Toronto In Question
Moving People: Responses to Congestion

Steve Munro

October 25, 2011

Introduction

- Is Toronto a “Transit City”?
- Population and transportation network growth
- 1971: A lost opportunity for transit
- Technology wars
- Are today’s policies and agencies viable answers to our problems?
- What are roads for?
- Can we “solve” congestion?

Is Toronto a “Transit City”?

- Riding habit in Toronto (416) is high by North American standards, but concentrated in areas and corridors with frequent service
- Riding habit beyond the “old” city falls off quickly and is generally below 10% in the 905
  - Growth in GO Transit riding to the core unmatched by transit growth to other parts of the region
- Political and popular support for transit depends on “what can it do for me”
- Opposition to transit based on “what will it do to me”
- This is not a 416/905 issue.
  - Spadina (proposed 1973, opened 1997)
  - St. Clair (competition for space, construction delays)
  - Queen’s Quay (arterial vs local road, local access, special considerations for tourism, signal priority design)
  - Transit City proposals for road redesign

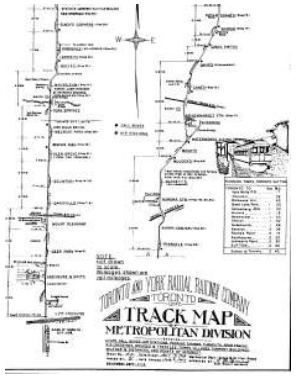
Subway Envy

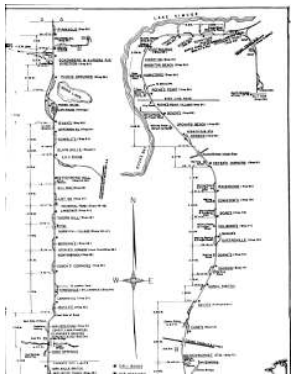
- Why don’t we have a subway network like New York, London, Paris?
- Population of Toronto in 1900
  - Old city: 208k “416”: 238k
- Population of major cities in 1900
  - New York: 3.4m
  - London: > 6m
  - Paris: > 3m
- During the period when private transport was rare and expensive, major “transit cities” had much larger populations than Toronto
- Public transit had no competition, served dense cities and operated at a profit

St. Clair & Dufferin 1912

Bathurst North of St. Clair 1912

"Radial" Line to Lake Simcoe 1914





Prince Edward Viaduct (1918)
Bloor-Danforth Subway (1966)

TTC System Reconstruction and Expansion 1921-1929

Effective Sunday, November 18th, 1928

"Queen" Route Extended

THROUGH DOUBLE-TRACK SERVICE FROM DOWNTOWN TORONTO TO BIRCHMOUNT ROAD AND KINGSTON ROAD

Fare Zones beyond City Limit to remain unchanged. "Scarboro" route to continue from Birchmount Loop to West Hill.

With the completion of the new double-track placed in the middle of the widened roadway between the City Limit and Birchmount Rd., on Kingston Road, the T.T.C. "QUEEN" route cars will extend service to the new Birchmount Loop (formerly Stop 8), almost one-and-a-half miles beyond the City Limit.

Every second "QUEEN" route car will be routed to Birchmount Loop. These cars will be identified by "QUEEN BIRCHMOUNT" route and destination signs, and will provide a service to and from Birchmount Loop every 12 minutes during normal hours and every 6 minutes during rush hours. "QUEEN-BINGHAM" cars will loop at Bingham Ave., (City Limit), as in the past.

On Sundays the route of the "QUEEN" cars will be confined to Kingston Road, commencing at Woodbine Loop (Queen St.) and providing service alternatively to Bingham Loop and Birchmount Loop.

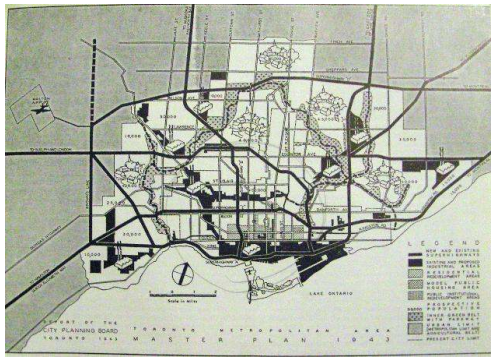
The "SCARBORO" route cars will continue to provide service from Birchmount Loop to West Hill and intermediate points.

