Signage evaluation

Signage deficiencies can sometimes be determined in isolation (e.g., a typo or the wrong typeface). But because *wayfinding* is a *process*, we carried out actual tests involving sample tasks to assess the real-world performance of signage when using TTC subway stations

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Use a large station to take the bus

TTC is unusual in that it operates multimodal stations, with subways, buses, streetcars, or combinations of those all available inside some subway stops. But from outside a station, do you even know that you have more options than just taking the subway?

Task From a corner at Yonge St., enter Eglinton station and find a bus that can (and later does) take you to Mount Pleasant and Eglinton.

Issues

¶ Standing anywhere at Yonge and Eglinton, it is not obvious where to take a bus going west or east from Eglinton Ave. It also isn't obvious that buses depart from the subway station under your feet.

¶ With construction and renovation happening beyond TTC control, only two *corners* have entrances to the subway (on the south side). Both entrances look different and have different signage; neither tells you buses serve the station; neither explains where the barrier-free entrance is (farther south along Yonge St.).

¶ Entering via the southeast corner, tunnels to the actual station clearly signalize TRAINS AND BUSES.

¶ Inside the fare-paid area, signage begins to use pictograms. At this point the user has seen three different graphic styles (exterior, tunnel, station). Directions to the bus bay use a fourth style.
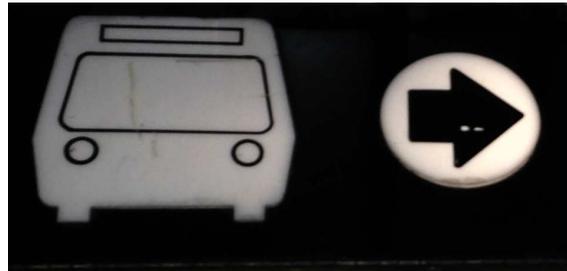
¶ The bus bay has a map *of itself* but not a map of *where buses go*. Crucially for this experiment, there is no map or even an indication that all eastbound buses drive along the same stretch of Eglinton Ave. East, meaning that any of those buses would suffice to reach Mount Pleasant Ave.

¶ Electronic departure-time signs are lists of line names or numbers. The presentation needs better grouping, but the real problem is the ambiguity of the numbers of minutes displayed. Are we counting down to the *arrival* time of the bus *into* the station or the departure time *from* the station?
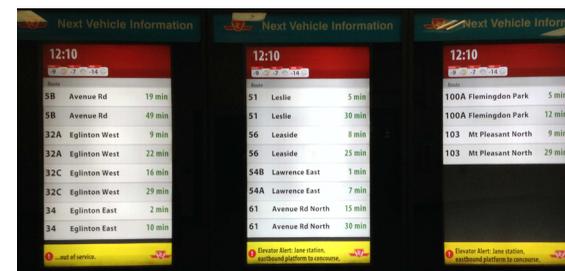
- There's no way to tell which bus leaves first for the common stretch along Eglinton. You must have prior knowledge of which buses take that route, then examine the countdown times to find the bus leaving earliest, and then find that bus, hopefully before it leaves without you. (Isn't it possible that one bus leaves while you sit in another?)
- A forest of printed bus schedules, using frames made for on-street stop poles, seems obviated by technology. You have to get right up close to each schedule just to find out what route it covers. (Those schedules do not even work well in their intended environment – on poles along surface routes.) Riders need to know when the next bus is and what times first and last buses leave.

Other deficiencies

- Automatic door to bus bay did not work in either direction.
- Overhead signage at each bus bay does not match the same at Victoria Park station.
- Electronic next-vehicle-departure typography does not match that of equivalent displays at other stations.

Discussion

This task impinged on two rider groups:

- People who do not know that taking a bus from a subway station is even possible
- People who know where they want to go and need to be told the quickest option to get there

For multimodal subway stations, at the very least exterior signage has to make it clear what modes of transport are available. Given the plethora of exterior signage types, this task would require coördination and planning and could result in opposition if it involved destruction of heritage signs.

The exterior pole sign at Main station lists all the modalities available at that station, but does so by pictogram. What remains to be tested is the comprehensibility of words-only, words-plus-pictograms, and pictogram-only presentations. The Paul Arthur redesign of 1993 erased the distinction between streetcars and buses, and this too needs to be tested.

This experiment showed that electronic next-vehicle-departure signage has an implied single purpose and use: You the rider know what bus you want (you knew that before you even looked at the sign) and need a countdown of how many minutes to wait. A rider with expert knowledge of the system may be able to use those displays to reverse-engineer which of several vehicles to get on first (as expressed in this experiment), but that is not the primary use case.

