

11TH CONFERENCE ON COMPETITION AND OWNERSHIP IN LAND PASSENGER TRANSPORT

Delft University of Technology (The Netherlands)
20-25 September 2009

HOW FLEXIBLE SHOULD BUS SERVICE BE? FREQUENT NETWORKS AS A TOOL FOR PERMANENT CHANGE

ABSTRACT

Buses are often hailed for their "flexibility" as a transport mode, compared to rail-based technologies. Many cities, though, need certainty about where high-quality services will be in the long term, so that they can guide both land use and road design in harmony with them.

Bus Rapid Transit is an obvious example of "bus service made permanent." The infrastructure of BRT represents a fixed government investment in service in a certain place, which in turn provides the certainty that other city actors need as they decide how to grow the city, and whether they can rely on the permanence of the service as they do so.

This paper asks: Can we seek similar permanence for frequent local-stop bus lines? A generation of North American land use planners and urbanists has decided that when it comes to local-stop services, trams matter and buses do not. But people make location decisions based on the mobility offered by public transport, so there is at least theoretical reason to believe that we would get better long-term patronage (and urbanist) outcomes if we fixed our best local bus services far in advance. The paper reviews current practice in "Frequent Network" strategies and branding to this end.

INTRODUCTION

Perhaps the most vexing conceptual chasm afflicting public transport debates is between technology-first and service-first thinking:

- Technology-first thinking views the vehicle (and sometimes the running way) as the primary categorical distinction among transit services. In this view, the public transport world is divided, first and foremost, into rail, road, and ferry, and all other distinctions are secondary to these.
- Service-first thinking is primarily concerned with the mobility and access outcomes of public transport, and therefore tends to categorise services according to the types

of mobility they provide. Service-first thinking views technologies as tools for delivering mobility and access outcomes, rather than as ends in themselves.

For example, a widespread view among US public transport advocates is that “bus rapid transit” means “buses pretending, more or less successfully, to imitate real [i.e. rail] rapid transit.” This is, almost unconsciously, a technology-first view. Only a service-first thinker has a technology-neutral concept of “rapid transit” -- defined in terms of stop spacing, frequency, speed, and reliability -- and can thus see bus and rail as two tools for implementing the same concept.

Technology-first thinking is intuitive for most non-experts. Its emphasis on the transit vehicle may derive partly from a false analogy with motoring, where the selection of a vehicle to purchase is a consequential and often emotive decision. In any case, service-first thinking requires a greater degree of abstraction, and is thus more common among professionals. Service-first thinking often arises in the general public only in the face of the high-cost of a technology-driven proposal – most commonly a rail transit project – which thus generates curiosity about whether less expensive technologies can deliver the same mobility and access outcomes.

In the world of rapid transit, there are now enough bus-based examples that the tradeoffs between bus and rail can be made visible even to people who prefer to think technology-first. Dramatic uptake of Bus Rapid Transit in the developing world, combined with key developed-world models such as Ottawa and Brisbane, are beginning to yield an adequate body of data on buses as a rapid transit tool. As a result, there is now a reasonably well-developed range of bus-based products that can be studied against a rail proposal in any particular corridor, and thus at least the potential for decisions that maximise cost-effective mobility.

The same is not true, however, in the realm of high-frequency local-stop transit, which is the focus of this paper. Here, the rail-based product is the tram (called a streetcar in North America), which is well-established in Europe and is the subject of intense advocacy – much of it driven by inner-city planners, architects and developers – in North America and parts of Australasia. Yet in many cities, there is still no word for the bus equivalent of this service. To put the problem in technology-first terms, many cities do not have a word for “a bus doing what a tram does.” To put the same problem in service-first terms, there is no word for “a local bus running at a consistent high frequency, with a high standard of comfort, etc.” The lack of a word indicates the lack of a concept, or as the philosopher P. F. Strawson (1979) put it: “What we can’t say, we can’t think.”

As a result, trams are often wrongly compared to the average city bus, yielding an exaggerated difference that distorts the real choice about how to best provide mobility and access in each corridor. Populist discussions about why trams are better than buses (e.g. Infrastructurist 2009) tend to conflate intrinsic features of the two modes with contingent differences about how the two modes have been implemented. To take the most crucial example, trams are virtually always frequent, while buses sometimes are not. But this is not a sufficient reason to build a tram. It’s a reason to create a clear concept of “frequent bus service” that can be compared to the tram more fairly.

