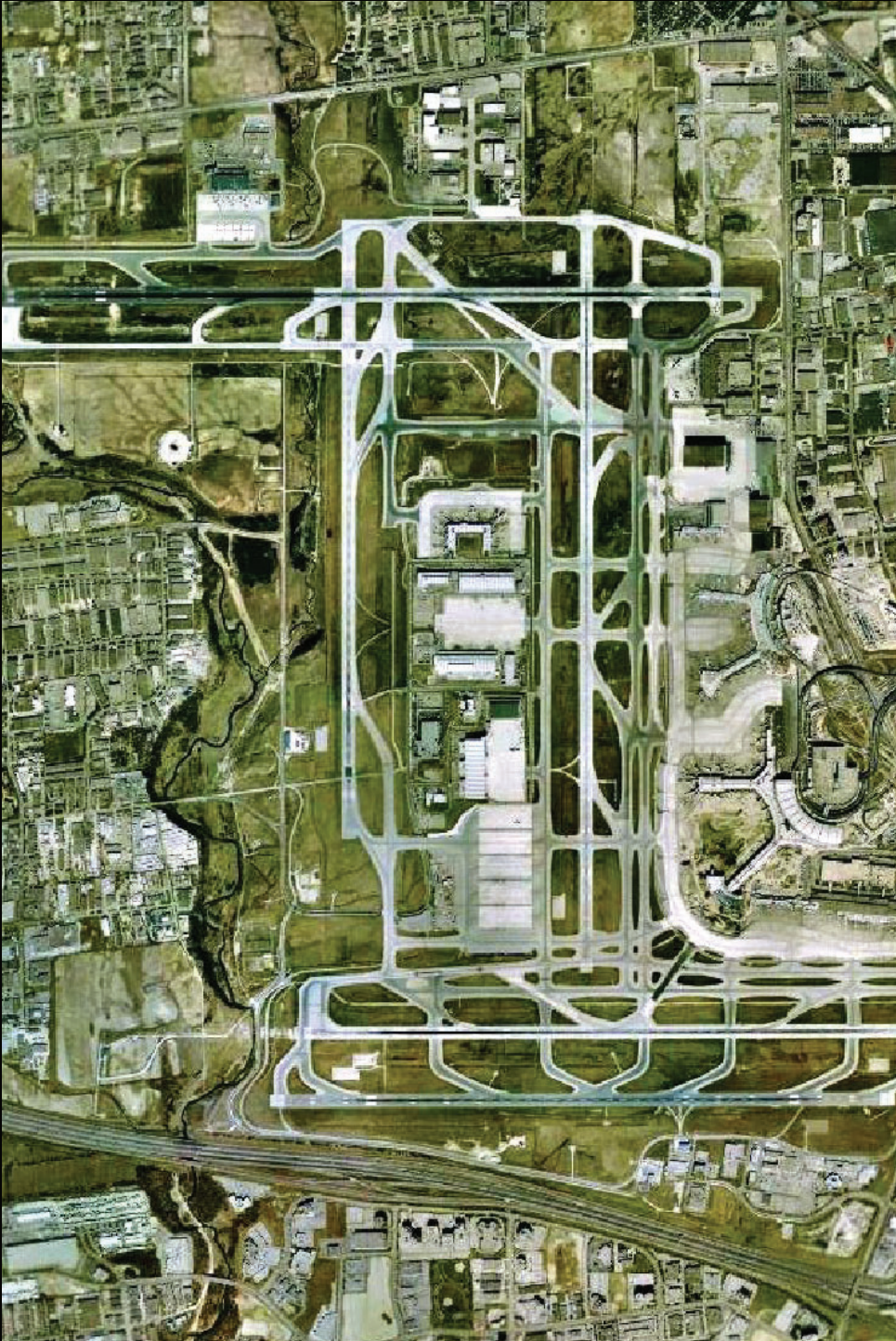


The late 1940s and 1950s saw major growth in air travel worldwide, and Malton Airport continued to grow to meet Toronto's needs. Runways were lengthened and added to the airport, along with a new terminal building. The terminal had a large rooftop observation area, which was closer to the apron than the airport's control tower. [19]

With the arrival of the jet age, Malton again had to expand. In 1964, YYZ's new terminal opened about 1.6 km south of the previous terminal. The new terminal was a unique design called the "Aeroquay" – state-of-the-art for the 1960s. It had a central ticketing and operations area topped by a nine-level parking garage. The central building was ringed by a circular concourse, leading to six "fingers" with a total of 23 gates to handle up to 3.5 million passengers, annually. The 1960s expansion plan for YYZ had additional Aeroquays, but the design quickly became overwhelmed by passenger loads and changing security and operational requirements. [20]

In 1972, the long-and-thin Terminal 2 opened a short distance across the ramp from T1. Originally a cargo building, T2 became Air Canada's main terminal at YYZ for the next three decades. With expansion and improvements over the years, T2's capacity increased from six to nine million passengers per year.