Throughout Eglinton station, sign design and typography reflect the respective eras in which they were installed. When experienced one after another, the impression left is one of inconsistency. But to impose complete consistency would involve removal of actually functional signage, much of it of heritage value.

Remedies

- For multimodal stations, at the very least *add* exterior signage explaining the options available at those stations. Carry out user testing as to method (words, pictograms, both).
- At relevant stations, redesign electronic next-vehicle-departure signs to show next viable trip for common destinations. Standardize type.

Hurry to the streetcar

Even if you are well acquainted with the system up front, can you find your streetcar during a crunch moment when you don't quite know where you are?

Task At rush hour, emerge at ground level at Broadview station and take the Dundas streetcar. Complication: Write text messages (with eyes looking down at phone) until ten paces out the north-side door.

Issues

This was a simulation of wayfinding while distracted. Even if you are reasonably familiar with Broadview station, suddenly popping out of the mindset of text messaging and discovering yourself on a platform is jarring. Where *are* you?

In this case, one streetcar was parked at the station, so you don't need signage to know which direction to go. But what signage exists is unilluminated, distant, shadowed, and unreadable. Further, you have to walk right in front of the 504 streetcar to get to the 505.

Discussion

There is not enough signalization for streetcars. Rather after the model of building as sign, the streetcar is a sign for itself.

But the central problem is that, even post-renovation, Broadview station does not have enough land to comfortably house all its surface routes. Signage cannot fix a bad layout. And on the day in question, by far the most prominent signs were multiply duplicated and redundant signage (in green for some reason) pointing certain bus users to temporary bays.

Remedies

Even if signage cannot fix a bad layout, bad signage can make it worse. Surface routes at Broadview need a full functional assessment from scratch and a rationalization based on user testing. That could be timed to coïncide with the arrival of LFLRVs, whose immense length will materially change the use patterns of the station.

Go one way or the other

Starting at the simplest station in the system, Chester, get to the Dufferin Mall

Task Take the subway and a bus.

Chester is deemed "the simplest station" because it sits on a residential street and has no connections to buses or streetcars. (Connection to the Bloor–Danforth night bus requires leaving the station and waiting on a nearby corner.) It's a *subway* station, not an RT station (like Ellesmere) or a streetcar station (like Queen's Quay), and it has but one line running in two directions. (Almost as simple are North York Centre, Summerhill, and Yorkdale, the last of those dealt with below.)

   The working assumption here is that all you know is you have to get to Dufferin station.

Issues

Entering Chester station:

¶ On Danforth Ave., there's only one sign telling you the subway exists, and it's high up, unilluminated, and on the opposite side of the street from the subway entrance.

¶ There are no subway maps on immediate entry (outside the fare-paid area).

¶ If you don't know which direction to go, you must look at the huge TTC system map to find just the Bloor–Danforth subway line and, within that, Dufferin station. Knowing at this point that you must go west, the act of looking at that system map placed you almost on top of the *eastbound* platform's stairs. (The westbound platform has a larger and more usable map listing only subway stations.)

At the newly remodelled Dufferin station:

¶ There is no neighbourhood map, but two giant signs thanking customers for patience during renovations are duplicated once each for a total of four impressions of the same message. More signs are not better.

¶ The Dufferin Mall is a common destination for passengers getting off at Dufferin station. By comparison with Coxwell station, which has signage telling you to take any 70 O'Connor bus to reach Toronto East General Hospital, there are no signs telling you to take the southbound bus or to which stop.
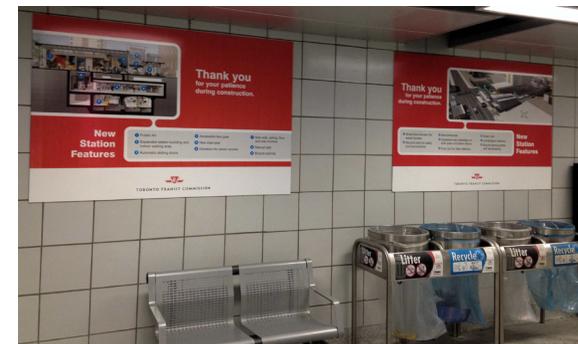
- If you guess correctly that southbound is your direction, the Dufferin Mall stop is announced as "Dufferin Park Avenue." The stop announcement does not add "Dufferin Mall," and the Astral-controlled bus shelter claims the street is called Dufferin Park Dr.
- By coïncidence, the easiest way to get to the surface from the subway leads you to the bus you need to take – the 29 Dufferin southbound. The only barrier-free path also leads you there. The system biases you in favour of getting you to the bus heading in the direction you need *in this case*.
- Signs attempt to pack too much into limited space. (Is "Board Northbound Buses Across Street" a destination?)