FARES AND ZONES

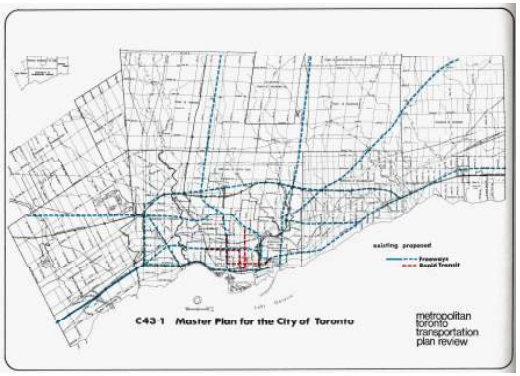
Beyond the City Limit the Rates of Fare and Fare Zones will remain unchanged.

Zone 1—City Limit to Stop 14 (Halfway House)
Zone 2—Stop 14 to Stop 27 (Scarboro Golf Club)
Zone 3—Stop 27 to Stop 35 (West Hill)
FARES—One fare for each zone as in the past.
ADULTS—Cash 5 cents. Tickets 5 for 25 cents.
CHILDREN (Not in arms and not over 54 inches in height)—Cash 3 cents. Tickets 10 for 25 cents.

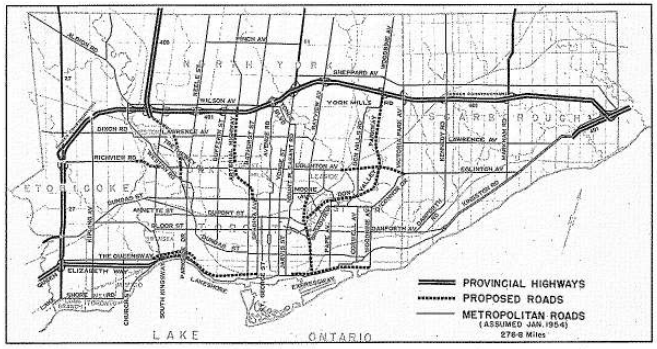
Toronto Plans for Cars (1943)



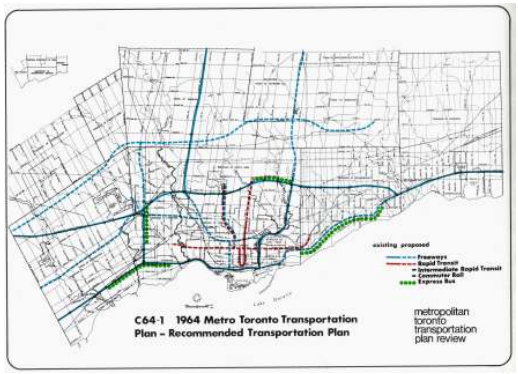
1943 Plan Including Rapid Transit



Metro Toronto Road Plans (1954)



1964 Recommended Plan



1969: Subways Are Not The Only Answer

"Following completion of the Spadina and Queen subway lines, consideration should be given to rapid transit lines which would act as feeders to major subway radials or circumferential lines operating through lower density areas which cannot justify the expense of full subway operation.

"Intermediate capacity rapid transit lines are conceived as operating on private or exclusive grade-separated surface rights-of-way but with lighter equipment, minimal station facilities, and on-board ticket collection wherever possible. Initially, service on such lines might be provided by P.C.C. car type vehicles. It is believed that the capacity of such lines should be in the order of ten to twenty thousand passengers per hour and the T.T.C. is undertaking a study to arrive at a possible design of a suitable lightweight vehicle for this type of high speed service."

From "A concept for integrated rapid transit and commuter rail systems in Metropolitan Toronto", TTC, February 1969, Page 13

The TTC was working with Hawker-Siddeley on a new streetcar design, but this was pre-empted by Provincial schemes for "Intermediate Capacity Rapid Transit".

TTC Concept Plan (Feb. 1969)

1971

- Davis government kills Spadina Expressway plan
- Capacity expansion will focus on transit
- "Cities are for people"
- But …
  - How to build transit without spending a fortune?
  - The myth of the "missing link" between buses and subways
  - The birth of "Intermediate Capacity Transit Systems" and high-tech "solutions"
  - Magnetic levitation trains will solve everything
    - It didn't quite work out that way

1972 to 1985

- "Streetcars for Toronto" fought to save the streetcar system as a basis for future suburban growth (similar to TTC 1969 plan)
- Streetcars didn't fit with Provincial dreams of new technology development
- TTC management didn't really embrace streetcars as a transit technology except, possibly, for new suburban routes
- New Toronto streetcar project didn't get seriously underway until Queen's Park needed a replacement for the failed Maglev project
- CLRVs (1977-1981) and ALRVs (1987-1989)
- The Scarborough line was originally planned as LRT using CLRVs and included an extension to Malvern
- Queen's Park had continued support for development of a new technology which eventually became the "RT", and they forced this technology on Toronto. The high cost (> 2x LRT) precluded any extension beyond the original terminus or use of RT as a subway alternative.