In 1984, Toronto International Airport was renamed Lester B. Pearson International Airport, in recognition of Canada's 14th Prime Minister. By then the airport was over capacity. The T1-Aeroquay was improved to handle 6.5 million passengers per year, almost double its original design capacity, but that was not enough. [21]



T3 and (a new) T1 1987-2004

In 1987, construction began on Terminal 3, the first passenger terminal in Canada to be developed, owned, and operated by the private sector. T3 opened in 1991 with 24 gates and a capacity of 10 million passengers per year. [22]

The Greater Toronto Airports Authority (GTAA) took over management of YYZ in the mid-1990s from government agency Transport Canada and continued to develop the airport's Master Plan. In 1995, to meet YYZ's needs through to 2030, the GTAA proposed replacing YYZ's Terminal 1-Aeroquay and Terminal 2, with a new Terminal 1, which along with Terminal 3 would accommodate up to 50 million passengers per year. The logistical and operational challenges were formidable. All existing airline and airport operations had to be maintained while demolition of existing obsolete infrastructure occurred, and new construction began. [23]

In 1998, visitors saw construction begin of the new Terminal 1. The first phase of T1 New opened in April 2004, with fourteen gates on Piers D and E, along with nine commuter positions. [24]

In 2004 demolition of the Aeroquay began. When demolition was complete, an additional ten gates were opened at T1 New in October 2005. Two years later, the second phase of the new terminal became operational with the opening of Pier F, with 25 gates for international and US-bound flights. [25]

Demolition of Terminal 2 was completed in November 2008. [26]



Demolitions and Modernizations 2004-2020

Along with all of the other changes at YYZ, Terminal 3 underwent a modernization program during the first decade of the 2000s. The building was updated and enlarged, with new check-in counters, retail space, eight additional gates, and baggage system upgrades. A new arrivals hall was built, larger security screening areas were added, and the international baggage claim area was expanded. [27]

Passengers travelling through YYZ Terminal 1 today will find themselves in a bright, modern, massive building, stainless-steel bright with windows everywhere. Services, retail, and restaurants are as one would expect at an airport of this calibre and are continually being updated and upgraded. [28]

As with many airports worldwide, YYZ is proud of the collection of art that has been commissioned especially for the airport, along with special exhibits that are on display throughout the terminals. The changing exhibits feature works by cultural institutions, organizations, collectors, and art groups, with a focus on local and regional partners. [29]

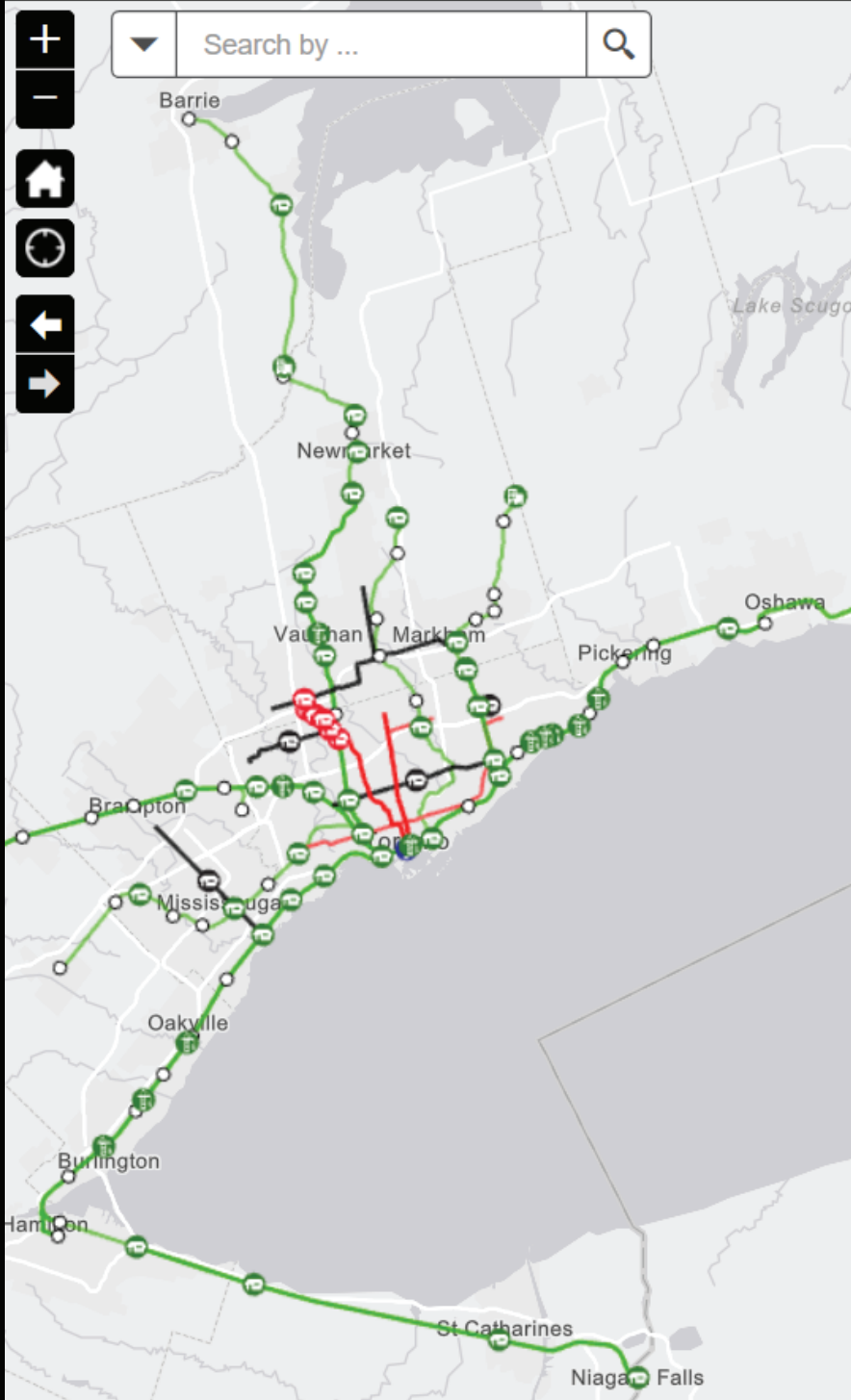
The City is What is In Between Stations 2012-2041