Discussion

Landmarks and common destinations are poorly signalized throughout the TTC. When it does happen, it is not obvious why some destinations were chosen while others were not. For example, the words "Artscape Wychwood Barns" were added to stop announcements on the 512 St. Clair and 126 Christie routes despite the fact the single-most-used stops on the latter are the set of three seniors' residences and long-term-care facilities at Lambertlodge/Melita. Kensington Market is announced on the 510 Spadina route at Nassau St., a clear parallel to the current experiment – one shopping destination is announced while another isn't.

The addition of the 192 Airport Rocket *bus* route to *subway* maps further shows that criteria for signalizing and highlighting common destinations need to be evaluated.

If you have only half the knowledge you need to get to your destination (here, "Get to Dufferin station"), existing signage does a poor job filling in the other half. In particular, you have to pay a fare just to answer the question "Can I even get there from here?" There seems to be an assumption that, since any subway station is reachable from any other, any passenger with a destination in mind should be fully confident in the system, pay a fare, and enter. But only expert or advanced users know that all stations are reachable from each other.

At some expense, subway stations are being retrofitted with electronic displays designed to be visible only to would-be passengers who have not yet paid a fare. The use case there – one borne of complaints publicized in newspapers – is to avoid wasting money, tickets, or tokens when the subway is out of service. But across the board, the system does not tell you what you can and cannot do at a station and where you can and cannot go if you enter it.

Remedies

Stations need to make clear to would-be passengers not only if the system is out of service or not but what can and cannot be done at, and where one can and cannot go from, each station. Achieving that would require a pilot project and before-and-after user research.

Senior travel

Does signage tell you how you can – and cannot – pay a fare to enter a station?

Task Armed only with seniors' tickets, enter stations using secondary entrances (e.g., elevators at Sheppard–Yonge; Bloor–Yonge entrance north of Bloor; North York Centre mall entrance).

Issues

There was never any doubt it is impossible to get through an automated entrance using nothing but senior tickets; this was a test of *signage*.

At automated entrances, signage attempts to tell you the ways in which you *can* enter a station but does not clearly tell you the ways in which you *cannot*. Further, signage stating that entry is by token or Metropass only (as at Yonge station) is simply not accurate because you can buy one or more tokens with cash. But you aren't told that.

Every station handles the problem differently. A troublesome automated entrance at the west end of the Sheppard-line platform at Sheppard–Yonge wordily attempts to explain what can and cannot be done inside a standard TTC caisson format and does not really succeed.

The next station up the line, North York Centre, just says "Automatic Entrance" in a forest of Helvetica type and arrows.
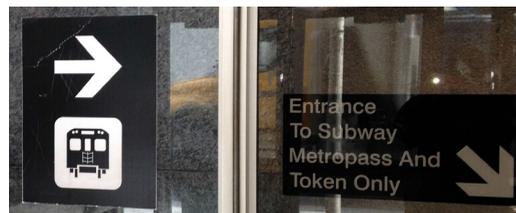
Discussion

Entering automatic fare gates with senior tickets is the same as entering such gates with a day pass or any other "fare medium" without a magnetic stripe. It is also functionally equivalent to attempting to enter a station via an inaccessible entrance when you need an elevator. (The most common use cases there are not people in wheelchairs but people with strollers and baggage carts.) The system does not do a good job telling you that you *cannot* enter here and informing you where you need to go to succeed in entering.

Something akin to a checklist could be used to explain what does and does not work at an entrance. The exact typography and presentation could be improved, but pass-vending machines do a reasonable job of presenting yes-and-no checklists.

Remedies

¶ Add signage to automated and/or inaccessible entrances to clearly list what is and is not possible at those entrances.

¶ Tell people the other entrances where they can use the fare methods that don't work at the current entrance.

¶ Tell people where elevators are.

(All require user testing.)

Take the 64

Can you tell which way to go on a bus that travels north and south past or through a subway station?

Task Using the online trip planner in advance, select a destination on the 64 Main route. Then take that bus from Main station.

Issues

This task assessed the consistency or lack of same between subway signage for bus routes and signage on the buses themselves. The task further dealt with bus routes that go through or go past subway stations but do not necessarily terminate at one.