This paper reviews current best practices in the creation of this “frequent bus service” concept, which sometimes appears, equally usefully, as a technology-neutral “frequent

service” or “Frequent Network” concept. Inspired but not constrained by the competing vision of local-stop trams, the paper looks at a range of uses for the “frequent bus” concept, ranging from short-range service planning and branding to long-term efforts to encourage a more transit-oriented urban structure.

DEFINING AND JUSTIFYING THE FREQUENT NETWORK CONCEPT

While there are many kinds of service, they can be sorted into basic categories according to fundamental distinctions about their usefulness and market. These categories deal with *when* and *how frequently* they operate:

- Is the service available whenever I need it, or just at limited times of day?
- Is the bus likely to come when I need it, or will I have to wait a long time or plan my trip around the bus schedule?

Few questions are so fundamental to determining whether a particular trip can go by public transport. The Frequent Network is that element of the public transport network where the answer to both questions is yes.

The Frequent Network is fundamentally different from other transit services, because it offers spontaneous convenience. On Frequent service, you can travel whenever you want, change your plans, make an unscheduled stop, etc – a level of convenience that most people associate only with the private car.

Because of this level of convenience, the Frequent Network permits customers to organize their lives around the service for many of the needs of life, not just for rigidly-scheduled commutes. Only on this network is it practical for an active person to consider not owning a car and relying on transit for daily needs. Since cars, once owned, tend to be driven, a city has a clear interest in creating opportunities for lower car ownership and making those opportunities visible. A map of the Frequent Network is a map of those opportunities.

Frequent Networks are therefore ideally suited to those segments of a city where the goal is higher urban density and reduced car ownership. (Reducing car ownership is emerging as a key element of the larger effort to reduce vehicle kilometres travelled, especially in countries where most of the costs of driving – such as vehicle purchase, licensing, and insurance – are unrelated to distance travelled.). These denser areas are typically designed with mixed-uses to bring many of life’s needs within walking distance, supplemented by a range of mobility options including carsharing, cycling, and public transport

The definition of “Frequent” can vary considerably from one urban area to another, but the common minimum in these definitions seems to be a frequency of every 15 minutes or better extending throughout the day, including both peaks and the entire period between them. In most cases, the same standard applies on Saturday and often Sunday. The greatest variance among definitions occurs with evening service, which is often hardest to sustain financially given lower evening patronage. It is also common to have a minimal definition based on current resources and a more maximal aspirational definition for use in long-term planning.

RELATIONSHIP TO OTHER SERVICES AND “FREQUENT LOCAL” CONCEPT

Table 1 below shows an obvious service-first system for categorising public transport services. On this view, the most crucial distinctions are:

- Frequency and service span, which determine whether service is available when you need it. The categories are:
 - Frequent (every 15 minutes or better all day, 7 days)
 - Infrequent, i.e. headways longer than 15 minutes, often with no evening or weekend service.
 - Peak-only.
- Speed/access. Since speed is inversely related to stop spacing, the key categories here are:
 - Nonstop. Serving a long nonstop segment.
 - Rapid. Widely spaced stops serving distinct nodes, high speed.
 - Local. Closely spaced stops for continuous coverage, lower speed.
 - Flexible. Deviated or demand-responsive services, highest access but lowest speed.

Table 1. Taxonomy of Key Mobility-Based Service Types

		FREQUENCY/SPAN TYPES		
		Frequent	Infrequent	Peak Only
SPEED / ACCESS TYPES	Nonstop			Typical commuter express service.
	Rapid	"Rapid transit" (rail, ferry, or bus)	Rural links between towns.	
	Local	"Frequent Local" (tram or bus)	Typical suburban local bus service.	Commuter shuttles (station to worksite)
	Flexible		Typical demand-responsive services.	

The Frequent Network, then, is the area shaded in yellow. It consists of all frequent services, but within it is a crucial distinction between Rapid and Local services.

In most agencies that use the Frequent Network concept, Rapid services already have a clear identity reflected either in a rail transit technology or a Bus Rapid Transit product, so in practice, the “new” concept introduced by the Frequent Network is the “Frequent

Local” service. Some agencies prefer to emphasise the entire Frequent Network, while others apply a brand specifically to the Frequent Local, but the effect is the same.

