Urban Rail Perspectives in Perth, Western Australia

Modal Competition, Public Transport, and Government Policy in Perth since 1880

Peter Cole, BA (Hons), W Aust

This thesis is presented for the degree of Doctor of Philosophy of Murdoch University, 2000.
I declare that this thesis is my own account of my research and contains as its main content work which has not previously been submitted for a degree at any tertiary education institution.

(C.P. Cole)
Abstract

The decline of public transport in Western Australia is observed in four separate historical studies which narrate the political and administrative history of each major urban transport mode. Perth's suburban railway system is examined as part of the State's widespread rail network, including the extravagantly-equipped short-lived suburban railway in Kalgoorlie. Political interference in early railway operations is studied in detail to determine why Perth's rail-based public transport systems were so poorly developed and then neglected or abandoned for much of the twentieth century. The unique events in Kalgoorlie at the turn of the century are presented as potent reasons for the early closure of Perth's urban tramway system and the fact that no purpose-built suburban railways were constructed in Perth until 1993. The road funding arrangements of the late nineteenth century are considered next, in order to demonstrate the very early basis for the present lavish non-repayable grants of money for road construction and maintenance by all three layers of government. The development of private and government bus networks is detailed last, with particular attention paid to the failure of private urban bus operators in the 1950s and the subsequent formation of a government owned and operated urban bus monopoly. The capital structure and accounting practices of public transport modes are analysed to provide a critique of popular myths concerning the merits of each. In order to obtain an impression of the changing political view of different transport modes, the attitude of politicians to public transport and the private motor car over the last one hundred and twenty years is captured in summary narrations of some of the more important parliamentary transport debates. Two possible explanations of public transport decline are discussed in conclusion; one relying a neo-classical economic theory of marginal pricing, and the other on an observation on the fate of large capital investments in the modern party-based democratic system of government.
Acknowledgements

I acknowledge the help of my Supervisor, Dr Jeff Kenworthy, with advice on my writing style and presentation. Inadequacies that remain are my own. I thank Jeff and Professor Peter Newman for free access to their personal libraries. I am grateful to the Institute for Sustainability and Technology Policy, and to Anne Randell and Karen Olkowski in the Research Division, for making this project possible.

C.P. Cole

December 2000
Frontispiece: The Western Australian Government Railways Commission has been the primary supervisor or provider of Perth’s urban passenger rail systems since their inception in 1881. However, Commission has consistently focussed on the railway freight business, following international trends by abandoning many rail services in recent decades. This photograph illustrates a number of difficulties the chronically undercapitalised Commission found itself after 90 years of operations. The steam locomotive was regarded as obsolete in 1969. What was worse was that the sixteen 'V' class 2-8-2 locomotives (V1209 is shown here) were withdrawn after serving a fraction of their potential working lives. This short train (10% of the 'V' class locomotive capacity) reflected the common carrier obligations of the railway department. The brand-new railway was the third attempt to cross the relatively easy grades of the Darling Scarp. The provision of extra rails for two gauges was a consequence of the 'Battle of the Gauges' in the 1870s. This train's destination of Albany is still 20% further from Perth by rail than by road. The guard's van was virtually redundant following introduction of continuous train brakes at the turn of the century. With all these deeply embedded difficulties, the Commission was reluctant to provide unprofitable passenger services. (WAGR)
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Systems of Measurement, Glossary of Railway Terms and Acronyms

0.1 - Systems of Measurement

Measurements of weight, distance and currency are given in the form appropriate to the historical period under discussion. Conversion factors are given below. Where prices are corrected for inflation, the 1966 Australian Dollar is used as the benchmark. The year 1966 (14 February) marked the change from pounds (£) to dollars ($) at which time $2 equaled £1. The Metric Conversion Act, 1970 was given effect by the Western Australian Government Railways Commission on 1 July 1973. An explanation of various technical terms associated with railways and tramways is also given below.

0.2 - Conversion Factors

(Abbreviations appear in brackets)

