

The Ten Myths of Automobile Dependence

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Abstract

The myths about automobile dependence are analysed and dismissed as no longer having the inevitability they once had. The myths relate to wealth, climate, space, age, health and social problems, rural life styles, the road lobby, land developers, traffic engineering and town planning praxis. Only the tenth one seems to continue to have an inevitability due to entrenched practices which should now be updated and replaced.

Keywords

Automobile dependence, cities, development, engineering, myths, new urbanism, planning, traffic.

Introduction

Cities show varying degrees of automobile dependence (Newman & Kenworthy, 1989, 1999). The rationale for justifying the extent of car-based low density dispersal has many different forms which are encountered whenever discussions are held showing the variations in different city forms and transportation patterns.

In Table 1, we list 10 of the most common reasons which have been suggested to explain the phenomenon of automobile dependence. This paper will argue that none of them are sufficient in themselves. They are therefore called 'myths about automobile dependence'. They are the basis for addressing public policy and administration issues to do with cities and cars as they reach to the

Table 1: 10 Myths about the Inevitability of Automobile Dependence

1 <i>Wealth</i>	Automobile dependence is an inevitable consequence of wealth. People will always buy cars and larger amounts of private urban space, thus alternative urban forms, public transport and non-motorised modes will inevitably die out as people get richer.
2 <i>Climate</i>	Automobile dependence is inevitably induced by warm climates where people can enjoy low density suburban lifestyles, whereas compact, transit-oriented cities are mostly in cold climates.
3 <i>Space</i>	Automobile dependence is inevitably part of countries that are very spacious, whilst those with little space have compact cities.
4 <i>Age</i>	Automobile dependence is an inevitable feature of modern life and thus new cities developed predominantly after 1945 show it more than old cities.
5 <i>Health and Social Problems</i>	Automobile dependence is inevitably created by the reaction to density and its health and social problems.
6 <i>Rural Lifestyles</i>	Automobile dependence is inevitably created by the attraction of rural lifestyles in the suburbs with their associated promise of withdrawal from the evils of city lifestyles.
7 <i>Road Lobby</i>	Automobile dependence is inevitably created by the powerful combination of road interests.
8 <i>Land Developers</i>	Automobile dependence is inevitably created by the powerful interests of land speculators and developers and there is little that planning can do to stop them.
9 <i>Traffic Engineering</i>	Automobile dependence is an inevitable outcome of the standard processes of transportation planning.
10 <i>Town Planning</i>	Automobile dependence is inevitably regulated into cities by local town planning.

assumptions that are causing so many policy makers, practitioners and activists to feel there is nothing they can do about automobile dependence.

Dispelling the myths about automobile dependence

Wealth

Automobile dependence is an inevitable consequence of wealth. People will always buy cars and larger amounts of private urban space thus alternative urban forms of transportation will inevitably die out as people get richer.

Many urban commentators suggest there is an inevitable link between rising living standards and rising demands for private space and car use (e.g. Gomez-Ibanez, 1991). ‘As soon as people get enough money they will buy a car and move to the suburbs’ is how the inevitability is generally expressed. Stopping these sprawling car-based cities is therefore like being the hapless King Canute.

Rising living standards obviously do impact on transportation and land use (Schafer & Victor, 1997). Historical analysis shows how cities have moved outwards following trams and trains, and then cars, as people developed the economic means to take advantage of these technologies. Also, increasing incomes meant that people could afford to buy bigger homes and more spacious surroundings which they appreciated for cultural reasons.

