Do Public Choice and Public Transport Mix?  
An Australian-Canadian Comparison

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Working Paper No. 58  
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SERIES EDITOR:
R.C. Coles
No. 58 EDITOR:
Penelope Hanley

ISBN 0 7315 2517 5.
ISSN 1035-3828
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*Series Editor:*
*Rita C. Coles*
Abstract

This paper explores the causes of, and evaluates possible remedies for, the decline of public transport in Melbourne. Travel patterns in urban areas are characterised by diversity: origins and destinations are dispersed and travel occurs throughout the day. Traditional forms of public transport, oriented to peak period, central city commuters, have had difficulty coping with this diversity. The currently popular response to this problem in Australia is based on the 'economic rationalists' remedies of privatisation and deregulation. But other cities have responded with the opposite policies, planning and coordination of services.

This exploration of the two approaches is carried out through a comparison of public transport policy in Melbourne, where patronage has declined at world-beating rates in the last four decades, with Toronto, which has been much more successful. The reason for the contrasting patronage performances is found to lie in the different policies pursued in the two cities. These differences date from decisions taken in both cities in response to crises in public transport policy following the first world war and again in the 1950s.

In Toronto, services have been planned and integrated by a public monopoly; policy in Melbourne has been market-driven, and based around competition and extensive private sector involvement. Toronto's centrally planned system has proven the more flexible in car ownership. While public transport operators in Melbourne have competed with one another, Toronto's single operator has competed with the car.
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Post-modern travellers
Once, the urban transportation problem was regarded as an engineering question: providing the necessary ‘capacity’ to carry large ‘flows’ of commuters. Such debates as there were revolved around questions like: how wide should the roads be; where would the cars be parked and could rail transport ease the load? In the last three decades, the questions have become more numerous and more complex. Environmentalists have called attention to the damage created by road building and car use, while sociologists have pointed to transport’s role in providing ‘access for all’ (Schaeffer & Sclar, 1975).

A curious convergence of post-modernist, feminist and technology-based thinking agrees that people’s travel is becoming more diverse and flexible, both in space and time. A new image of increasingly complex cross-city trips made throughout the day in low density suburbs contrasts with the traditional metaphors of ‘tidal flows’ of commuters to and from central business districts. (Whether it is travel patterns themselves, or merely our image of them, that have changed is, of course, debatable - cf. Mees, 1995.) Some argue that public transport simply cannot compete with the car in such an environment:

[I]t is because of the messiness and indeterminacy of mobility that the car is rightly the most useful and popular form of transport... [Women’s] journeys tend to be more complex, unpredictable and flexible. (Huxley, 1995)

Huxley argues that public transport cannot match the ‘go anywhere, anytime’ convenience of the car for even a significant minority of trips, a view shared by Brotchie et al (1995), who write not from a feminist, but from an engineering-technological perspective. The focus of public transport policy debates has shifted from engineering issues like capacity, to whether, and if so how, public transport can be provided effectively and economically to a population with diverse travel needs. The problem is exacerbated by the low-density form of most recent suburban development, which appears to rule out the type of comprehensive public transport provided by densely patronised systems like the Paris metro. Transport planners of the 1970s sought ways to make public transport in low-density cities flexible and demand-responsive like the car. The two most popular suggestions were ‘personal rapid transit’, a Disneyland-style technology much discussed but never implemented, and ‘dial-a-bus’, the subject of numerous, mainly unsuccessful, trials (Pushkarev & Zupan, 1977, pp. 70, 133-7).
**Creative chaos?**

In the 1980s, economics- and engineering-based transport planners began to converge around a new solution, albeit one initially mooted in the 1960s (Meyer, Kain & Wohl, 1965, pp. 355-9). Rather than drawing inspiration from Walt Disney, transport planners looked to the chaotic urban public transport found in developing countries. Cities such as Bangkok support a diverse array of public transport offerings, from slow, overcrowded conventional buses offering very cheap fares, to privately operated ‘jitneys’ charging higher fares for superior service, to taxis. Here, it seemed, was the flexibility, innovation and specialisation for which planners had been searching.

Many commentators have argued that a similarly rich array of public transport offerings could be provided in developed cities, and that the main barrier is over-regulation of public transport. Remove or reduce regulation and innovation, particularly in the form of demand-responsive services, minibuses and other ‘intermediate’ modes between buses and taxis, will flourish. Thus, Gordon & Richardson (1994) advocate for the Los Angeles area a transport policy with three elements: price roads, introduce bus priority systems and “deregulate va- taxi, and jitney services to encourage innovation and entrepreneurship in creating these new modes.”

The ‘Bangkok’ model for urban public transport did not develop in isolation. In Australia, as in other English-speaking countries, public discourse has been dominated since the 1980s by what Australians call ‘economic rationalism’, but in North America carries the name public choice theory. Self (1993) provides a description and critique of these doctrines, whose main consequences for public policy he summarises as “slimming the state” and “restructuring government”. Slimming the state involves reducing government expenditure and privatising government agencies. Restructuring government entails “measures to refashion the operations of government along market lines” (p. 61), such as subdivision into smaller units that can compete against one another. Deregulation of urban public transport fits neatly into the public choice prescription, which may account for its popularity with transport economists. Since the model can be applied most readily to road-based forms of public transport, and involves public transport types that resemble the car, it also appeals to transport planners with road engineering backgrounds.

The principal advocate of public choice doctrines in Australia is the Industry Commission (IC), which completed a report on urban transport in 1994. The Commission argues that existing urban transport lacks “the flexibility to cope with changing travel patterns and with social and technological changes” (IC, 1994, p. 3). Public transport, while retaining a role for central business district commuters and the disadvantaged, is centrally planned and therefore
inflexible, is over-regulated and incurs large deficits. The solution is to deregulate, introduce competition, expand the role of private operators and increase fares, especially for peak period commuters. The IC ‘reform package’ for public transport has the following key themes:

- splitting integrated public transport operating authorities into separate mode- and area- based units (the recommendation for Melbourne is separate ‘autonomous business units’ covering trams, trains and buses - p. 278, with bus operations further subdivided into competing depot-based units - p. 375);
- privatising government-owned operations;
- increasing fares; and
- encouraging competition between different public transport operators and modes.