<table>
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<th>Conversion</th>
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<tr>
<td>1 acre</td>
<td>4840 square yards = 4050 square metres</td>
</tr>
<tr>
<td>1 chain (ch)</td>
<td>22 yards = 20.11 metres</td>
</tr>
<tr>
<td>1 foot (1')</td>
<td>12 inches = 0.305 metres</td>
</tr>
<tr>
<td>1 gallon</td>
<td>1.2 US gallons = 4.55 litres</td>
</tr>
<tr>
<td>1 horsepower</td>
<td>= 0.746 kilowatts</td>
</tr>
<tr>
<td>1 inch (1&quot;)</td>
<td>= 25.41 millimetres</td>
</tr>
<tr>
<td>1 mile</td>
<td>1,760 yards = 1.61 kilometres</td>
</tr>
<tr>
<td>1 pound (1lb)</td>
<td>= 0.45 kilograms</td>
</tr>
<tr>
<td>1 ton</td>
<td>2240 pounds = 1.02 tonnes</td>
</tr>
<tr>
<td>1 yard (1yd)</td>
<td>3 feet (3') = 0.91 metres</td>
</tr>
<tr>
<td>1 pound (£1)</td>
<td>= 20 shillings (20s)</td>
</tr>
<tr>
<td>20 shillings (20s)</td>
<td>= 240 pence (240d) = $2 (at time of conversion to decimal currency on 14 February 1966)</td>
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0.3 - Glossary

The terms 'public transport' and 'transit' are used interchangeably. Only collective modes are included under this description (not taxis). The following technical terms relating to railways, tramways and political institutions are used:
<table>
<thead>
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<th>Term</th>
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<tr>
<td>'B' double</td>
<td>Double-articulated semi-trailer road vehicle.</td>
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<tr>
<td>Ballast</td>
<td>Stone chips or gravel used to provide foundation for railway track.</td>
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<tr>
<td>Bogie</td>
<td>Separate pivoting frame mounted under a railway coach, tram car or locomotive containing two or more wheelsets.</td>
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<td>Common carrier</td>
<td>Transport operator required by law to carry any goods on offer. The common carrier status of the Western Australian Government Railways was confirmed by the Government Railways Act of 1904, and terminated by amendments to the act in 1982.</td>
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<td>Cost recovery</td>
<td>Inverse of operating ratio - see below.</td>
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<tr>
<td>Coupling</td>
<td>Device for linking railway locomotives, wagons and coaches.</td>
</tr>
<tr>
<td>Diesel-electric</td>
<td>Locomotive or rail car with diesel prime mover and electric transmission of power to wheels.</td>
</tr>
<tr>
<td>Diesel-hydraulic</td>
<td>Locomotive or rail car with diesel prime mover and hydraulic transmission of power to wheels.</td>
</tr>
<tr>
<td>Diesel-mechanical</td>
<td>Locomotive or rail car with diesel prime mover and mechanical transmission, usually in the form of a clutch and gearbox, of power to wheels.</td>
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<tr>
<td>Depreciation</td>
<td>Allowance for deterioration and obsolescence. Railways generally avoided depreciation accounting in the nineteenth and early twentieth century. Maintenance and replacement were often met in</td>
</tr>
</tbody>
</table>
working expenses, and major improvements reflected in the capital account.

Duplicated

Construction of double track.

Flange

Raised part of railway wheel that guides the wheelset - note that railway wheelsets are generally coned and therefore self-steering. The flange is designed only come into contact with the head of the rail on extreme curves or points and crossings.

Gauge

Distance measured between inside faces of the rails on a railway or tramway track.

Gross return

Excess of revenue over operating expenses expressed as a percentage of capital invested in a railway. Depreciation, interest or payments to a sinking fund are traditionally excluded.

Hypothecation

In a political context, dedication of a tax income stream to benefit the activity which is taxed.

Interest

Money paid for the use of money lent, or for forbearance of a debt, according to a fixed ratio. (OED)

Legislative Assembly

Lower house of Western Australian state parliament.

Legislative Council

Elected state legislature in Western Australia, from 1868 to 1890, which included official nominees, and was subject to veto of the state governor. The name was adopted by the upper house of state parliament in 1890.

Load-to-tare ratio

Weight of loaded wagon divided by weight of same wagon when empty.
Mixed train
Railway train composed of passenger carriages and goods wagons.

Multiple unit
Adoption of control systems which allow more than one locomotive, rail car or tram to be operated by a single driver.

Narrow gauge
Any gauge less than the standard gauge of 4' 8.5" or 1,435mm.

Net profit/loss
Operating revenue minus operating expenses, depreciation and interest. Sometimes referred to as overall profit/loss.

On the voices
Decision on motion by the parliamentary Speaker without a formal vote.

Operating profit/loss
Operating revenue minus operating expenses. Depreciation, interest, or payments to sinking funds are traditionally excluded.

Operating ratio
Operating expenses divided by revenue expressed as a percentage. Depreciation, interest, or payments to sinking funds are traditionally excluded, although some allowance for depreciation was often informally included as part of working expenses. The inverse of the operating ratio is termed 'cost recovery', which, in a modern context, usually includes depreciation and interest.