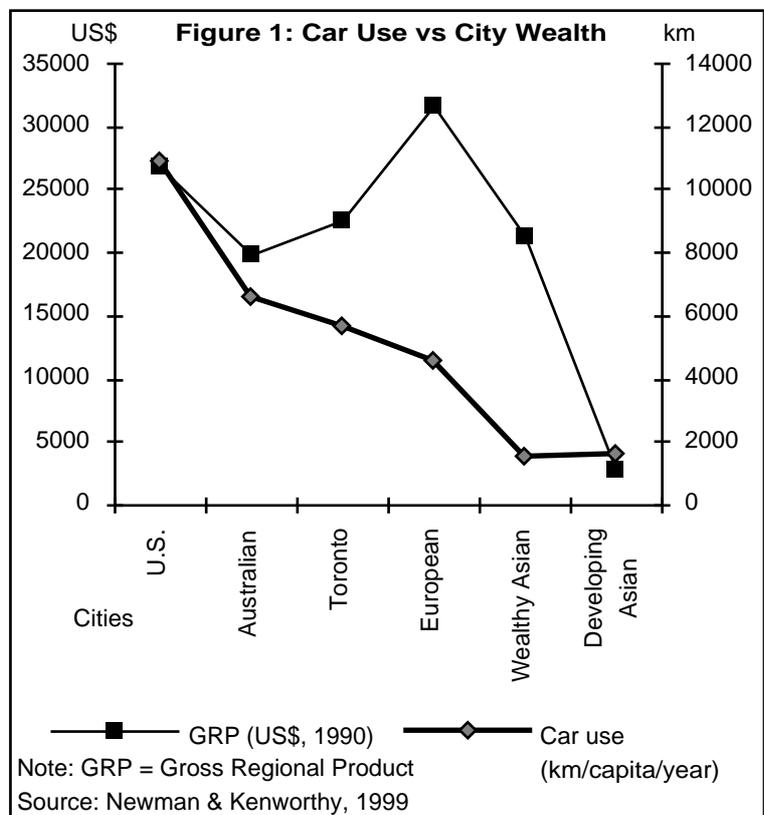
However, the link between living standards and a more car-based, low density city is not automatic. In fact, the correlations are very weak and in more recent times are going in the opposite direction (see Newman & Kenworthy, 1999, and Figure 1). Thus the future does not necessarily bring more automobile dependence. Technological determinism based on cars can be switched into transit if a quality service is available and the major road and freeway systems are operating close to capacity. Cultural choices vary and the dream of space in the suburbs can be replaced for some with a dream of urban living near to the full range of amenities and cultural attractions. In addition to this, the economic processes which link wealth and urban form, as suggested above, are much more complex than conventional argument has considered.

An analysis by Frost (1991) provides a detailed understanding of the link between wealth and urban form based on whether

wealth is mostly reinvested in new suburban infrastructure or into industrial development. North American and Australian cities have mainly done the former and hence have developed low density, car-based cities while others have become more compact as they reinvested more into industrial innovation. Frost seriously questions whether any cities can continue to move in the direction which assumes growing wealth from our rural hinterlands is the basis of urban growth patterns. The financial problems with urban sprawl have led the Bank of America to reject investment in dispersed suburbs in favour of more compact development (Bank of America, 1994)

Other urban researchers (reviewed in Newman & Kenworthy, 1989) have shown how levels of car ownership and use are significantly less in higher density areas of cities at all levels of wealth (why use a car if you can walk or take transit more quickly and conveniently?).

Our global cities data (Newman & Kenworthy 1989, 1999) reveal a significant difference between U.S./Australian and European/Asian cities in their density and in their car use patterns – and yet European city incomes are higher. Indeed many European cities have per capita incomes 20% to 50% higher than in Australian and U.S. cities, yet are four



times as dense and two to three times less intensive in their car use.

When we talk to European planners they are adamant that their urban policies are determined to minimise sprawl. Most European urban and transportation policy documents indicate a strong commitment to, and belief in, physical planning policies intended to contain sprawl and to provide effective alternatives to the car. These policies have taken a while to begin working, but results are becoming more evident in some cities.