The IC predicts that the outcome will be reduced deficits and more flexible and customer-responsive services:

> The need for competition in the delivery of urban public transport services is most pressing. This is the most effective way of securing the lowest possible operating costs and the service improvements that people value most. (IC, 1994, pp. 9-10)

The conditions under which deregulated public transport apparently thrives in cities like Bangkok are, of course, virtually the opposite of those found in the suburbs of Australian cities. Incomes and car ownership are low and population densities high, creating concentrated, high-volume flows of passengers rather than dispersed, low-density travel patterns. Low wage levels permit the use of labour-intensive vehicles like jitneys. So perhaps the apparent flexibility of Bangkok public transport is simply a result of these factors, coupled with poor quality (but cheap) conventional bus service. If so, a different approach may be called for in places where patronage is sparse.

**Planned network?**

Major airlines in the USA operate in an environment of dispersed, if not low-density, demand. They rely on ‘hubbing’ to reduce operating costs by achieving economic densities of patronage. American Greyhound has employed a similar strategy to survive an environment of low-density, multi-directional demand (Berechman, 1993, pp. 194-6, 267-70). The Paris metro is a successful urban illustration of the network approach, although it operates in a high-density environment. Passengers trade off the inconvenience of having to transfer between services, and some indirect journeys, against a high level of service (frequency, hours of operation) and low fares. The result is a ‘go anywhere, anytime’ service that for most trips matches the convenience of the car (although changing trains is not as convenient as it could be, because the
initial Metro lines, having been constructed separately, were not designed to facilitate transfers).

The network issue is rarely canvassed in the urban transport planning literature. Most analyses of the effectiveness of strategies to increase patronage of public transport rely instead on demand elasticities, which are estimates of the percentage change in the number of trips that occurs in response to a change in fares, service levels, etc. Most studies have found the elasticity of demand with respect to service to be much less than one, meaning that a 1% increase in service will increase patronage by much less than 1% (Pushkarev & Zupan, 1977, p. 14). This in turn means that service increases are unlikely to generate sufficient revenue to cover their costs. Service increases will also reduce vehicle occupancies, eroding public transport’s environmental edge over the car. The result is a kind of law of diminishing returns. An interesting exception, which takes network issues into account and which I have adapted and extended here, appeared recently in a most unlikely source, the Environmental Effects Statement for Melbourne’s largest-ever freeway project (Vicroads, 1994, pp. 22-3).

Imagine a hypothetical city called ‘Squaresville’, comprised of 100 blocks, as in figure 1. Squaresville has a rectangular pattern of streets, which bisect the blocks and provide routes suitable for public transport services at convenient intervals (say 800 metres). Assume that travel patterns are entirely dispersed, with each block generating 99 trips, one to each of the other blocks, a total of 9900 trips. Consider a single public transport route offering a high level of service along a North-South corridor to a once-dominant central business district. The route runs through the middle of the 10 blocks that make up the corridor, and serves passengers with trip origins in the corridor, since passengers are prepared to walk half a block to a stop. This corridor generates a total of 990 trips, but the public transport route is only capable of serving the 90 of these trips which have origins and destinations along its route. If there are ten such routes, one along each North-South corridor, as in Figure 1, public transport can serve a total of 900 trips, less than 10% of journeys in Squaresville. Assume that, at present, public transport attracts one-third of the journeys it can theoretically serve. This gives 300 trips, and a modal share across the whole city of 3%.

What would be the effect of doubling public transport service levels in Squaresville? A traditional transport planning model, based on elasticities of demand, would suggest that a 100% increase in service may produce a 50% increase in demand, increasing daily trips to 450 and modal share to 4.5%.
Figure 1: 'Squaresville' (with 10 public transport routes)

Route

Area served by route (shaded)
Since doubling service will almost certainly increase costs by more than 50%, cost-recovery is likely to fall. But what if the increase in service is used to add ten East-West public transport routes, creating a grid network of 20 routes, ten in each direction? The number of trips served directly would double to 1800, since there are twice as many routes. But if passengers are willing to transfer between routes, as is the case on the Paris metro, then all 9900 trips can be made by public transport, 1800 directly and 8100 by transferring. This is an increase of 1000%. Even if the modal share for journeys involving a transfer is only half that for direct journeys, this would still produce a dramatic increase in patronage, to 1950 trips (a third of 1800 plus a sixth of 8100).

Increased revenue should more than offset the costs of the increased service, vehicle occupancies would rise and modal share across Squaresville would increase from 3% to 20%.

This model is an illustration of the argument that comprehensive planning which knits individual routes into an economical regional network may be able to overcome the law of diminishing returns that is frequently assumed to rule out substantial upgrades of public transport. Interestingly, the more dispersed travel demands are the stronger the network effect. In a hypothetical city where all journeys are made to a single point, there is no benefit at all. This suggests that public transport in metropolitan areas with dispersed travel patterns may be a natural monopoly, and contrasts with the more common view of transport economists (e.g. Berechman, 1993, p. 308) that public transport is only a natural monopoly in dense, centralised inner cities, if at all.

The principal prerequisite of the network effect is that passengers be willing to transfer between services. This in turn requires a series of conditions not usually associated with free-market systems: convenient physical facilities at interchange points, a fare system in which transfers are free and a timetable that encourages transfers. The best type of timetable is one offering high frequency services on all corridors, as Hussler (1994) notes in an analysis of the success of the City of Zurich’s public transport network:

The network of trams and buses work on a four to eight minutes frequency during the day. It is important that the frequency of services remains under ten minutes. If it is over ten minutes, changing from one line to another is not attractive. With a ten minutes frequency you have a network effect; with a twenty minutes frequency people don’t change from one line to another.

But can such high service levels be provided in lower-density environments, such as those found in Australian cities?
Looking for evidence

Frisken (1991) argues that North American public choice theorists who advocate competition-based models for the public sector have conducted few comparisons of 'real-world' performance among different models. Similar accusations have been levelled at Australian public choice advocates including the Industry Commission (e.g. Quiggin, 1993). The relative merits of competition and planning for urban public transport are often simply asserted. One way of testing these assertions is to examine the track record of the different policies.