CURRENT EXPERIENCE: BRANDING OF EXISTING SERVICES

A number of agencies in North America and Australasia have introduced frequent network brands, mostly in the last decade.

Portland, Oregon

Portland, Oregon’s Tri-Met offers a relatively high-end version of the brand, featuring distinctive stop signage and a relatively simple schematic map showing just the “Frequent Service” network. The agency website (Tri-Met 2009a) states: TriMet’s Frequent Service bus and MAX [light rail] lines run every 15 minutes or better during most hours of the day, every day. SO often, you don’t really need a schedule.”

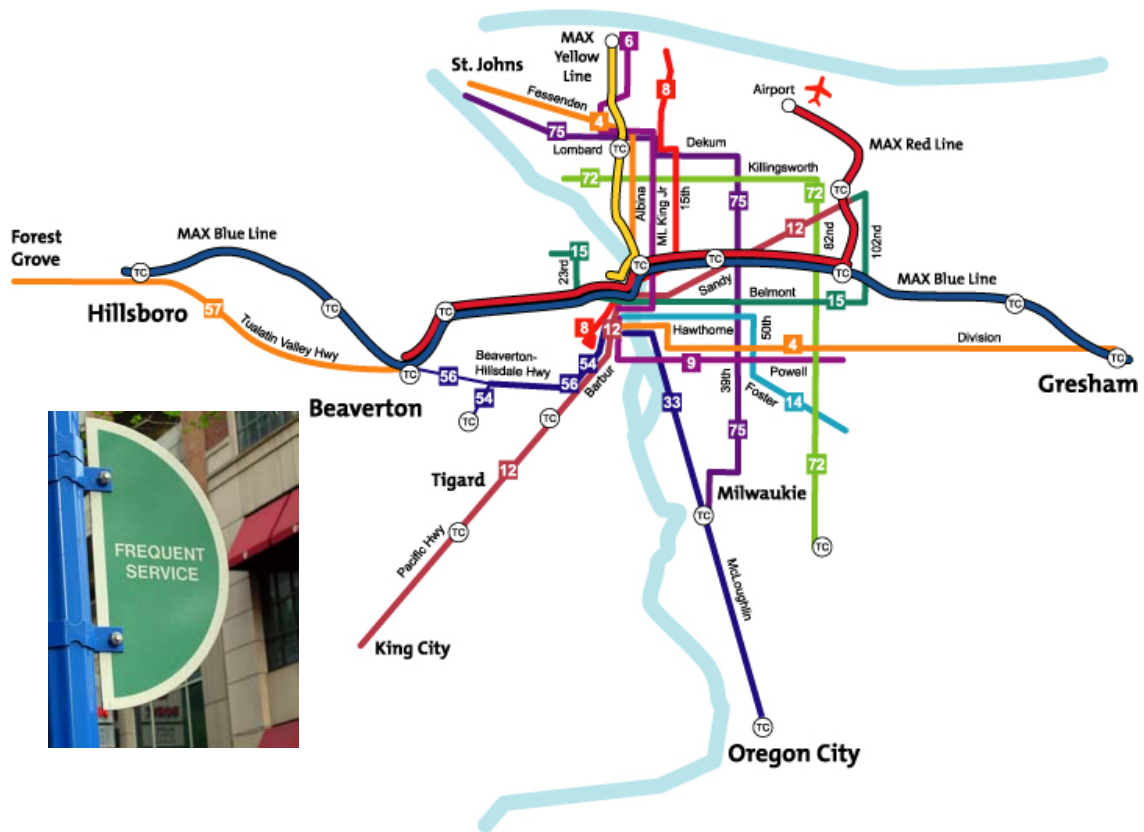


Figure 1. Portland's Frequent Service Network, Map and Signage

The brand was introduced in the late 1990s, in the course of a project to replace all of the system’s bus stop signs. The schematic map is perhaps the most important expression of the network. It provides a quick view of the extent of the network, useful for quickly seeing where you can travel while enjoying the frequent service guarantee. Wide lines on the map indicate the light rail system, while the remaining lines are local-stop bus services.

As in many agencies, the frequent service product is sometimes the result of two or more less frequent lines overlapping. In Portland's case, Lines 54 and 56 in the southwest part of the map have a long common segment that is presented as Frequent Service even though the two routes, when separate, offer a lower level of service.