Perhaps some of the last European cities to tackle automobile dependence are those in the U.K., but their Planning Policy Guidance Notes (PPG) 6 (1996) and 13 (1994) favour re-urbanisation and reducing the need to travel. The new policies suggest that there should be no more new 'out of town' shopping centres. This has come in response to the decay of their cities under Thatcherism, which was stopped equally by the 900 anti-motorway groups and the business owners in traditional centres whose trade was dying. As the Royal Commission on Environmental Pollution (1994) put it:

'There has been a significant shift in thinking away from what Lady Thatcher once called the 'great car economy'.

In the U.K. they seriously question the notion that greater wealth means greater use of cars and more sprawl. Examples of the old way of car-based thinking still emerge and some steps backward are taken, but the universal belief in the car as a source of wealth is no longer quite as dominant. Mobility and wealth have become decoupled as the quest for the sustainability agenda becomes more and more mainstream.

There are now many examples of wealthy cities in which densities have gone up and in which transit and walking/cycling have grown at the expense of car travel. The data trends show that European cities were in general reducing in density but at a slower rate than in U.S. cities. Now they are reversing like Stockholm which grew in density in each part of its city in the 1980s and also grew in wealth. The changes towards re-urbanisation that have occurred rather than being due to incomes reducing, have often occurred because of the attraction of market processes which appear to favour compact urban nodes. This appears to be because of the new information-based city which favours more intense multi-nodal urban environments, or simply because of different planning priorities, e.g. transit preferred to highways due to the politics of high capacity roads which are no

longer favoured by communities.

Finally, it is worth remembering that the most expensive places to live in all U.S. cities are in their high density downtowns such as in New York (Manhattan), Boston (Beacon Hill), Philadelphia (Society Hill), San Francisco (Knob Hill or Mission Bay) and so on. There appears to have been a long term market in the U.S. for these areas which favour dense, walking-based urbanity and increasingly there is a shift in the suburban market to nodes that are more city-like. See, for example, the publications from the Center for the Livable Communities which show this change in urban values very clearly (Center for the Livable Communities, various dates).

Climate

Automobile dependence is inevitably induced by warm climates where people can enjoy low density suburban lifestyles, whereas compact transit-oriented cities are mostly in cold climates.

The argument generally goes like this: a warm, low rainfall climate means people spend time outdoors, they travel more and have large private blocks of land for their houses so they can enjoy gardening, barbecues, swimming in private pools and so they can give children the extra space for sports and games. In relation to Perth, one early 1980s transportation study proudly proclaimed:

'Our climate promotes the 'quarter-acre' and 'fifth acre' block: we seek space for garages and gardens, pools and patios, barbecues and boats' (Director General of Transport, 1982, p.65).

Conversely, the argument is that in cold climates, snow and ice motivate people to take transit rather than drive a car on dangerous roads and that people don't mind living in compact, apartment settings because outdoors is so unattractive. An interesting variation on this occurs in Calgary (renowned for its frigid winters). Here the planners say that the reason Calgarians so much like their low density, single family homes is because the climate is so cold! How so? 'Well if you live in such an awful climate you want to be able to rush outside as soon as the weather turns nice!' (Calgary City Planner personal communication).

Our global cities study of 32 cities found there was no correlation between gasoline consumption (a key indicator of automobile dependence) and average annual temperature, or between urban density and average annual temperature (Newman & Kenworthy, 1989).

This at least suggests there is nothing about hot

weather, as such, which induces travel or sprawling cities. Conversely, there appears to be nothing about cold climates which induces people to drive little and cram together in apartments. Certainly, indoor activities can be just as attractive in hot weather as in cold weather. The positive effect of climate on certain outdoor activities such as gardening and games is not limited to hotter climates, particularly considering the popularity of winter sports.

The use of transit seems also to be related to more than just climate. All our data show that it depends on how fast transit is relative to cars, how frequently it comes and how easy it is to get to.