The 64 Main route was chosen because it is somewhat inscrutable to outsiders. The line does not *terminate* at Main station but passes through it northbound and southbound. The southbound direction can be reasonably inferred because the bus destination sign states TO QUEEN. But the northbound destination is listed as TO EASTWOOD, a small residential street.

Destination signs do not state the bus goes through Main station, and the northbound destination can be and is shown while the bus is pointed south (as at Queen St. East).

Signage at Main station clearly differentiates northbound and southbound directions of the 64, albeit in widely disparate type.

Other deficiencies

The portion of this task requiring the use of the trip planner failed. There are no destinations that can be chosen via the trip planner. For typical subway-feeder routes, that is to be expected, because not every route can be a 29 Dufferin with a Dufferin Mall on its path.

Discussion

By no means could every surface route be categorized and signalized as east/west or north/south. The 82 Rosedale route is a classic example of a bus that drives hither and yon. But for a great many surface routes, many of them extremely well used, general east/west or north/south directions are in effect. (And those directions are listed as such in the description of those routes on the TTC Web site.)

Electronic route destination signs can and should be updated to read, for example, NORTHBOUND TO EASTWOOD VIA MAIN STATION (in the 64 case).

There is existing research that can be relied upon to choose block display versus scrolling or crawling display of such information.* Many routes' destination signs, including some branches of the 29's, already cycle through more information that fits in a single display block.

Remedies

Update electronic route destination signs to show general direction of travel and subway stations served.

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* Philip M. Garvey, "Synthesis on the Legibility of Variable Message Signing (VMS) for Readers with Vision Loss." Architectural and Transportation Barriers Compliance Board (Access Board), 2002.

Take the Community Bus

Is the Community Bus a viable alternative to reach a neighbourhood destination?

Task   Use the 404 East York bus to go to the S. Walter Stewart branch of the Toronto Public Library.

Issues

¶ The 404 East York Community Bus terminates at Victoria Park station. Except – confusingly – it visits that station *twice per trip*.

¶ 400-series Community Bus stops are not predicted via NextBus. If you use any system – whether API, SMS, or an app – to check when a 400-series bus will arrive, all you receive is a generic error. (The error should be on-topic and customized for Community Buses.)

But this further means the 404 is not shown on the next-vehicle-arrival screens inside Victoria Park station.

¶ No front destination sign on this vehicle. No stop announcements at all. (Driver: "I know.") Next-stop *display* showed nothing but its application version number the whole trip.

¶ No way of requesting a stop.

¶ The bus stops and waits at every stop unique to the 404, presumably to give slow-walking passengers waiting inside an adjacent building time to bundle up and make their way to the bus. The bus blows right past stops (e.g., on Dawes Rd.) that it never serves – but it also blows right past the stops it *does* serve that it shares with conventional buses (like the 62 Mortimer).

¶ Those shared stops on Mortimer Ave. do not say the 404 stops there. This task needed the bus to stop at one of those locations on Mortimer Ave., but it did not stop and there was no way to request a stop.

Other deficiencies

¶ Rides on the curiously named Friendly paratransit model are never pleasant. This bus was cold and, not atypically, was loud, poorly finished, and festooned with clattering seatbelts and restraints.

¶ One seatbelt tongue was twisted 180°, hence unusable. One other passenger was observed trying to pull down a fixed restraint stowed on the inside wall instead of using the seatback-mounted (and twisted) seatbelt.

¶ Overhead signage at each bus bay does not match the same at Eglinton station.

Discussion

Barely anyone knows that Community Buses exist. Their details are even more obscure. The typical user – a senior, a wheelchair user, an old-age-home resident – is arguably disadvantaged or vulnerable. Yet ironically, these routes require the highest degree of expert knowledge of any in the system. You have to know they exist, know where they stop, and know their schedules (because stop predictions available everywhere else are unavailable here). To use Community Buses well, you have to already use them well.

Stop announcements were mandated by the Lepofsky decisions and it is not really in dispute that they are needed on Community Buses. TTC will not remove a vehicle from service if its only defect is broken stop announcements. The limited number of Wheel-Trans Friendlys with front destination signs and stop announcements means that taking the vehicle tested (W104) out of service that day would essentially put the entire 404 East York line out of service.

It is literally and figuratively alarming that there is no way to request a stop. Untenably, you're essentially trapped inside the vehicle until the driver chooses to stop.

Remedies

¶ Add 400-series stops to the NextBus prediction API. Doing so would then add next-vehicle-arrival listings on electronic signs inside Victoria Park station.