In 2015, Union Station and YYZ were linked by a direct light-rail connection. The “Union Pearson Express”, or “UP Express”. The new service runs every 15 minutes from Terminal 1, with a 25 minute trip to Downtown Toronto’s transit hub at Union Station. [30] Built by Metrolinx, the UP Express runs over 1000 trips a week along its 23km route, providing 3.5 million passenger trips a year. Using Tier 4 diesel—the most “emissions friendly diesel technology available,” the UP Express was built alongside existing rail lines, yet was a vast set of infrastructural construction, with a three-kilometer spur from the Kitchener corridor to the airport meeting a new station at Pearson Airport, along with new rail bridges constructed over Kipling, Martin Grove, Highway 427, Black Creek, Eglinton West, Ray, Dufferin, Queen Street West, Brock, Lansdowne, Dupont and Bloor Street West, new overpasses on King and Church streets, a pedestrian bridge on John street and widenings of pre-existing rail bridges over Lawrence West and the Humber River. [30]

Metrolinx imagines the UP Express as a showcase as part of their regional transportation plan for the agglomeration known as the GTHA—which is what—and a “concrete demonstration of the progress we are making to relieve gridlock and get the region moving,” which is the kind of talk that politicians make.

METROLINX PROJECT MAP



Metrolinx 2041 Toronto Hamilton Greater Toronto

Metrolinx positions the UP Express as the first step in a multi-step process wherein the entire "Golden Horseshoe" is drawn as a single figure, drawn together by new networks. In Metrolinx' 2041 Regional Transportation Plan, the authors outline a knitting together of the region from Niagara Falls to Oshawa and beyond, the super conglomeration of GTHA or Greater Toronto and Hamilton Area is already an underperforming nomenclature for a system that extends throughout the geographic region, with its symbolic and functional heart and ultimate site of interchange, under the Great Hall.

Conclusion / Take-Aways

- YYZ is the busiest airport in Canada by total passenger traffic and the second largest in North America by international travel.
- Union Station is the busiest multi-modal passenger transportation hub in Canada, visited by more than 750,000 people each day.
- UP Express connects YYZ and Union Station and runs daily every 15 minutes. It takes 25 minutes for a complete one-way trip.
- YYZ, Union Station, and UP Express are part of the larger Regional Transportation Plan by Metrolinx. The goal is to connect the entire 'Golden Horseshoe' into a unified transportation system.
- Engineers have played a major role in the development of each of these 3 structures throughout their history. The latest infrastructure techniques and materials have been used to create and expand these transit hubs to accommodate the expanding passenger demand.
- Traffic engineers have analysed traffic growth patterns, and this has been used to upgrade terminals at YYZ and Union Station.
- Structural engineers have combined structural integrity with architectural grandeur to build the beautiful structural we have today.
- This network has allowed the city of Toronto to evolve into a megacity and become the centre of the Canadian economy.

Endnotes

- [1] "About UP," UP Website, accessed 28 May 2020, <https://www.upexpress.com/AboutUP/AboutUP>
- [2] Pierre Belanger, "Prepositions," *Landscape as Infrastructure (DEETS)*: 20-21.
- [3] Jameson as see in Rohan Quinby, "City and Theory," *Time and the Suburbs: The Politics of Built Environments and the Future of Dissent* (Winnipeg, Arbeiter Ring Publishing, 2011) 21-37.
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