If we go beyond the scope of the global cities study, it is easy to find cities that are not cold and yet have a high density urban form with good transit and much more use of non-motorised transportation. In Europe there are Athens, Barcelona, Madrid and Rome. In the Middle East there are, for example, Istanbul, Cairo, Jerusalem and Teheran, with many Middle Eastern cities continuing to build in a compact way to create micro climates with shade and orientation of buildings and public spaces to optimise cool breezes. In South and Central America almost every city has a hot climate – Mexico City, São Paulo, Rio de Janeiro, Lima, Buenos Aires – and all are compact and high density. In the U.S. there are Honolulu which features some very high density areas such as in Waikiki, and the dense, compact city centre of old San Francisco. In Asia, again all cities are densely populated regardless of the climatic conditions.

Alternatively, many cold northern cities are low density and car oriented. Detroit and Denver have few supposed car-enhancing climate features for much of the year, but are totally dominated by the automobile and extensive, low density suburban land use.

If low density planning and high car use are encouraged in a city, it is probably for deeper reasons than lifestyle induced by the climate.

Space

Automobile dependence is inevitably part of countries that are very spacious, whilst those with little space have compact cities.

‘It might just be that here, in the biggest State in the sparsest continent, we love space... It may be a faintly amusing concept to many of us to imagine Perth people crammed together in a transportation efficient city on the edge of the wheatbelt and outback, and next to the void of the Indian Ocean’ (Western Australian Director General of Transport,

1982, p.65).

A number of points can be raised about such assertions. Other countries with ‘plenty of space’ have not developed sprawling cities along the lines of those in Australia and North America with densities of about 10 to 20 people per ha.

Central and South America have vast areas of rural land similar to the U.S. and Australia but their cities are all high density (Buenos Aires 80 per ha, Salvador 90 per ha, Santiago 144 per ha, Lima 171 per ha, Caracas 175 per ha and Mexico City 224 per ha). Russia has no shortage of land but its cities are very efficient users of space (Moscow 139 per ha and St Petersburg 85 per ha).

However, more compact cities in countries with lots of space are not limited to developing world situations. In fact Stockholm, historically one of the world’s most wealthy cities, has consciously sought to develop in a more compact way despite having an abundance of space (Cervero, 1995). Sweden has vast expanses of rural land, mostly forest, but the few cities are for the most part highly compact with little wasted space. Sweden has a long tradition of planning urban services in an equitable and efficient manner. Stockholm has no ‘need’ to concentrate its land use because of lack of space, but its planners believe that a good city has:

- a railway station within 500 to 900 meters (i.e. short walking or cycling distance) of most housing;
- a train service without a timetable, i.e. a frequency of 12 minutes or less; and
- people living not more than 30 minutes from the city centre.

These policies ensure a compact urban form based around a fast electric train with housing and other land uses concentrated around stations. Indeed, as is shown in our latest data, Stockholm is the only city which actually lowered its per capita use of cars a little between 1980 and 1990, it grew in transit use from 302 to 348 trips per capita and, at the same time, it grew in density in its central city, its inner city and its outer area.

If a nation has ‘plenty of space’ it does not automatically lead to a low density urban form where land use is highly inefficient, although this perception in the U.S. and Australia appears to play some role in facilitating or at least justifying the low density city. Frontier land views of space (cowboy cities) can be rationalised in a frontier economy. Now we are all global cities in a global economy and as our data suggest, those cities not addressing the global

agenda (including sustainability) may well go the way of the cowboy.

Age

Automobile dependence is an inevitable feature of modern life and thus new cities developed predominantly after 1945 show it more than old cities.

The city's age does affect its spatial and transportation traditions. Cities founded before the middle of the 19th century were built around walking, then transit spread the city out, and finally the car allowed even lower densities. However, many modern cities have been built with a walking-based or transit-based urban form around which they continue to develop. Asian cities, including modern Tokyo, Seoul and Hong Kong are high density walking and transit cities with tiny levels of car use compared to U.S. and Australian cities. European cities mostly maintain their medium-density, transit-oriented land use in much of the new development which has been added to these cities in the age of the car's dominance.