The first experiment with urban public transport deregulation began in 1979 in Santiago, Chile, under the Pinochet regime. The experiment appears to have been unsuccessful, and was reversed on the restoration of democratic government (Koprich, 1994). The best known case is the deregulation of bus services in British cities outside London, a measure introduced by the Thatcher government in 1985 following the publication of the White Paper 'Buses'. A modified version of the British approach was introduced in New Zealand in 1989, but the results are difficult to assess, since one result of the policy was the disappearance of publicly available information on trends in patronage.

The British experience has been discussed extensively. The Industry Commission Urban Transport report presents the UK as a role model for Australia. Benefits of deregulation are said to include reduced government subsidies, lower operating costs, improved productivity and greater innovation (particularly increased use of mini-buses), while initial concerns about the policy were proven unfounded (IC, 1994, p. 145).

A starkly contrasting assessment is provided by the report 'Transport and the Environment' of the British Royal Commission on Environmental Pollution which, like the IC report, was released in 1994. The Royal Commission notes that the effects of deregulation have been well-documented by a series of studies (none of which is mentioned in the IC report), which found that subsidies were indeed reduced, but that:

fares increased sharply, many services were reduced, networks were restructured and became less stable. The general impression was of declining services. The immediate sharp drop in patronage is not therefore surprising. There was also a deterioration in the extent of bus-rail integration... Competition has generally not been widespread or sustained, although there are exceptions. Where it has taken place, it has usually been on popular routes where more vehicles have not necessarily led to a better service for passengers, but may have increased urban congestion and pollution... (RCEP, 1994, p. 219)
Concluding that the reduction in subsidies achieved through deregulation “may have been bought at too high a price”, the Royal Commission recommends that deregulation be abandoned and regional planning of services recommence (p. 220). The British experience was most recently reviewed by Mackie et al (1995), who report a 35.5% decline in patronage from 1985/6 to 1993/4 in cities where deregulation was introduced, contrasting with a 3.0% decline in London, where central planning was retained. The authors argue that this decline shows that the experience of developing countries was not transferable to Britain. Competition did lead to increased service levels, but in a wasteful manner, rather than through the kind of network effect illustrated in the Squaresville example.

The Industry Commission’s views are shared by most leading Australian transport planning professionals, although Hensher (1994) concedes that the British experience has produced mixed results. The trend away from public transport in developed cities is unstoppable, but public transport retains a role for ‘niche markets’ such as “school children, households with low incomes, a declining proportion of the elderly, those who have no automobile available in the household, who live in a central city and work in or adjacent to the central business district, and who live in a densely settled area.” (Hensher, 1994, p. 50) These niches will best be served by flexible, demand-responsive public transport operated by private enterprise with minimal government interference. Ogden (1995) advocates a system of ‘suburban’ public transport for Melbourne in which greater competition produces a wide range of services, each oriented to a market niche. In addition to the fixed route, heavy bus operation focussed on railway stations, we would expect to see smaller buses operating as ‘jitneys’; ‘dial a ride’ services; demand responsive services; shared taxi operations of many forms (especially at night). And no doubt many more. (p. 8)

Another speaker at the same forum series where Ogden unveiled his proposal described a very different model of public transport:

In Toronto, Canada, there is an excellent example of a public transport system which appears, to the passenger at least, to effortlessly integrate train, tram/light rail and bus. Although, in principle, this would not seem to be an unreasonable objective, in practice, it is an achievement which has, to date, escaped most other cities who seek it. Those in Toronto, a long time ago, made the managerial, technical and operational policies and decisions necessary to integrate their public transport system, despite the obvious difficulties associated with merging the various elements. (Dixon, 1995, p. 143).

Toronto’s success in providing public transport is frequently noted (e.g. Hutchinson, 1986). While the majority of travel in Metropolitan Toronto is by
car, public transport has retained a healthy share of the travel market, in contrast with the decline seen elsewhere (Figure 2). Frisken (1991) argues that the success of Toronto’s public transport relative to US cities can be in part related to its strong metropolitan government, and offers “an empirical dissent from the public choice paradigm”. Doucet (1977) regards the public takeover of the transit system in 1921 as vital, and Frisken (1984) describes the record of the Toronto Transportation Commission from 1921 to 1953 as “a triumph for public ownership”. Davis (1978) counters that public takeovers at similar times in US cities (e.g. Detroit in 1922) did not save public transport, because of significant differences, including race problems and higher car ownership in the US cities (pp. 62-3; 76-79).

Regardless of whether Davis is correct about US cities, it remains striking that Toronto has been so much more successful than Melbourne, given the similarities in the character, form and history of the two cities. These include similar populations (3.1 million and 3.8 million for the respective census areas in 1991), the British colonial legacy, lower car ownership than the USA, the absence of American-style race problems, and the persistence of trams. Both cities, like Squaresville, have grid arterial road networks and, possibly more importantly, are characterised by low population densities in contrast with cities like Paris and Zurich.

Other Australian commentators (e.g. Kenworthy, 1991) have explained the difference by focussing on land-use planning in Toronto, particularly the integration of high-density housing with rapid transit stations. In earlier works, however, I concluded that population density has declined, and employment dispersed, more rapidly in Toronto than in Melbourne since the Second World War, and that the share of the population living within walking distance of rapid transit stations is actually greater in Melbourne (Mees, 1994, 1996). Toronto’s superior performance is primarily due to the way public transport has been operated and in particular to the type of policies Dixon describes in the above extract. My argument here is that the adoption of these policies relates to matters at the heart of the planning-competition debate, namely that Toronto’s public transport has been regionally planned by a single public authority since 1921, while Melbourne’s has featured extensive competition for over a century and, in the private bus sector, a textbook example of the public choice model.

