Car dependence in Australian cities: a discussion of causes, environmental impact and possible solutions.

KIERON AMPHLETT

Abstract

This essay investigates why Australia's five major cities have become so dependent on the automobile. The essay also discusses the impact of car dependence on the environment and suggests possible solutions to the problem. Changes to urban planning following the post-war long boom period of the 1950s and 1960s resulted in major restructuring in the retail and manufacturing industries. The combination of these changes with the economic boom led to Australian cities becoming among the most car dependent in the world. This dependence on cars creates a multitude of environmental concerns and calls for improved public transport options, modification to urban structural planning and a return to 'soft' modes of transport.

Key words: automobile, car-dependence, Australia, long boom, manufacturing, public transport

Kieron Amphlett wrote this essay as a first year student in Geography, in the School of Geography, Population and Environmental Management, Flinders University, South Australia.

Introduction

The latter half of the twentieth century saw Australia's major cities develop an extreme reliance on the automobile, placing them among the most car dependent in the world. The rapid rise in automobile ownership and consequent decline of public transport since the Second World War are two factors that have played a major role in influencing the shape of Australian cities and determining urban structure to the extent that for most people a car is essential. With depleting oil resources, increased awareness of pollution and climate change

coupled with growing city sprawl, the need to lessen automobile dependence has become more and more apparent. This essay will examine why households in Australian cities have become so dependent on the automobile, the consequences it has to the environment and what can be done to address these problems.

Factors contributing to high car-dependence

The post-war period from 1947 to 1971, known as the 'long boom', saw a rapid increase in automobile ownership by households in Australian cities. Mass-production technology pioneered by American car manufacturer Henry Ford made car ownership – formerly a luxury – affordable (Forster 2004, p. 18). Coupled with the removal of wartime petrol rationing and a booming economy approaching full employment, the levels of car ownership rose from 100 cars per 1000 persons in 1945 to almost 500 cars per 1000 persons by the early seventies (Forster 2004, p. 17). Australian cities remain very high car users compared to other cities around the world and second only to some in the US. The use of cars in Australia is 31 per cent higher than European cities and 77 per cent higher than Asian cities (Parbo 1997, p. 81).

With cars easily affordable during the post-war period, people enjoyed the freedom and flexibility to travel without being reliant on trains. The importance of city rail systems also diminished thanks to truck transportation and increasingly improved inter-state road systems which meant manufacturing was no longer bound by rail networks. Consequently many changes in urban development patterns began to take place (Fig. 1-B).

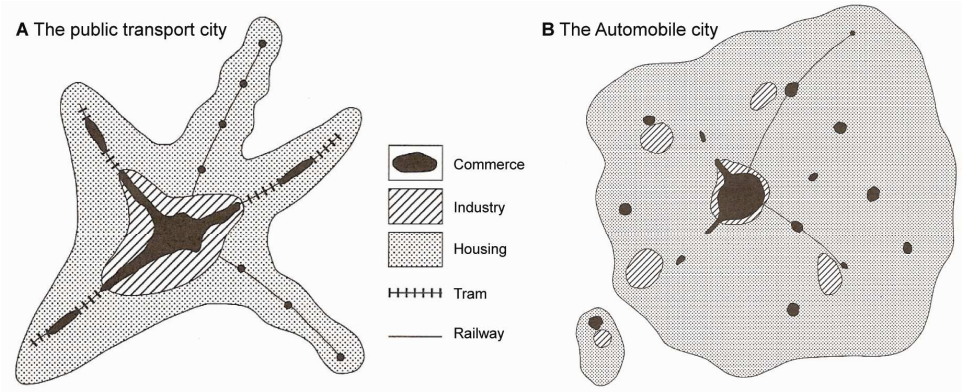

Figure 1 Transport technology and eras of urban form
(*Source*: Forster 2004, p.20)

The former star-shaped city, defined by a rail system that typically branched out from the city centre (see Figure 1-A), changed into a more decentralised sprawl due to accessibility made possible by the automobile (Forster 2004, p. 18). Amenities no longer needed to be located close to railways and so the gaps between the lines began to fill as shown in Figure 1-B.

As the automobile became the preferred means of transport during the long-boom, the public transit system declined, initially in usage and then later in the quality of the service owing to decreased fare revenue generated to maintain it (Forster 2004, p. 18). Public transport in Australia's major cities soon became outdated and inefficient, making it an increasingly less desirable transport option and heightening people's dependence on the automobile (Forster 2004, p. 18).