Significantly, Tri-Met's Frequent Service brand is also manifested in long-range planning documents for the region. (The regional planning agency Metro is responsible for long range planning for both land use and transport, and thus has an unusual opportunity to coordinate the two functions around a common spatial plan.)

There is some evidence that acceptance of the Frequent Service concept is not embraced by all key elements of the agency. Notably, new signage on the downtown Portland transit mall opened in mid-2009 does not distinguish frequent services. The most recent version of the complete System Map (Tri-Met 2009b) uses a nearly invisible yellow shading on the route number to identify Frequent Service, a considerable reduction in legibility from earlier versions where Frequent Service routes were drawn with a wider line.

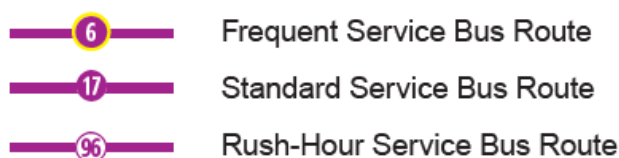


Figure 2. Legend of New Tri-Met System Map

Minneapolis and St. Paul, Minnesota

Metro Transit in the Minneapolis – St. Paul region introduced a “Hi-Frequency Network” brand, (Metro Transit 2009) inspired in part by Portland's, in the mid-2000s. The mapping is similar, while the signage is better than Portland's in that it specifically identifies the frequent route rather than just indicating, as Portland's does, that frequent service is present at the stop.

The Metro Transit definition of the “Hi-Frequency Network” is narrower but also more specific than Portland's, promising service every 15 minutes or better from 6:00 AM to 7:00 PM on weekdays and 9:00 AM to 6:00 PM on Saturdays. There is no frequency guarantee on Sundays. This relatively limited promise expresses the limitations of the current service, and is likely to expand over time.

As in Portland, the Minneapolis network includes both light rail and buses. (The single light rail line is identified as Line 55 on the map.) In service-first terms, light-rail and buses correspond to the Rapid and Local service categories in Minneapolis, because there is currently no Bus Rapid transit, nor are there “trams,” i.e. local-stop rail.

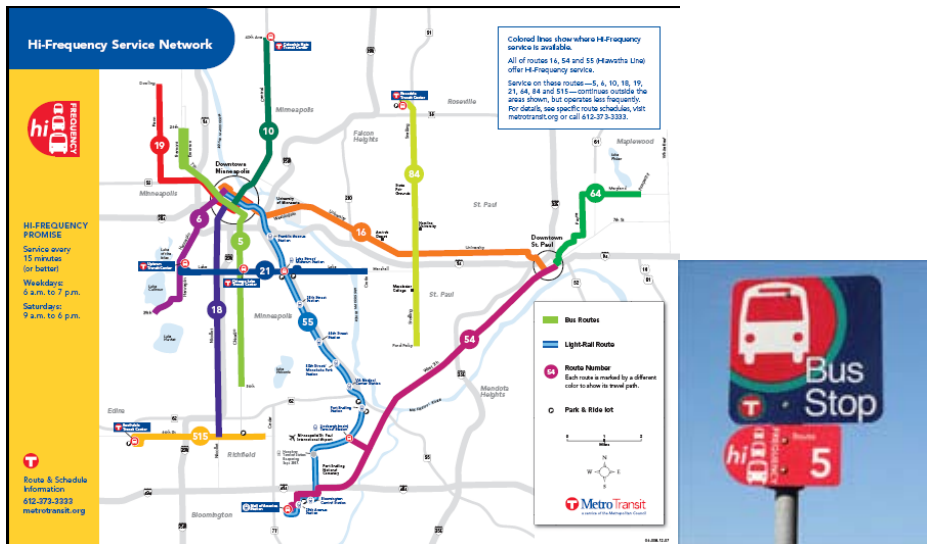


Figure 3. Minneapolis-St. Paul "Hi-Frequency Network" Map and Signage

An interesting feature of the Minneapolis-St. Paul map is the high degree of disconnection in the current Frequent Network. Network design in this region tends to use extensive branching patterns that have the effect of dissipating frequency, so with few exceptions the “Hi-Frequency” brand extends only to portions of routes. Thus, for example, the east-west Line 21 appears not to extend far enough to connect with north-south Line 84. In fact, some Line 21 trips do extend that far, but not enough to sustain the high frequency. A fairly modest expansion of Line 21 service, adding just some trips on one part of the route, would “close the gap” in the frequent network, dramatically expanding the range of trips that could be completed at a 15-minute frequency. However, that idea only becomes visible once the frequent network map is identified and drawn.