**Melbourne: where have all the jitneys gone?**
The reforms proposed for public transport by the Industry Commission and Ogden are actually a reversion to the traditional Melbourne model of separate, competing rail, tram and bus services. The three modes of public transport began as separate undertakings and remained so:
• the 'suburban' (as opposed to 'country') rail network was opened in the 1850s by the Melbourne and Hobson's Bay Railway Company, but was sold in 1878 to the Victorian Railways, a statutory corporation which greatly expanded the system in the 1880s;
• the tram network was opened from 1886 to 1891 by a private cable car operator, with electrified lines added by municipalities and private operators, and the whole system taken over in 1919 by another statutory corporation, the Melbourne & Metropolitan Tramways Board;
• buses commenced following the First World War, with a plethora of small private operators.

Each public transport undertaking had its own routes, timetables and fare system, with little coordination and fierce competition. Davison (1978) records:

By 1890 few cities of Melbourne’s size boasted a [public transport] system as advanced, extensive or convenient. In fact, it is arguable that the system was becoming dangerously overgrown. Its two main operators were falling into the misbegotten strategy of attempting to annex each other’s natural catchments and, by the turn of the century, railways and tramways intersected at no less than eighteen points. This of course was not necessarily unhealthy - they might possibly have interlocked to offer mutual support - but in practice they seem to have constructed their routes so as to suck rather than feed each other’s services. (p. 170)

The 19th century pattern was repeated following the Great War, when both the suburban rail network and the tram system were converted to electric operation. The MMTB used the replacement of cable trams with electric services as an opportunity to extend the tram system, making further inroads into the viability of the rail system. As observers noted in 1953:

in the inner suburbs where the population has been constant [since 1938], railway bookings have declined by 26.5%... the reason is not competition from private cars, but from trams. (MMBW, 1953, p.192)

To the competing tram and rail systems was added the private bus industry, which can hardly be described as a system at all. Buses operated according to a classic public-choice model, replete with jitneys. Initially, there was little regulation of bus operators, and virtually none for ‘cabs’, buses with eight seats or less, so “[bus operators] began running where they thought there’d be patronage, regardless of whether it was already being served by other operators or by the growing tramway system” (Maddock, 1992, p. 9). In contrast with most developed cities, including Toronto (Doucet, 1977, pp. 25-7), which regulated jitneys out of existence, Melbourne offered an excellent opportunity for the service innovations envisaged by public choice theorists.
Figure 2: Per capita trips by public transport

Source: Mees (1994)
The rail system and most tram lines formed a radial pattern focused on the central business district, so a natural niche for innovative bus operators would have been to provide cross-suburban links to fill the gaps left by the radial network, and 'feeder' services to new housing estates growing up beyond tram stops and railway stations. But the initial thrust of bus operators was to compete, rather than complement. The major routes focussed on the already well-served central business district and paralleled radial train and tram lines, with most main routes running along Swanston Street/ St Kilda Road, the principal traffic artery and cable tram route (Maddock, 1992: 10). This was partly a response to a 'niche' opened up by the mess of tram lines inherited by the Tramways Board, which required most Swanston Street passengers to change from an electric to a cable tram en route. But when the Board began to electrify and integrate its network in the 1920s, and regulations were enacted to restrict 'predatory' competition, the larger bus operators closed their operations rather than seeking new opportunities, leaving suburban operations to an army of returned servicemen who pioneered the Melbourne route bus industry.

The smaller operators mainly drove seven-seat 'cabs' (jitneys), and operated without fixed timetables, providing a working model of the type of public transport envisaged by public choice advocates. As might have been predicted, the services operated were indeed 'flexible', as one operator interviewed by Maddock noted:

In those times practically every street that ran across a suburb to the Sydney Road tram route running north and south had either a cab service or a bus service on it—little two-section runs of about a mile-and-a-half or two miles long. The cab owners operated a sort of timetable agreed among themselves. It was something of a catch-as-you-can business: although they worked to what were roughly fixed routes, they really had no schedules. They would move off as soon as they had five people aboard. They plicated for hire as long as there was some sort of demand. If there wasn't, they'd simply disappear. (Maddock, 1992, p. 28)

But what looks like flexibility from the perspective of the operator can easily mean unreliability for passengers, as Maddock's informant conceded:

It was pretty rough and ready, to say the least, and the system was somewhat unreliable as far as the paying public was concerned. (p. 29)

Maddock reports other disadvantages of the deregulated environment, such as 'dragging' routes (deliberately running late to poach passengers from the bus following behind), and concludes:
Cab-style operation was a very haphazard affair; service was provided as traffic warranted and if the owner decided he’d rather spend the afternoon at the races or elsewhere he’d simply do that and passengers would have to find other means of transport or walk. (pp. 22-3)

While multiple ownership was in vogue there was little prospect of an improvement in service. If an owner’s bus broke down there was not always a vehicle to replace it. Traffic played havoc with schedule-keeping and it was not always possible to feed in additional buses along a route to get it back onto timetable. (p. 12)

The first attempt to regulate the bus industry was the Motor Omnibus Act of 1925, which gave the Melbourne City Council power to grant licences for bus services throughout metropolitan Melbourne. In 1934, oversight of suburban services was transferred to the Transport Regulation Board which, in 1952, acquired responsibility for regulation of bus services throughout Victoria. As indicated previously, jitneys were exempted from these regulations, but these vehicles had largely disappeared by the end of the 1930s. Apart from restrictions on ‘predatory’ competition with tram lines, there were few restrictions on larger buses, with multiple-operator routes permitted until the Transport Regulation Board decided, in the mid-1950s, to encourage multiple operators to amalgamate into companies, a process which took a further two decades to finalise.