Pay loading
Additional wages for work in remote or unpleasant conditions.

Pounds per yard
Standard measure of weight of rail (1 lb/yard equals 0.41 kilograms per metre).
Rail car
Self-propelled rail vehicle (i.e. no separate locomotive is required).

Representative government
A legislature with the majority of its members elected. This form of government was adopted in Western Australia in 1868 (Colebatch, 1929, p.95).

Responsible government
Adoption of Westminster principle of ministerial responsibility by a legislature. This occurred in Western Australia 1890 and, amongst other things, gave the colonial government responsibility for its own finances.

Road train
Semi-trailer road vehicle or 'B' double also towing one or more additional trailers.

Route mile
Measurement of transport network size; service or track duplication is not included. (e.g. 1 route mile of double track railway equals 1 route mile of single track railway).

Ruling grade
Steepest grade on a section of railway which determines locomotive hauling power.

Shunting
Re-arranging railway wagons.

Sinking fund
Fund to repay capital. A typical nineteenth century sinking fund involved annual deposits of 2% of the total capital, which, at compound interest of 4% would allow full repayment of the capital amount in 28 years.

Skip
Small open railway wagon.

Sleeper
Transverse elements in railway or tramway track which transmit weight from the rails to the ballast and hold
the rails in gauge. Usually made of wood, steel or concrete.

**Standard gauge**

Gauge of 4' 8.5" or 1,435 mm.

**Tabled**

The placing of a bill before a legislature.

**Tram car or tram**

Tramway vehicle, usually self-propelled (one exception was Sydney with its small tramway steam locomotives) and usually hauling no more than one unpowered trailer (Kalgoorlie's electric trams sometimes hauled as many as four trailers, illustrated in Richardson, 1967, p37, reproduced as Plate 37).

**Tramway**

Railway laid all or partially in a roadway. Also used to describe light railways built under the authority of tramway legislation.

**Uncompensated gradient**

An incline on a railway or tramway expressed as a ratio of height gained to horizontal distance covered (e.g. 1:22). This ratio is modified (compensated) if the effect of a line's curvature on locomotive hauling power is accounted for.

**Unit train**

A train transporting a single commodity from one source to one destination (Association of American Railroads, 1974, pS1-25)

**Wheel arrangements**

The British system for describing wheel arrangements of steam locomotives is used; for example, 4-4-0 refers to a locomotive with tender, a four-wheel front bogie and four driving wheels; 4-8-4T denotes a tank engine with a four-wheel front bogie, eight driving wheels and a rear four-wheel bogie.
Wheelset

Assembly of two (normally flanged) steel wheels and axle. Some locomotives have unflanged wheelsets to allow negotiation of sharp curves.

0.4 - Acronyms and Abbreviations

I have endeavoured to avoid the use of acronyms and abbreviations in the text as much as possible. In order to minimise cumbersome references, I have used the following:

ACT Australian Capital Territory.
ARCC Australian Railway Commissioners Conference.
CPD Commonwealth Parliamentary Hansard.
EGR Eastern Goldfields Railway.
ER Eastern Railway.
EMU Electric Motor Unit or self-propelled electric rail car.
FMT Fremantle Municipal Tramways.
GSR Great Southern Railway.
KET Kalgoorlie Electric Tramways, Limited.
MCD Mahogany Creek Deviation.
MLA Member of the Legislative Assembly.
MLC Member of the Legislative Council.
MRD Main Roads Department of Western Australia.
MTT Metropolitan (Perth) Passenger Transport Trust, more commonly known as the Metropolitan Transport Trust; given the corporate marketing title of 'Transperth' on 31 August 1986, and 'Metrobus' in 1995.
NR Northern Railway.
NSWGR New South Wales Government Railways.
OPA Omnibus Proprietors' Association.
PET Perth Electric Tramways, Limited.
PCCRFs Perth Central City Railway Feasibility Study.
PD Western Australian Parliamentary Debates (Hansard).
PWD Public Works Department of Western Australia.
RAC Royal Automobile Club of Western Australia.
SWR South Western Railway.
UDRR  Upper Darling Range Railway.
UK    United Kingdom.
USA   United States of America.
VP    Votes and Proceedings of the Western Australian Parliament.
WA    Western Australia.
WADT  Western Australian Department of Transport.
WAGR  Western Australian Government Railways, given corporate 
       marketing title of Westrail in 1975 - often simply referred to here as 
       the 'railway department'.
WAGTF Western Australian Government Tramways and Ferries 
       Department.
WATB  Western Australian Transport Board.
YR    Yilgarn Railway.