Comparing this network to Portland’s suggests the degree to which the frequent service concept can lead to different network design choices. Portland’s planners have now been working with the frequent service concept for over a decade, and the result has been a conscious effort to consolidate and complete logical frequent corridors. As a result, Portland’s network exhibits no cases where two routes that are frequent in part fail to make a frequent connection, such as the Line 21 / Line 84 example in St. Paul. It is likely that if they continue to work with the frequent service concept, planners in Minneapolis-St. Paul will gradually focus on closing these obvious gaps, creating a more fully interconnected network of frequent services.

Los Angeles

The Los Angeles County Metropolitan Transportation Agency has one of North America’s most extensive and nuanced systems of service branding. Branding distinctions, however, focus primarily on the stop spacing distinction (Rapid vs. Local), emphasising it over the bus/rail distinction. Key brands used in Los Angeles include:

- A rapid transit network consisting of a mixture of heavy rail, light rail, and bus rapid transit corridor. Names referring to colours (Red Line, Blue Line etc) indicate this level of service. The definitive feature of this network, apart from high frequency

and Rapid stop spacing, is that all services are in exclusive right of way. (This assurance is slightly compromised in the case of the Orange Line, a Bus Rapid Transit service that mixes with traffic briefly near its endpoints.)

- A Metro Rapid brand denoting bus services with a Frequent Rapid pattern (i.e. widely spaced stops and high frequencies) but operating in mixed traffic. These services are operated with a distinct fleet of bright red buses.
- A Metro Local brand denoting all local-stop services regardless of frequency, operated with a fleet of orange buses.
- Separate brands of municipal services, mostly controlled by individual city councils rather than the central authority. These often function as feeders to Metro's network but also serve some long frequent corridors in their entirety.

With so much branding already in place, it is understandable, perhaps, that the Metro Local brand is not further subdivided to distinguish the frequent local services from the infrequent ones, helpful as this would be. Still, Los Angeles MTA does publish a map of "12-minute corridors."



Figure 4. Los Angeles "12-minute Map" (excerpt).

This excerpt shows, in the upper right, segments and stations of the rapid transit Red Line and Purple Line. The rest of the map features Metro Rapid lines and stops in their characteristic red and Metro Local (lines but not stops) in orange. Finally, services run by municipal agencies (the City of Santa Monica in this case) are in green. All these services have been sifted to show only those running every 12 minutes all day on weekdays. The branding does not extend beyond the provision of this map.

Adelaide and Brisbane, Australia

Two Australian agencies have frequent service brands. Brisbane Transport, the municipally controlled bus operator in the City of Brisbane, refers to its high-frequency services as "Bus Upgrade Zones" (BUZ). The State of South Australia, in its role as the regulator and planner of Adelaide bus services, refers to its high-frequency corridors as "Go Zones." Both publish rather schematic maps of these services.

use the two interests will tend to converge. The difference is analogous to the difference between “postal code” and “zip code,” where the latter is a US brand name meaning the former. It would be simpler if Americans referred to postal codes just as most other anglophone countries do, but the “zip code” brand is so widely established in US English that it is no longer an obstacle to comprehension.

While the effects of Frequent Network branding are very hard to isolate, our study of the causes of patronage improvement in Australasian systems (Walker and Donovan 2009) observed that Adelaide and Brisbane tended to display particularly large patronage results from increases in frequency to the 15 minute threshold. At the rollout of the BUZ concept in Brisbane in the early 2000s, one inner-city route that already had frequent all-day service posted an unusual patronage gain in the year following the introduction of the BUZ brand. The case is insufficient to demonstrate causation but does suggest that significant increments in patronage on Frequent Services may relate to the visibility created by the branding itself.

OBSTACLES TO SHORT-TERM FREQUENT NETWORK BRANDING

Waiting time is the most onerous aspect of the public transport trip. Modelling routinely assigns waiting time up to twice the weight of in-vehicle travel time in quantifying the factors that push customers away from public transport. As the variable that most directly determines waiting time, one might expect frequency to be the object of strenuous marketing in those cases where high frequency is provided.