An illustration of this ‘free market’ system in action is provided by route 10, one of the original services dating back to the early 1920s, and the route on which jitney operation lasted longest (Maddock, 1992, p.31). The route commenced as a multiple-operator service provided by more than a dozen drivers, each of whom owned one jitney. The initial route was a classic predatory service, running from suburban Box Hill railway station to the city rail terminus at Spencer Street Station (Maddock, 1992: 42), paralleling the rail line and actually duplicating the full length of a cable tram service. In 1925, regulators compelled the bus operators to terminate in the inner eastern suburb of Abbotsford to protect the newly-electrified tram route. In 1933, the route was split into two to suit the convenience of one operator, who had acquired a small fleet of buses. The remaining route section was operated by owner-drivers, who gradually replaced their jitneys with second-hand larger buses, but whose numbers dwindled over the years as vehicle breakdown or falling revenues claimed them. The demise of the route was described as follows in the Bus and Coach Society’s newsletter:

At 6.40 pm on Friday 19th December 1969, owner-driver Phil Venier pulled his bus into Canterbury terminus to cease operation for this day - and forever. Thus the colourful history of one of Melbourne’s oldest private bus routes came to a close. Phil commenced as an owner-driver in 1932 with a seven-passenger [jitney]... The number of buses on the route gradually dwindled over the years from 18 to one, and now none. This decline started many years ago...
One of the operators withdrew his [bus] quite early in the piece, and the other four continued to provide the service until well into the ‘60s, when the Ford [bus], older than the rest was withdrawn. The remaining three continued until about a year ago when Mr. P.G. McCallum withdrew because he found it increasingly difficult to make a living out of the route. The service was then provided by two [buses] until Mr. A.H. Cotton’s ‘did’ a gearbox early in November and was withdrawn. Phil Venier continued operation for another five or six weeks to see out the school year. (Maddock, 1992: 33)

The effect on service quality on this route was recounted by Fouvy (1970, p. 4.134). A 10-minute off-peak service frequency was provided until the 1950s, then reduced to 15 minutes, then cancelled in the early 1960s. Peak service levels were further reduced until the route closed completely. Fouvy notes that a service along the adjacent parallel arterial road had ceased operation about 20 years earlier. The service decline was exacerbated by the fact that the changes happened at random as owner-operators dropped out.

Melbourne’s unplanned public transport survived the depression and war years, in which first the high cost of cars, then economic hardship, and then petrol rationing ensured a large supply of ‘captive’ patrons, not unlike the situation in Bangkok today. Wartime petrol rationing lasted until 1950, and as late as 1951 a survey conducted by the Melbourne & Metropolitan Board of Works in preparation for the city’s first Metropolitan Planning Scheme found very high rates of public transport usage. But could this continue in an era of rising incomes, expectations and car ownership?

For some Melburnians, public transport did offer a convenient service. High numbers of captive patrons ensured frequent service on most train and tram services, which followed radial routes terminating in the central business district. A resident living within walking distance of a stop or station and wishing to travel to the CBD or a point along the route was provided with a high level of service. But anyone living beyond walking distance of trams or trains, or travelling across the suburbs, or needing to transfer between modes to complete a journey, received an extremely poor service, and usually had to pay two fares for the privilege.

The quality of the most flexible and deregulated mode, private buses, was inferior to that of the publicly operated modes, with lower frequencies and more restricted hours of operation even on services operating in comparable corridors. Only 16% of public transport journeys in 1950 were made on private buses, compared with 35% on the railways and 49% using the Tramways Board’s services (MTC, 1969, Vol 1, p. 49). The problems of the bus industry were generally acknowledged to be a result of the deregulated
environment inherited from previous decades (Maddock, 1992, p. 32-3). The MMBW noted:

> there are about 100 routes operated by privately owned buses... A few of the private buses run to and from the city, but in most cases they act as feeders to rail and tram services... On account of infrequent service and poor co-ordination the saving in walking time by use of a feeder bus is largely offset by waiting time. there are relatively few who can save much time by using these services. (MMBW, 1953: 184)

One indicator of the ineffectiveness of public transport, particularly buses, was the high rate of suburban bicycle use observed in the MMBW survey. Only 1% of workers employed in the central business district, served by rail and tram, cycled, with 18% travelling by car. But of workers employed in the suburbs, 17% cycled compared with 18% who travelled by car. In both the CBD and suburbs, some 5% travelled by bus. Since few cyclists were ‘choice’ passengers, they rapidly switched modes as car ownership rose, with the Melbourne-wide bicycle mode share plummeting from 9.5% to 1.9% between 1951 and 1964 (Wood, 1965, p. 14.04).

As Melbourne grew in the 1950s, 1960s and 1970s, more and more residents came to live beyond the reaches of the train and tram networks, and increasing numbers of journeys were made to locations other than the central business district. Car ownership was also rising rapidly. Patronage on rail and tram routes began to fall as some passengers began using cars; unless new patrons could be found to replace those leaving, a vicious cycle of patronage and service decline would be established. The need for a co-ordinated response was identified by the MMBW:

> From the survey of the existing transport system and study of the probable needs of the future, it is apparent that, if the public transport system is to play its proper part in the essential movement of people and goods, there will have to be effective co-ordination of all forms of surface transport - trains, trams and buses. Only in this way will the public be given the best possible service at the lowest cost. (MMBW, 1953: 192)

This is precisely what was being provided in Toronto in the 1950s, with buses used to feed passengers to trams and trains, but in Melbourne public transport remained uncoordinated and ‘market driven’. Operators responded to falling patronage by increasing fares, reducing services and poaching one another’s remaining patrons. In 1955, the Tramways Board actually dis-integrated its fare system, by abolishing transfer tickets which permitted passengers to switch tram routes at a discount; the same year, newspapers reported dramatic reductions in private bus services. In the 1970s, the Tramways Board moved into bus operations, with a series of radial express routes along freeways,
many of which repeated the now-traditional pattern of ‘annexing’ patrons from parallel rail routes. Meanwhile, the financial position of the private bus operators deteriorated to such an extent that the State government stepped in with a subsidy in 1974, on condition that there be an independent review of the industry. The review (Wilbur Smith et al, 1976) recommended rationalisation of services and depots, but this did not occur. Tantalising references to the only possible source of patronage growth being rail passengers taking buses to reach stations (e.g. p. 38) were not reflected in the review’s final recommendations.

With no overall planning, little was done in these decades to provide services to newly-developed areas. As extension of the tramway system stopped in 1956, new suburbs were dependent on private bus services. But the small private operators lacked the financial and organisational capacity for a planned expansion, and the short ‘one-man’ routes inherited from the jitney era were a brake on the development of cross-suburban linkages. Springvale Road, Melbourne’s busiest non-radial road, was provided with a bus service (route 888/9) only in 1981, following government-supervised negotiations among three separate operators who had previously run four short routes along sections of the road. Unfortunately, this move occurred two decades after the major period of suburban development along Springvale Road, and the service provided was of low quality (Table 1). The only significant, planned expansion of suburban bus services took place in the City of Doncaster & Templestowe, where the local private operator went bankrupt in the late 1960s. The Tramways Board took over its bus routes and greatly increased services, although, in typical Melbourne fashion, based on competition with the rail and tram systems, rather than coordination.