The introduction of the private passenger car is perhaps the greatest facilitator of suburbanisation (Abu-Lughod 1991, p. 128). An early cause of suburban sprawl, however, was manufacturing industry, which typically required large sites to cater for modern single level plants. These were not available in the inner-city. Industry relocated to the cities' outer fringes, where interstate highways facilitated truck transportation (Forster 2004, p. 18). Workers moved closer to their jobs and retailing followed. With the freedom of car

travel, people no longer relied on the local shop to do their grocery shopping. The economic and manufacturing boom led to most households owning refrigerators and so larger, less frequent purchases could be made and people were prepared to travel longer distances to shop at large shopping complexes where prices were cheaper (Mees 2000, p. 33). Urban planners with little insight into future problems of automobile dependence located major facilities such as schools, hospitals and universities in the outer-fringes of Australian cities with little or no access by public transport making automobile ownership not only attractive but essential (Forster 2004, p. 18). The sprawling suburbanised city with insufficient public transport heightened the need for private automobile use.

The suburbanisation of employment has had a major impact on car dependence in Australian cities (Forster 2004). Where a simple commute to the city centre via public transport used to be the norm, employment is now scattered throughout cities' metropolitan regions. It may at first seem a reasonable and efficient option to locate jobs around suburbs near residential areas. However, workers do not necessarily live in the same part of suburbs as their place of employment (Forster 2004, p. 65). Housing affordability often determines where people live, leaving many home owners and renters no opportunity to consider proximity to the workplace. A study by the Victorian Department of Labour predicts that by 2031, Melbourne's fringe will house 40 per cent of the city's workforce but supply only 10 per cent of its jobs (Newman, Kenworthy and Vintila 1995, p. 60). Inter-suburban travel, which public transport rarely provides, is increasingly required.

The extent of dependence Australians place on the automobile in its five major cities can be seen in Table 1 which shows the mode of transport for travel to work. Recently released 2006 census data reveal that there has been a slight decrease in car use with public transport and walking or cycling to work up marginally in most cities; however, the percentage of workers who drive their private cars to work is still exceptionally high across the board with between 58.1 per cent in Sydney to 72.2 per cent in Adelaide.

Table 1 Mode of travel to work in major cities, 1991 – 2006 (per cent)

Employed persons stating mode of travel

	Sydney				*Melbourne*				*Brisbane*				*Perth*				*Adelaide*			
	1991	*1996*	*2001*	*2006*	*1991*	*1996*	*2001*	*2006*	*1991*	*1996*	*2001*	*2006*	*1991*	*1996*	*2001*	*2006*	*1991*	*1996*	*2001*	*2006*
Car driver only	58.0	60.1	58.8	58.1	67.8	70.7	70.5	67.5	64.4	67.0	66.8	64.9	71.7	73.1	73.1	70.3	68.9	73.3	73.5	72.2
Car passenger only	7.6	7.2	6.3	5.7	7.6	6.8	5.9	5.2	8.9	8.4	7.6	6.9	8.1	7.6	6.6	6.6	8.8	7.7	6.8	6.4
Public transport only	14.9	14.3	14.7	14.3	9.1	8.0	8.4	9.0	10.2	9.1	9.0	9.8	7.0	5.8	5.5	6.7	8.6	7.0	6.8	7.8
Walk or cycle only	5.6	4.8	4.9	5.2	4.6	3.8	3.7	4.6	4.8	4.0	3.9	4.4	3.8	3.1	3.2	3.6	4.9	3.7	3.6	4.5
Two or more modes	7.5	6.9	7.5	9.6	5.1	4.4	4.6	7.5	4.2	3.6	4.1	6.0	2.7	3.4	4.2	5.8	2.9	2.3	2.8	3.1
Other	2.2	2.3	3.1	2.8	1.7	1.8	2.4	2.2	3.0	3.0	3.7	3.6	2.4	2.3	2.7	3.0	2.3	2.1	2.4	2.6
Worked at home	4.2	4.5	4.6	4.2	4.2	4.5	4.5	4.1	4.5	4.9	4.9	4.4	4.3	4.7	4.7	4.0	3.5	3.9	4.0	3.5
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: Forster (2004, p.67) and ABS 2006 Census, Basic Community Profiles.