However, the simple idea of Frequent Network branding encounters two key kinds of resistance. First, of course, the Frequent Network concept must compete with other distinctions for the limited semantic “bandwidth” of the system’s brandable elements. Second, the Frequent Network map sometimes raises concern about how inequitably the service appears to be deployed.

Competition with Other Systems of Categorisation

Transit services can be categorised in many ways, and each of these systems of categorisation can be used as the basis of brands. In addition to the frequency distinction discussed here, others include:

- *Technology* distinctions, such as road vs. rail. In cities where the technology distinction corresponds fairly closely to the frequent service distinction for local-stop service – typically because most frequent local-stop corridors are already trams – there is little need for distinctive frequent network branding.
- *Operator* and *government agency* distinctions. The identification of private operators and their territories becomes a predominant point of distinction in systems where much planning and branding authority is invested in the operating company. In North America, where most planning and branding authority lies with government, similar distinctions arise in regions where multiple government authorities are at work.

- *Stop-spacing* distinctions, such as “rapid” (widely-spaced stations) vs. “local” (many local stops).
- *Exclusivity of right of way* distinctions, such as the busway infrastructure brand exemplified by Ottawa and Brisbane, called a Quickway in the work of its American advocate Alan Hoffman (2008).
- *Network structure* distinctions, reflected in terms such as “orbital,” “crosstown,” “feeder.”

Even where the focus is long-term, and thus expressed less in branding and more in the conceptual categories of a region’s strategic plan, there is a limit to the number of perpendicular schemes of categorisation that are easy to explain. The existing categories inevitably shape not just the communications of an agency, but its internal process of thought. Organisations think by people talking to one another, so the most available words will tend to steer thinking into the systems of categorisation that those words suggest, whether or not they are the right system for the question at hand.

Appearance of Inner-City Bias

A common point of resistance to Frequent Network branding in North America is that large regional agencies serve a range of communities from dense core cities to low-density outer suburbs, and in many cases, the political centre of gravity of the agency’s governance lies well out in the suburbs. Yet a map of the Frequent Network, like all of the examples presented above, will inevitably show that frequent service is most common in the densest parts of the region, which is usually the inner city. Marketing and communications staffs, considering a proposed Frequent Network map, sometimes express anxiety that publishing such a map would exacerbate perceptions that the agency is biased against outer suburbs in their service planning decisions.

The objection illustrates the prominent role played by easily dispelled misconceptions. There is more service in dense areas because there are more people there, and most transit agencies care about serving units of population and economic activity rather than just units of area. Every map subtly invites us to judge each square centimetre equally, which is why maps often mislead when used to present information about populations and their services. Unfortunately, the initial visual impression created by a Frequent Network map is often just too visceral to argue against rationally.

FREQUENT SERVICE AS A LONG-TERM PLANNING CONCEPT

Best-practice long-range planning for urban regions identifies the long-term frequent network, including the local-stop services that are the focus of this paper. While many long-term planning agencies continue to think exclusively in terms of long-term rail and tram networks, it is increasingly common, especially in North America and Australasia, to define long-term services in a technology-neutral way so that technology debates do not distract from the need to think clearly about urban structure in the long-term and its relationship to the best public transport.

As a long-term policy tool, the Frequent Network can serve as a common focus for the efforts of several areas of government toward the common goal of sustainable transport, including:

- Land use planning and development design.
- Road planning, design, and signalisation.
- Public transport operations, communications, and short-range planning.
- Location decisions by other government agencies, particularly those dealing with the public and those that serve groups that may be especially dependent on public transport.

Put simply, all of these functions need to be working with the same policy map showing where the highest-quality services will be in the future, so that:

- Land use planners can orient future PT-oriented density toward the network.
- Road planners and engineers can be responsible for helping protect the speed and reliability standards of the network, and can assess and justify their own projects in terms of these standards.
- Development design can orient specific buildings and pedestrian paths toward the network's stop locations.
- Public transport planners and operators can evaluate short-term planning options according to how well they lead in the direction of the policy network.
- Government agencies, health services, senior organisations, and other key institutions can be encouraged to locate on the Frequent Network if they want high-quality services - and to not expect such services if they do not.

This level of co-ordination is crucial to achieve the full benefits of the Frequent Network's intense level of service, and to avoid creating new patterns of development, or location decisions, that make efficient public transport service impossible. An adopted Frequent Network's value is that it can be a shared "map on the wall" that all relevant functions of government are expected to help implement.