¶ Outfit more Friendlys with front destination signs so they can sub in for Community Buses when needed.

¶ Immediately retrofit Community Buses with stop-request functions.

¶ As on the conventional system, run vehicles only if stop announcements are working.

Take GO Transit

The TTC's subway lines are intermodal with other transit operators. How easy is it to transfer from the TTC to another transit system?

Task   Take the GO Train from Main station.

Issues

The TTC is not just multimodal (buses, streetcars, and subways sharing the same stations) but *inter*modal, with connections to neighbouring or overlaid transit services. In principle it is straightforward to transfer between the TTC and GO Transit at a few stations, including Main station (near the GO Danforth station). In practice, only an expert user could manage it.

There is no signage at all at Main station telling you that a GO station exists nearby. You can see that station when looking out the right-side window of any surface vehicle heading northbound over the bridge *to* Main station, but in fact the station is hidden and below grade. As in this task, even knowing the GO station is there somewhere and *even seeing a Via train fly by while looking for it* will not get you there.

Discussion

This was the sole task that was impossible with no way to save it.

Remedies

Add signage to Main station stating that the Danforth GO station is nearby *with instructions on how to get there*. Coördinate with Metrolinx and the City to improve on-street signage.

Walk into Yorkdale

Yorkdale is the one subway station that exists almost in isolation, with no advertised or even apparent connection to the street. Can you enter it on foot?

Task   Enter Yorkdale station from the street.

Issues

At root, Yorkdale station exists to serve the Yorkdale Mall, plus a few nearby amenities and a GO bus terminal. You are expected never to touch foot on a city street when using Yorkdale station.

Along the vaulted passenger tunnel between the mall and the station are two unlabelled stairways. As it turns out, both lead to the outside world. The stairway tested leads to ground level and has TTC signage on its inside. It has a recently updated Yorkdale sign on its outside.

But the door and entrance are like something out of J.G. Ballard* – exurban with no cues as to location. You could be anywhere. There was no visible way to walk up to that door from some distant starting point and enter the station. Perhaps there is such a path and perhaps it is visible with no snow cover in full light of day, but the test was run at night in –15° C weather in a snowstorm.

Farther along that vaulted tunnel is another stairway that, based on previous observation, leads to a street (perhaps Dufferin St.).

If you walk up either of these stairways, you end up in the vaulted tunnel, which at no time tells you to turn left to reach Yorkdale station. If you hadn't already been there, you would have no way of knowing that there's a subway station a minute and a half away. Once you are almost so close to the door of the station you can touch it, signage directs you to trains and tells you the name of the station (in two eras' typography).

It is not really clear if these stairways and the doors they lead to constitute emergency exits and are in compliance with any version of the Ontario Building Code, including the signage aspect. They might not even be TTC or City property.

*   The work of British novelist J.G. Ballard (1930–2009) concerned itself with desolate urban settings like apartment blocks and, in *Concrete Island*, with a protagonist stranded on a patch of asphalt under a busy highway overpass. The feel at Yorkdale is similar ("Ballardian").

Discussion

Yorkdale station is not really set up for passenger ingress or egress from the street. Through its design and the design of the urban surroundings, it is actively hostile to such ingress or egress. You can do it, but the station really discourages you from trying.

Taking this one step further, it is not obvious how the *station* can be made barrier-free. It is not even obvious how the well-travelled route between station and mall can be made barrier-free.

Remedies

Add signage directing passengers to the subway.

General discussion & next steps

Every task was marked by surprises. These tasks revealed a series of hidden assumptions that TTC riders – even experts – see right through. They also underlined a fact that is already well known: TTC signage works great if you already know how to use the system. Signage is geared to expert users *like the creators of the signage,* a conundrum one finds everywhere in usability testing.

Experts always think a system they know well is easy. It's hard to put yourself in other people's shoes. The advantage of task-based testing, as seen in this experiment, is that even setting up tasks explicitly because they are edge cases will reveal deficiencies that apply widely throughout the system. Testing for uncommon use shows you what goes wrong in everyday use.

Fundamentally, signage should not be installed before it is tested. Or, to be more precise, final signage should not be installed without testing it first. Testing is not a matter of likes and dislikes ("I don't like the colour" is not a helpful statement) but of functional outcomes.

We suggest the TTC prioritize user testing, even via proxy methods like the one used here, in all signage design and installation.

Next steps include following up on the upgrades and user testing recommended in this evaluation.

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