The ‘Toronto model’
If Melbourne public transport exemplifies ‘public choice’ in action, Toronto is a paradigm of comprehensive planning. The establishment of the Toronto Transportation Commission in 1921 paralleled the formation of the MMTB in 1919, but with one principal difference. The Commission was given responsibility for all urban public transport within City of Toronto boundaries (except taxis) and operated an integrated system from its earliest days. The TTC was a municipal monopoly, which ensured that private operators were excluded, and that a full public transport service was provided to all residential areas of the City. As in Melbourne, the tramway system was rehabilitated rapidly, but in contrast with Melbourne, the system was multi-modal from the start. Before the end of 1921, the TTC began using buses as feeders to the tram system (TTC, 1971, p. 6) and to test demand prior to the extension of tram services (Davis, 1978, p. 94). Friskin (1984) points to the early diversification into buses as evidence of the TTC’s innovation, and
Davis agrees that “Superior management probably explained the TTC’s unusual efficiency” (p. 75). The organisation successfully weathered the Depression and was able, during the patronage boom of the war years, to accumulate a surplus of $25 million that was used to finance the building of the Yonge Street subway.

The TTC did not serve areas beyond the municipal boundary: these were covered by four private firms supplemented by separate municipal offerings (some of which the TTC provided on contract). Dissatisfaction with suburban public transport was a major reason behind the establishment of the new Municipality of Metropolitan Toronto in 1953 (Lemon, 1985, pp. 43, 110). The TTC (renamed the Toronto Transit Commission) became an agency of Metro, and suburban private and municipal bus operations were acquired and integrated into the TTC system. When urban rail appeared in 1954, the integration theme was continued. High on the list of ‘primary design objectives’ for the new subway system was: “It would be built to facilitate the fast and convenient interchange of passengers between the subway and the connecting surface transit routes” (TTC, 1971, p. 25).

Frisken (1990) draws a direct connection between the organisational structure of Toronto public transport and post-War service integration and expansion:

Because the TTC had a monopoly on transit service within Metro, it was able to link suburban bus routes to subway lines, just as the city agency had used buses to feed streetcar lines... The practice remains a cornerstone of the TTC’s servicing policy. The extension of subway lines into the suburbs has meant the addition of many suburban bus routes primarily for the purpose of generating subway ridership. This has undoubtedly meant that some suburban districts have received bus service earlier than they would have... Between 1955 and 1963 the TTC doubled its annual mileage of suburban bus operation. (pp. 22-3)

The TTC’s suburban expansion was carried out on a grid pattern, taking advantage of the configuration of the arterial road network. This grid of bus routes was designed “to meet the transportation needs of the increasing number of riders who travel locally within their own suburban districts” (TTC, 1971, p. 12), while also providing direct access to the radial subway network.

Three crises

Toronto’s decision to opt for planned public transport in 1921 has had far-reaching consequences that may not have been appreciated at the time. Both Melbourne and Toronto faced a public transport ‘crisis’ following the first world war. In each city, the 30-year franchise of a private tram operator was due to expire; in 1916 in Melbourne, in 1921 in Toronto. In both cases, dissatisfaction with the private operator led to a public takeover of the system,
followed by a programme of tram reconstruction and extension in the 1920s. In Toronto, the solution of a municipal body probably seemed logical, given the existence of a City that covered most of the urban area, and the absence of a competing public rail system. In Melbourne, the small size of municipalities seemed to dictate a State government solution, and the existence of the Victorian Railways (and possibly a failure to foresee the rise of the bus) may have discouraged a multi-modal authority. In Toronto, the idea of a single monopoly operator had been established during the previous period of private ownership, and according to Davis (1978, pp. 88-9) prevented the construction of uneconomic lines as occurred in the US and, as already noted, in Melbourne.

But these divergent paths led to significant consequences in the 1920s and 1930s: an integrated system in Toronto; a non-system in Melbourne. Both the MMTB and the TTC appear to have been well-managed organisations, and Melbourne provided the more favourable operating environment, with lower incomes and car ownership. The Tramways Board was crippled, however, by competition from the railways and private bus operators, and prevented by its single-mode charter from taking advantage of the synergies produced by the network effect.

This divergence in turn led to quite different responses to the second public transport crisis, the explosion of car ownership in the 1950s. The massive service expansion in the suburbs of Metro Toronto Frisken has described took place at a time when service levels in Melbourne were in rapid decline. Toronto met the crisis of increasing automobile ownership with a planned counterattack; Melbourne succumbed to a vicious cycle of decline. The performances of the two cities reversed (Figure 2), Melbourne beginning with the higher patronage, but ending with the lower. A similar picture can be found with government subsidies for public transport. In Toronto, these were introduced as deliberate policy initiatives, firstly special subsidies in 1956 and 1963 to prevent fare rises, and then a permanent subsidy introduced in 1971, initially to avert a fare rise then, in 1973, to allow a two-zone fare system which charged higher fares to suburban travellers to be abolished. In Melbourne, subsidies also began in the late 1960s and early 1970s, but in an unplanned way: deficits simply appeared as patronage declined and the traditional responses of fare rises and service reductions failed. The outcome by the late 1980s was that Toronto’s planned subsidy was relatively lower, at 32% of operating costs (TTC, 1989, p. 32), than Melbourne’s unplanned deficit, 57% of operating costs (MTA, 1987, p. 42).

Public transport in both cities faced a third crisis in the early 1970s, when unpopular major freeways were cancelled. In another parallel, in each case the
decision was taken by a newly-appointed 'reforming' Premier anxious to rehabilitate the image of a traditionally conservative party. Both Bill Davis in Toronto and Dick Hamer in Melbourne promised a greater emphasis on public transport. In Toronto, following an unproductive diversion into new technology, this took the form of a redoubling of the already-successful model of comprehensive service provision, coupled with the abolition of the two-zone fare system. In Melbourne, nothing really happened, as there was no model of successful public transport to apply. Within a few years spiralling deficits led to the 'Lonie enquiry' (VTS, 1980), which proposed the most radical service reductions in history, floated the prospect of completely eliminating trams and led to the revival of many of the freeways cancelled in the early 1970s.