Defining, Adopting, and Updating the Network

In a fully realised long-range plan using the Frequent Network, a government adopts all of the following as policy:

- A geographically specific Frequent Network for at least 20 years in the future, representing the intended geography of the network in the long term. (The year of this long-range network should roll forward to remain 20-30 years in the future, matching a year for which population and employment projections exist.)
- A set of policies requiring the realisation of the network to be a shared effort of:

- Land use planning.
 - Road planning.
 - Parking policies and pricing.
 - Location decisions by all parts of government.
 - Actions of government to encourage private location decisions to be made with the Frequent Network in mind. In other words, convey the message: If you want good public transport service, locate on the Frequent Network!
- A rolling five-year plan for the Frequent Network, specifying its geographical extent, and the intensity of its services (frequency and span) for implementation over the next few years. This network should form a basis for programming of expenditures on public transport, as well as offering a high degree of confidence to developers that the specified corridors will be served.
 - Specific rules on how the Frequent Network can be revised. In general:
 - Because the Frequent Network is intended to convey a sense of permanence, segments should not be deleted from the network.
 - Segments should not be added to the network until there is a very strong shared belief in their permanence.
 - An intermediate category of “candidate” frequent services can be maintained in cases where there is reason to question the permanence of a corridor. In this case, planning efforts should clearly identify the conditions that would need to be met for the segment to “graduate” into the Frequent Network.

LONG-TERM FREQUENT NETWORK EXAMPLES

The author’s own experience – in long-term network planning projects in Portland, Vancouver, Seattle, and the Australian capital Canberra among other cities – is that frequent networks, including local-stop components, can be valuable long-term network planning tools. They seem to gain the best acceptance in cities where:

- There is a relatively strong shared culture of planning, characterised by a proven ability to make long-term planning commitments that remain in place through multiple changes of government.
- There is a high level of support for encouraging modal shift to public transport, and an understanding of the need to co-ordinate other aspects of policy, such as urban form and road planning, to this end.
- There is widespread acceptance of town planning concepts that create pedestrian-friendly urban form and infrastructure, since all public transport customers are also pedestrians.

Introduction of the concept into long-term planning can then strengthen the case for using frequent networks as a brand in presenting the existing system. This process can already be observed in Portland and Vancouver.

Portland, Oregon

The Portland region's Regional Transportation Plan and its long-term Region 2040 land use vision both include, among their public transport layers, a frequent local network. The concept has been in place since the mid-1990s. The plan organises its highest density uses around rapid transit – light rail in Portland's case – but the frequent local layer is generally associated with linear development at moderate densities, such as 2-3 story residential and office-over-retail. Within older parts of Portland, the Frequent Network follows early 20th century tram corridors, where land use outcomes (including recent redevelopment long after buses replaced trams) show the potential for transit-oriented land use specifically where frequent service is present.

Vancouver, British Columbia, Canada

Vancouver's regional transit agency TransLink has been developing a frequent service concept, and intends to introduce it soon as a public brand. The current concept is built around the slogan "15-15-7" meaning 15-minute service, 15 hours a day, seven days a week. The agency is still working out the details, including exactly which 15-hour window should be the focus on each day of the week, and how many existing services can be presented at this level.

The brand has already been established as a long-term planning tool. The region's land use planning agency, Metro Vancouver, uses a "frequent transit corridors" concept for organising higher density land uses. TransLink, as the region's public transport and road building agency, has developed a broad-based "Transport 2040" plan, with wide consultation, built around six fundamental goals (TransLink 2008). Goal 3, the primary goal governing public transport network planning, states that "the majority of jobs and housing in the region are located along the Frequent Transit Network." This goal clearly sets out the need to expand frequent service as a higher priority than extending service in general. Its effect in new greenfield development areas is likely to be to create fewer, stronger frequent routes as opposed to many secondary routes providing more complete coverage.

This is the highest-level policy statement that the author has encountered that specifically cites the frequent service distinction, and indicates a long-term intention to define, promote, and monitor its services in these terms.

Seattle and Minneapolis

During the early 2000s the City Departments of Transportation in Seattle (2007) and Minneapolis (2007) worked with the author on projects to define long-term Frequent Networks for those cities. In both cases, the core city relied for its public transport service on a much larger agency spanning the urban region. The core city government had substantially more aggressive goals for public transport than the regional agency, and also wanted to achieve a higher level of synergy between public transport and other city government functions than was typical in most of the municipalities in the region.