Canadian LRT in the West

- Edmonton:
  - Started construction in 1974
  - Now 20.5km
- Calgary:
  - Started construction in 1977
  - Now 48.8km
- Both systems use standard European cars and are substantially on private rights-of-way

Vancouver Skytrain

- B.C. chose the Scarborough RT technology because the Minister of Municipal Affairs and Transit didn't like streetcars
- Strong support from Ontario government to showcase "RT" technology for Expo 86
- First line opened in 1985
- Now 68.7km
- The technology works well in Vancouver because of available rights-of-way, terrain, demand level, government funding, strong management commitment and weather. New LRT alternatives run aground on integration issues with the established network.
- Canada Line (to the airport) does <u>not</u> use RT technology. It is an automated small-scale subway.

Technology Wars: What is LRT?

- The original idea was a mode that was simpler and physically lighter than a subway ("Heavy Rapid Transit")
- Essential characteristics:
  - Right-of-way can be shared with cars and pedestrians
    - Overhead power supply, manual train operation
  - Simple stations, possibly at grade (affects cost and accessibility)
  - Short trains (affects station size)
  - Tighter turns and steeper grades than HRT
- Evolution "up" from streetcar, not "down" from subway

Comparing Technologies

- Advocates may be selling a technology or an agenda
- Look at the full implications of choosing a technology:
  - Capital and operating costs
  - Station design and operations
  - Pedestrian circulation at high-volume locations
  - Intrusion of structures on neighbourhoods and future development
  - Expansion capacity, requirements and alternatives

What's Available?

- Full grade separation
  - Subways and intermediate capacity automated systems
  - Commuter rail (may have limited instances of grade crossings in light traffic areas)
- Partially private right-of-way and/or grade separation (degree varies depending on situation)
  - LRT
  - Bus Rapid Transit (BRT)
  - Capacity depends on train/vehicle length and station design
    - Passing lanes and multiple stopping bays require extra space
- Mixed traffic operation
  - Buses (regular, articulated, diesel, electric)
  - Streetcars
  - Taxis & vans
- Marine
  - Ferries (specific to local geography, e.g. Vancouver SeaBus)

Failed Options

- Compressed Natural Gas Buses
  - Replaced Trolley (Electric) Buses in Toronto
  - Far more complex and unreliable than hoped
  - A marriage of convenience between TTC management (anti-electric bus), Queen's Park (transportation technology advocates), the gas industry (surplus product looking for a market) and bus builder (untendered "demonstration" contract)
- Hybrid Buses (Battery/Diesel/Electric)
  - Large cost penalty (+50%)
  - Reliability problems
  - Benefits depend on duty cycle (stop-start traffic, hills)
  - Skewed evaluation of what is "green"

Fantasy Options

- Swan Boats
  - Require rivers or canals
  - Difficulty of grades (flumes? trebuchets?)
  - Weather issues (sleighs?)
- Gondolas
  - Best for severe topographical constraints (valleys, hills)
- Bi-planes
  - Personal rapid transit
  - High staff to passenger ratio
- Monorails
- All have
  - Proven technology
  - Tourism potential
  - Capacity constraints
  - Station design, access and intrusiveness problems
  - Limited real-world potential

Swan Boats




Monorails, Gondolas, Biplanes




Evaluating Alternatives

- Too many studies start with the “solution” and work backward to schemes that will support a preferred choice.
- If you want subways, you will only choose routes where subways can be built, and you will size networks to available funding. LRT advocates argue that omitting lower-cost LRT options prejudices the evaluation for subways.
- LRT routes may include sections where subways are impractical for alignment, station spacing, cost and capacity. Subway advocates argue that this prejudices the evaluation for LRT.
- If you need elevated structures, you will look for wide streets and Hydro corridors even though these may not be ideal as the location of a transit service for access or land use.
- Drawing a line on a map can predetermine the technology selection and future network options.

Why Talk About Technologies?

- Remember the “missing link” myth?
- The embrace of a high-tech “solution” prevented Toronto from launching major transit expansion just at the time when political support was available, and suburban development had not precluded transit as an important component.

Where and When is this?