Melbourne's one concession to planning was the inauguration of a multi-modal fare system in 1981, ironically a recommendation of the Lonie report. In 1983, the Victorian Railways was amalgamated with the MMTB in 1983 to form a Metropolitan Transit Authority (later Public Transport Corporation), to which the languishing private bus operators were made contractors at their own request (Maddock, 1992, p. 57). The multi-modal fare system produced an immediate increase in patronage on all three modes of public transport, the first such increase since the Second World War, and probably saved the bus operators from extinction (Maddock, 1992, p. 24). The TTC's fare system has been fully multi-modal since 1923 (TTC, 1971, p. 6).

The success of Melbourne's single fare system was not followed up with the obvious next step, the integration of services into a comprehensive, multi-modal network. The dramatic improvement in suburban bus services that this would have required was ruled out by the Ministry of Transport in a study carried out for a new State government elected partly as a result of public anger over the Lonie report. The study relied on conventional elasticities of demand and ignored the network effect (Ministry of Transport, 1982, pp. 32-35). Even inexpensive measures, such as co-ordinating rail and bus timetables, were generally ignored. For example, Monash University, which has 25,000 staff and students, is two kilometres from the nearest rail station, Huntingdale. The principal bus service to the University, 'good' by Melbourne standards, used to run half-hourly throughout the evening from Mondays to Saturdays, as did the train service through Huntingdale. Each bus passed by the station, missing the train by one minute (ensuring a wait of 29 minutes for the next train), all evening, six nights per week, for more than a decade until 1990, when the bus company removed most evening services due to 'lack of demand'.
Public transport in the two cities today

Public transport in Melbourne remains a series of unconnected routes and modes, rather than a network. The Public Transport Corporation’s Melbourne ‘Travel Guide’ (PTC, 1995) contains separate maps of the rail and tram systems, with no information about connection points and no map of bus services. Information about buses is confined to the following: “Operating hours vary for local bus services run by private companies. Contact the Met information centre for further details.” The conservative Victorian government elected late in 1992 is in the process of reversing what little integration was achieved in the 1980s, in line with the Industry Commission’s public choice ‘reform package’. The Public Transport Corporation has been split into separate rail, tram and bus divisions, while private bus operators have been granted greater ‘commercial freedom’, which some are using to reintroduce single-mode tickets.

Public transport in Melbourne is ‘flexible’, but in a different sense to that predicted by public choice theory. Service quality varies wildly across the city, and patronage varies along with it. Variations are not based on population density or any ‘rational’ criterion, but on history (areas with trams receive much higher service levels than similar areas served by buses) and personality (two private bus operators service South-East Melbourne; one operates a basic hourly service, the other a half-hourly schedule. The better service is provided to the area with lower population density and higher incomes). Bus services in particular are of extremely low quality (except for a few routes replacing former tram services), with a confusing and inefficient route structure, outdated and inappropriate vehicles (generally bus bodies mounted on truck chassis) and poor frequencies and hours of operation. Only 7 routes operate at all on Sunday evenings in the whole city. The result is that the majority of Melburnians have no access to public transport after about 7 pm or on weekends, and those served by public transport have a limited choice of destinations.

Intermodal integration is, except for fares, virtually non-existent. Facilities for passengers changing modes are poor, with patrons frequently having to cross busy roads to reach bus stops from railway stations. Timetables are generally uncoordinated, even though most bus routes terminate in shopping centres which, for historical reasons, are near railway stations. The rail and tram systems depend, due to lack of feeder services, on patrons living within walking distance of routes, and generally operate at only a fraction of capacity. Train and tram services are slower and less frequent than before the War.
Even in Melbourne’s inner suburbs, public transport fails to provide a comprehensive service. The City of Brunswick, 5 kilometres North of central Melbourne, provides a good illustration. Brunswick is densely populated (overall density across the municipality was 37 per hectare in 1991), with a grid road network, low car ownership and a municipal council that supports public transport. Public transport is provided by four radial tram lines and one electrified rail line, running North-South, and six private bus routes running East-West. The trams provide a high level of service by Melbourne standards, so Brunswick is seen as having ‘good’ public transport. But the trams run in parallel and bus services are of low quality, daytime frequencies being 30, 25, 20 (three routes) and 16 minutes. As Hussler (1994) notes, such frequencies ensure that trips requiring transfers cannot conveniently be undertaken by public transport, so for practical purposes the situation is analogous to the first stage of the Squaresville example (Figure 1). For example, less than a quarter of the population can reach the Municipal library while it is open on Sunday afternoons, as five of the six bus routes do not operate at all on Sundays, while the remaining route runs hourly, making the tram-bus transfer necessary to reach the library impractical. As the MMBW noted in 1951, infrequent services and poor co-ordination render the buses ineffective as feeders to the rail service (only 3 of the 6 routes even pass by stations), which consequently is poorly patronised, carrying only 12,000 passengers per day. There are no trains after 7 pm or on Sundays, and the line has often been threatened with closure.

By contrast, public transport in Metro Toronto today is ‘inflexible’, as public choice theorists might have predicted. A uniformly high level of service is provided throughout the urban area by an easily understood grid network of buses and trams, which feed the rapid transit system, as well as serving local and cross-suburban travel needs. Changing between bus and rail is very convenient owing to a unique feature of the Toronto system: at most stations buses and trams take passengers inside the ‘fare-paid’ area, eliminating the need for transferring passengers to show tickets. What surprised me on a 1994 visit was the extent, and convenience, of bus-to-bus transfers, which are facilitated by frequent services, a simple network structure and the placement of bus stops at street intersections so as to facilitate transferring. Frequent services operate on most rail, tram and bus routes day and night, 7 days a week, providing passengers with the real flexibility that comes with freedom from juggling timetables. The cost of providing such high service levels is considerably reduced by the simplified route structure and intermodal coordination. The predictability, efficiency and integration provided by centralised planning permit a ‘seamless’ service that serves spatially and temporally diverse travel needs. As Dixon (1995, p. 143) notes, this system is flexible from the perspective that really counts, namely the passenger’s, in
contrast with deregulated systems, where the flexibility appears to accrue primarily to the operator.