Each city took the lead in defining its own long-term Frequent Network, based on its current land use vision. The process was done in consultation with the regional transit agency but was led by the city. The result was a network that the city council could

adopt to form a basis for the city’s future planning. In both cases, the regional transit agency had little or no tradition of thinking about network planning on 20 year timescales, so while the agency did not always agree with the city’s network there was no overt contradiction between the city’s network and any transit agency policy. The stage was thus set for a gradual convergence between the city and the transit agency on network design, as the city focused its planning efforts on certain transit corridors and those corridors thus emerged as stronger and stronger markets.

These examples illustrate the important point that initiatives of this kind can originate at various layers of government. A Frequent Network plan adopted and followed through on by one relevant layer of government can gradually steer other layers of government in the same direction, if only by producing outcomes that reinforce the position of public transport in the selected markets.

CONCLUSION

If it’s true, as Strawson (1979) contended, that “what we can’t say, we can’t think,” the creation of terminology is a crucial step in making thought possible. This is especially true in the thinking of institutions, which require ideas to be expressed between individuals using words and maps.

Creating the term “Frequent Network,” and drawing a map of it in its present and future form, are thus crucial steps in creating a conceptual structure that recognises the fundamental distinction of high-frequency service and traces this difference and its impacts through all the activities of public transport planning, marketing, and operations. Such a map is a striking counterpoint to the typical transit agency map which shows all bus routes as equally important and therefore creates an impression of visual pandemonium, signalling to users that riding the bus involves studying deep complexities encoded in lists of three-digit route numbers.



Figure 7. Fragment of Sydney Buses Map Showing All Routes as Equal

In the long-term planning sphere, the same concept is needed to enable all the actors of long-term city-building to converge around a shared understanding of the future network – just as they already converge around shared understandings of future road networks. The long-term effectiveness of public transport is driven mostly by decisions about something else – land use, road planning, pricing, and location decisions. All of

these activities desperately seek long-term certainty – “permanence” in the words of tram advocates. An adopted map of a future frequent network, reflecting a well-debated and bipartisan consensus, can be a crucial tool in enabling multiple agencies and private actors to feel confident in the future shape of the public transport system, and thus feel more able to stake their own futures upon it.

REFERENCES

- City of Seattle (2007). *Seattle Transit Plan*. Available at <http://www.cityofseattle.net/transportation/transitnetwork.htm>
- City of Minneapolis (2007). *Access Minneapolis*. Available at <http://www.ci.minneapolis.mn.us/public-works/trans-plan/CitywideActionPlan.asp>
- Hoffman, A. (2008). “Advanced Network Planning for Bus Rapid Transit: The “Quickway” Model as a Modal Alternative to “Light Rail Lite.” U.S. Federal Transit Administration. Accessible at <http://nrti.org/docs/pdf/BRT%20Network%20Planning%20Study%20-%20Final%20Report.pdf>
- Infrastructurist [weblog] (2009) “36 Reasons Streetcars are Better than Buses”. <http://www.infrastructurist.com/2009/06/03/36-reasons-that-streetcars-are-better-than-buses/>, accessed on 1 August 2009.
- Litman, T. (2008) “Measuring Transportation: Traffic, Mobility, and Accessibility,” Victoria Transport Policy Institute. www.vtpi.org/measure.pdf
- Metro Transit [Minneapolis] (2009). Agency website, <http://www.metrotransit.org/serviceInfo/hi-frequency.asp> , accessed on 1 August 2009.
- Strawson, P. F. (1979) *Individuals: An Essay in Descriptive Metaphysics*. Routledge, London.
- TransLink [Vancouver] (2008). Transport 2040 website, <http://bepartoftheplan.fcvhost.com/goal-3-transit-corridors/>, accessed on 1 August 2009.
- Tri-Met (2009a). Agency website page on Frequent Service, <http://trimet.org/bus/frequent-service.htm>, accessed on 1 August 2009.
- Tri-Met (2009b) System map from agency website. <http://trimet.org/pdfs/trimetsystemmap.pdf>, accessed on 1 August 2009.
- Walker, J. and S. Donovan (2009). “How does patronage respond to bus service frequency?” UITP-ANZ Research project, publication pending. Final paper at <http://www.ozebus.com.au/ozebus/img/FrequencyStudy.pdf>