Where Is This (Another View)

And the answer is …

- Finch & Woodbine, 1965
- “Woodbine” is now called “Highway 404”
- The suburbs were built around cars, not transit even when the need for better transit was recognized.
- Congestion is “built-in” to the GTA
- Ontario built too little, too late and without a significant commitment to transit except where it was easy to implement (GO rail corridors).

Suburban Subway Plans

- 1990 Peterson plan: A subway in every borough (Spadina, Sheppard, Eglinton, Bloor West, Scarborough extension, Waterfront LRT)
- Rae government kept this alive as a construction stimulus in the early 90s
- Harris killed all but Sheppard (needed to keep Mel Lastman onside for amalgamation proposal)
- Small-scale GO improvements focussed on peak-period core access
- GO access was mainly by car to parking lots
- Suburbs continued to grow as almost completely car-oriented communities

The "Last Mile" Problem

- Surface transit is important
- Transit riders do not behave like motorists
- Getting to the trunk route poses a significant penalty in travel time and convenience
- Local service is essential unless population is concentrated at major transit nodes.
- We have built low density and now must serve it.

Ridership Growth Strategy & Transit City

- Programs introduced by Mayor Miller
- RGS: Low cost, short term improvements to transit across the network
  - Loading standards
  - Hours of service
  - Fare levels and options
- Transit City: Network of LRT lines to bring faster, higher-capacity transit closer to much of Toronto
  - Eglinton (partly underground)
  - Scarborough (replace and extend RT)
  - Sheppard East
  - Finch West
  - Future: Don Mills, Jane, Waterfront West, Eglinton/Malvern
- Almost all of this has been sidelined by Mayor Ford without Council approval

Is Metrolinx a Solution or a Problem?

- MoveOntario2020: Provincial announcement in June 2007 (pre-election)
  - A compendium of existing local plans
- Queen's Park handed the detailed planning work to their new agency, Metrolinx
  - Planners, not operators
  - Board composed mainly of local politicians
- The Big Move
  - Funding problems -- scope cut back even before it was released to get the cost down to $50m (2008) over 25 years
  - Many costs omitted (operations & maintenance, local feeder/distributor services)
  - No funding strategy beyond ad-hoc allocations
  - Spending for initial projects stretched into "out years" beyond current financial projections (after 2015)

Where Are Decisions Made?

- The real political and funding decisions for Metrolinx come from Queen's Park, not from the "new" Metrolinx (with no politicians on the board)
- The Big Move 2.0 is coming, some day, but Queen's Park spends most of its time re-announcing money it plans to spend over the next decade
- There is no sign of change in funding strategy or the embrace of new revenue streams such as tolls or regional taxes
- There is no local input to Metrolinx and most of its business is conducted in private

Are Politicians and Planners the Problem?

- Most politicians and many planners think like motorists, not like transit riders. Most politicians represent areas poorly served by transit.
- Spending is project oriented, not service oriented.
- Funding is granted to one scheme at a time, not to an ongoing plan of expansion and operations.
- The work (consulting) and prestige (ribbon cutting) is in big ticket construction and opening of new lines.
- "War on the Car" language implies transit must take second place for planning and funding

What Are Roads For?

- "Obvious" users:
  - Transit / Cars / Cycling / Pedestrians
- But there are also:
  - Parking & deliveries / Taxi stands / Street furniture
  - Legal and illegal uses
- Suburban streets are not the same as downtown
  - 66-foot wide old city streets are not the same as Sheppard Avenue
  - Built form downtown faces the street and encourages pedestrian access, but has little room for greater capacity
  - Built form in suburbs faces onto parking lots (with some exceptions) and encourages car access
  - "Congestion" is different depending on the nature of the street, and one solution won't fix all problems
  - Very difficult political and planning choices are needed about the allocation of road space to various types of users
  - Are cars the most important users of streets?

Can You Eliminate Congestion?

- Anyone who claims they can eliminate congestion is deluded or a liar.
  - Existing demand is very much greater than built capacity.
  - Population growth will match or outpace the rate of highway building or transit expansion.
  - Travel patterns are based on existing land use and road networks, not on corridors where transit can easily replace capacity/functionality.
  - Megaprojects address long-haul travel and specific corridor issues, but do not touch local problems

We Are Attacking the Wrong Problem

- Mobility throughout the region is needed, but this means different things in different places
- Transit measures must be widespread to benefit a large proportion of potential travellers
- Transit improvements may add capacity for mobility without reducing congestion
- Continuous improvement must be visible in the short term to convince politicians and voters than transit investment is worthwhile
- Sustained advocacy for transit is essential