An illustration of the different systems in action is provided by a comparison of two bus routes serving comparable suburban territory (Table 1, page 5).

As with service levels, public transport patronage in Toronto also shows a uniform pattern, with high usage in all areas. In 1986, public transport served between 19 and 37 per cent of total travel across the 17 planning districts that make up Metro Toronto, with an average of 26% (Frisken & McAree, 1993: 43). Even in districts served solely by bus, mode share ranged from 19 to 22%. Indeed, a number of suburban bus routes in Toronto carry more than 50,000 patrons per day, more than ten times the patronage of the busiest equivalent service in Melbourne, and a figure exceeded by only one of Melbourne’s 12 trunk urban rail routes. Public transport patronage in Melbourne varies dramatically, ranging from less than 5% of total travel to more than 30% across the 8 planning regions, with very low figures in the two-thirds of Melbourne beyond the terminals of the tram network. The average is below 10% (TRC, 1996). An indication of the extent to which the two systems operate as networks can be gauged from the access mode of urban rail travellers. Given that in each city some 80% of residents live beyond walking distance from stations, it is notable that only around 10% of Melbourne rail passengers reach the station by bus or tram, compared with approximately 75% for the Toronto subway.

The proposition that integrated, regional planning is the key could be tested if there were areas in Toronto where public transport was provided on a comparable basis to Melbourne. Public transport in the outer suburbs beyond the boundary of Metro Toronto bears many similarities to the public choice model. Like the areas beyond the City of Toronto prior to 1954, these suburbs are not served by the TTC, but by a dozen separate municipal bus systems, supplemented by provincially-provided commuter rail. Comparing one such municipality, Mississauga, with Etobicoke, the neighbouring area of Metro Toronto, we find similar gross residential densities (29 and 33 persons per hectare respectively - IBI Group, 1990: Exhibit 12). But Mississauga’s public transport is similar to Melbourne’s: typical bus routes run half-hourly with little evening and no Sunday service, and fares are high for most travellers, who must pay an additional fare to transfer to the TTC subway system. Public transport in Mississauga accounted for 8% of travel in 1986, similar to the share in Melbourne, while the figure in Etobicoke was 19.5%.
Table 1  Bus service levels and patronage

<table>
<thead>
<tr>
<th>Suburb</th>
<th>Melbourne</th>
<th>Toronto</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance from CBD (km)</td>
<td>Springvale</td>
<td>North York</td>
</tr>
<tr>
<td>23</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Bus route (no.)</td>
<td>888/9</td>
<td>36</td>
</tr>
<tr>
<td>Gross residential density along route (ha.)</td>
<td>30</td>
<td>34</td>
</tr>
<tr>
<td>Bus service (frequency in minutes):-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak period</td>
<td>20</td>
<td>21/2</td>
</tr>
<tr>
<td>Off-peak (daytime)</td>
<td>20</td>
<td>6</td>
</tr>
<tr>
<td>Evening</td>
<td>No service</td>
<td>71/2</td>
</tr>
<tr>
<td>After-midnight</td>
<td>No service</td>
<td>15-30</td>
</tr>
<tr>
<td>Last bus on weekdays</td>
<td>6:06 pm</td>
<td>24 hour service</td>
</tr>
<tr>
<td>Saturday morning</td>
<td>60</td>
<td>8</td>
</tr>
<tr>
<td>Saturday afternoon</td>
<td>120</td>
<td>7</td>
</tr>
<tr>
<td>Sunday</td>
<td>No service</td>
<td>10</td>
</tr>
<tr>
<td>Return fare to City (bus and train)</td>
<td>$Au6.40</td>
<td>$Can3.00</td>
</tr>
<tr>
<td>Daily patronage (weekday)</td>
<td>1800</td>
<td>40,000</td>
</tr>
</tbody>
</table>

(Sources: TTC 1991; Statistics Canada 1992; personal communications in Melbourne; ABS 1993)

Conclusion

Melbourne’s unco-ordinated market-driven public transport systems have collectively proven less able to respond to the changing travel needs of a low density city than Metro Toronto’s single, regionally planned system. In low-density environments with high car ownership, public transport appears to be a natural monopoly, because patronage is too sparse to permit wasteful competition. This is not to suggest that Toronto has not made mistakes (the flirtation with Advanced Light Rapid Transit technology appears to have been one), or that Melbourne’s approach provided no benefits at all (the single-mode orientation of the Tramways Board may have contributed to the preservation of the tram system). But on balance, the ‘Toronto model’ appears to provide further “empirical dissent from the public-choice paradigm”, at least in the area of urban public transport. Public transport operators in Melbourne have competed with one another; Metro Toronto’s single operator has competed with the car.

Environmental issues such as the greenhouse effect may constitute a fourth crisis for public transport in both cities, with the election of cost-cutting neo-conservative governments in Victoria and Ontario adding a further challenge. In Toronto, encouraging public transport is an important part of the response to the environmental crisis. Metro’s official plan, ‘The Livable Metropolis’, proposes a series of transit and planning initiatives directed towards travel
targets for increases in the share of trips by green modes (Metro Toronto, 1992: 79). The challenge, as in the 1950s, is the growing development outside the TTC service area.

In Melbourne, by contrast, public transport is not part of the official debate about issues like the greenhouse effect. The most recent metropolitan strategy, which proposes to more than double the size of the city’s freeway network, notes that “public transport services a relatively small proportion of total trips” (Department of Planning, 1994: 33), but does not seek to change this situation. Meanwhile, the Victorian Environment Protection Authority’s greenhouse response focuses on improving the efficiency of car engines, and the promotion of ‘urban villages’. And public choice-oriented transport planners are now proposing a radical, new policy for Melbourne: free-market public transport, featuring jitneys!
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