Not only has it become more-or-less essential to own a car in modern Australian cities due to urban structure and lack of alternative transport, it is also apparent that people view car ownership with a great deal of pride, seeing it as an expression of image, independence, mobility and sexual opportunity (Mees 2000, p. 45). Often the car is viewed as an extension of a person's personality and the attractiveness of driving at speed and being in complete control of one's destination is so strong that no matter how dire the environmental consequence of private travel, people are inevitably going to want to own their own cars (Davison 2004, p. 48). A survey conducted in the 1990s showed that only 5 per cent of Australians were willing to curb their driving habits in order to protect the environment (Forster 2004, p. 184).

Impacts on our cities

It has been established that households in Australia's major cities are very dependent on automobiles for a variety of reasons mentioned. In order to address the issue of combating the problems caused by car-dependence it is first necessary to understand the many social and environmental impacts that cars have on cities. Primarily, the impact of automobile dependent cities is felt on a global scale through the depletion of the world's oil reserves at a time of increasing demand for the resource. In turn, the most concerning issue at present

are the contributions of car use to climate change (Kenworthy and Laube 1996, p. 280). Greenhouse gas emissions from automobiles are a major contributor to global warming, with Australia's vehicle fleet being the nation's single greatest source of atmospheric pollutants (Parbo 1997, p. 9).

On a city-based local level, automobile dependence has led to increased urban sprawl resulting in the destruction of prime farming land and natural landscapes (Kenworthy and Laube 1996, p. 280). Photochemical smog from car exhausts threatens the health of all city dwellers. Sadly, this is particularly true for those who choose to walk or to use a bicycle. Automobiles are also responsible for many traffic accident fatalities. Renner (1988, p. 46) shows that in 1985, approximately 200,000 people died and millions more were injured in car accidents worldwide. Too many cars leads to parking difficulties and traffic congestion and can also restrict the ability of children to travel safely to schools and other amenities without parental supervision (Mees 2000, p. 16). Given the wide range of problems associated with car-dominated cities it is obvious that a transformation of Australia's urban travel habits is required.

One of the more obvious and important ways to reduce car dependence in Australian cities is to promote the only genuinely sustainable 'soft transport' modes of walking and cycling. They cause almost no pollution, use no oil and are a positive contributor to personal health and community well-being (Mees 2000, p.19). Attention needs to focus on safe and attractive environments for cyclists and pedestrians through wide-area traffic calming schemes and through the provision of cycling facilities such as cycle ways, carriage of bikes on transit and secure bike parking (Kenworthy and Laube 1996, p. 301). TravelSmart is a federal government funded program operating in all states and territories that promotes environmentally friendly forms of transport. It provides information on cycle routes, strategies for organising employer provided bike fleets for work commuting and many other suggestions for reducing car use (TravelSmart Australia 2007).

Possible solutions

If car dependence is going to be significantly reduced a large proportion of car drivers will need to shift to using public transport. When fully utilized, public transportation systems are considerably more energy efficient, less polluting and can provide an enormous reduction in traffic congestion (Renner 1988, p. 49). If authorities are going to attract commuters back to public transit the systems will need to be faster, safer and more regular, operate between inter-urban areas, be affordable and work efficiently in cooperation within the different modes of travel (bus, train, ferry, etc.) (Kenworthy and Laube 1999, p. 701). There has been an attempt in most of Australia's major cities to increase transit use by improving services; Sydney introduced a new inner-city light rail, Melbourne upgraded some of its tram fleet and Adelaide has set targets to increase the percentage of public transport from 5 percent to 10 percent by 2018 (Forster 2004, pp. 183-184). Perth is an example of a city that has made improvements to its rail service and increased patronage by providing large car parking areas close to rail stations which encourage commuters to drive short distances, leave their cars and travel most of the way to work by train (Forster 2004, p. 67).

Many Australian urbanists argue that the key to reducing car dependence is to follow the European example of creating high-density cities and reducing urban sprawl (Mees 2000, p.35). Newman and Kenworthy (1989) have been pushing this argument for decades, arguing that higher density cities will lower average trip distances, improve public transport by increasing patronage and allow for higher rates of walking and cycling due to closer and more centralised amenities (Newman and Kenworthy 1989, p. 132). Newman, Kenworthy and Vintila (1995, pp. 51-55) draw attention to the example of Stockholm which has successfully reshaped itself over a 50 year period to become a high-density, multi-centred metropolis with an excellent rail system and very little dependence on the automobile.

Others oppose the proposition that Australian cities should be modelled on European trends, arguing that low-density living suits the majority of urban Australians and that high-density creates many additional environmental concerns. Tony Recsei, president of Save Our Suburbs NSW, is fearful of this new urban push for higher population densities stating

that the spacious nature of Australia's urban areas is the reason for its beauty and high standards of living, and he refutes that higher density living would be effective in reducing car dependence (Recsei 2005, pp. 68-69).

One initiative, although it may raise equity-related problems, is to set pricing mechanisms that curb car ownership and use. High registration fees, parking costs, tolls and fuel taxes provide an incentive to find alternative means of travel but the concern is that only the rich will be able to afford to drive (Cervero 1992, p. 34). It causes even greater concern when considering the fact that many of the more financially disadvantaged rely on the automobile due to being forced to live in the outer-fringe of cities where there is little or no access to public transport (Newman, Kenworthy and Vintila 1995, p. 61).

An important measure in minimising the environmental effects of car-dominated cities has been the effort taken since the 1980s to increase fuel efficiency through new vehicle technologies and by developing cleaner, less polluting fuels (Parbo 1997, p. 108). Great reductions in photochemical smog as well as minimising depleting oil resources can be achieved through these processes (Renner 1988, p. 26). Electric and gas powered vehicles have also played a role in reducing environmental damage although do not provide the long term solution unless electricity is generated from renewable sources. Exciting developments in hydro and solar powered vehicles may one day see many of the problems associated with car dependent cities non-existent (Granovskii, Dincer and Rosen, 2006, p. 411).

Conclusion

The long boom post-war period in Australia saw many changes to retail, manufacturing, public transport and urban development causing its major cities to become sprawling and suburbanised, resulting in them being among the most car dependent in the world. With ever increasing awareness of our need to effectively reduce greenhouse gas emissions due to the threat of climate change and the need to limit our use of depleting oil resources urban travellers need to adapt to lifestyles that are not so heavily dependent on the private car. In order to achieve this, authorities must provide incentives for alternative travel,

improvements to public transport systems and create infrastructure that supports soft transport options.

References

Abu-Lughod, J.L. 1991, *Changing Cities: Urban Sociology*, HarperCollins, New York.

Cervero, R. 1992, 'The challenge for transport and how it shapes the city' in *Perth – Beyond 2000: A Challenge for the City*, Proceedings of a City Challenge Conference, Challenge Bank, Perth, 33-36.

Davison, G. 2004, *Car Wars: How the Car Won Our Hearts and Conquered Our Cities*, Allen & Unwin, Crows Nest.

Forster, C. 2004, *Australian Cities: Continuity and Change*, Oxford University Press, Melbourne.

Kenworthy, J.R. and Laube, F.B. 1996, 'Automobile dependence in cities: an international comparison of urban transport and land use patterns with implications for sustainability', *Cities*, Vol 12, no. 6, pp. 279-308.

Kenworthy, J.R. and Laube, F.B. 1999, Patterns of Automobile dependence in cities: an international overview of key physical and economic dimensions with some implications for urban policy, *Transportation Research*, vol. 33, pp. 691–23.

Mees, P. 2000, *A Very Public Solution: The car dominated city and its discontents*, Oxford University Press, Melbourne.

Newman, P. and Kenworthy, J. 1989, *Cities and Automobile Dependence: An international sourcebook*, Gower, Aldershot.

Newman, P., Kenworthy, J. and Vintila, P. 1995, 'Can we overcome automobile dependence?', *Cities*, Vol. 12, no.1, pp. 53–65.

Parbo, A. 1997, *Urban Air Pollution in Australia: An Inquiry by the Australian Academy of Technological Sciences and Engineering 1997*, Commonwealth of Australia, Kingston.

Recsei, T, 2005, 'Pipe Dreams: the shortcomings of ideologically based planning', *People and Place*, Vol. 13, no. 2, pp. 68-81.

Renner, M. 1988, *Rethinking the Role of the Automobile*, Worldwatch Institute, Washington D.C.

TravelSmart Australia, 2007, *About TravelSmart*, (online), Available: http://www.travelsmart.gov.au/about.html (4 November 2007).