The sprawling low-density city is essentially a U.S. and Australian phenomenon – one taken to the extreme in old railway-based cities such as Detroit and Los Angeles, which were rebuilt into totally car-based cities. It is now being recognised that such fully-motorised cities cannot function efficiently and hence rail systems are making a comeback in most Californian cities, along with a growing trend towards re-integrating development into high density, mixed use patterns around stations.

Canadians have perhaps gone furthest in beginning to change from car-based sprawl to more compact, modern rail-based cities, having adopted a deliberate policy on this in the early 1970s (see case study on Toronto and Vancouver).

Although a city's age is important in its spatial traditions, it is not an inflexible determinant.

Health and Social Problems

Automobile dependence is inevitably created by the reaction to density and its health and social problems.

While recognising the economic and environmental problems of automobile dependence, some urban commentators suggest that the primary motivation behind low density cities is one of health and social amenity. They draw on a long tradition that 'density is bad for you'.

The spread of disease was always thought to be through the air (via 'miasma'), and lowering densities was seen as a way to improve health through a 'wholesome supply of good air'. This

justification for the garden suburb continued even after a century of medical evidence showed that sewerage and sanitary facilities were the key factors in the promotion of good health. Cities such as Hong Kong and Singapore have extremely high health rates, yet some planners and academics still talk about the need for plenty of space for your health.

Social 'ill health' (crime, delinquency, suicide, drug taking) has also been linked to higher density, yet there is no consistent evidence to support this. We analysed crime rates and density (Newman & Kenworthy, 1989) and found that the data showing how low density reduces crime (as is so often stated) are very difficult to find. Poverty is the biggest correlate with crime, especially if there are extremes of wealth nearby (Knox, 1982). But this occurs at all densities. Indeed crime seems to be higher in low density cities in the U.S. (Newman & Kenworthy, 1989). International data tend to suggest European crime rates are lower than in the U.S. and Australia, and Asian city crime rates are even lower than in Europe (Fischer, 1976).

Obviously socio-cultural factors dominate the causes behind these data – but the evidence goes against the belief that increased density leads inevitably to increased crime. There is also a larger body of literature which suggests that higher density that is designed to create 'defensible space' for neighbourhoods may keep down some forms of crime, probably because of the 'eyes on the street' phenomenon (Jacobs, 1961; Newman, 1972; Gehl, 1994; Sherlock, 1991; & the New Urbanist Writers). Other literature shows the importance of community empowerment in easing crime (Herbert, 1982; Rosenbaum, 1986) and this process requires sufficient density for neighbourhoods to become communities.

At the very least, the data suggest there is no inherent relationship between higher density and crime and the common fear about increasing densities leading to an increase in violent crime is unfounded.

The one main study by Schmitt in 1963 which suggested a relationship between density and social disorder is widely quoted, but Schmitt's 1966 paper in which he re-examined the data and no longer found the correlation, is rarely quoted. The Australian sociologist Paul Wilson suggests: 'rhetoric about the effects of high rise living must rank as one of the major hoaxes imposed by social scientists on an unsuspecting public' (Wilson, 1976, p.45-46).

Not only has urban sociology had this particular strand of being anti-density, there are other social sciences afflicted by it as well. Psychologists in the

Anglo-Saxon world have studied rats in cages, students crammed in rooms and people walking in crowded city streets and concluded density is bad for us. Major critiques of these studies have shown that either their results cannot be reproduced, are meaningless (rat studies), or they do not consistently show problems with density (Fischer, 1976; Baldassare, 1979; Guskaynak & LeCompte, 1977). For example, crowding sometimes produces positive effects in behavioural studies and not the expected negative. The classic studies of New Yorkers avoiding mugged victims in the street was attributed to the density of people, but when repeated in Dutch cities this did not occur (Korte, 1976). Despite such studies, the belief in the negative impact of density remains very strong. Yeung (1977) concludes that so many of the studies on density were dominated by 'half truths based on ethnocentric perspectives' (p.594), suggesting that we have wanted to find negative aspects of density. Baldassare (1979, p.6-7) suggested that

'In a sense crowding became the non-social explanation of the society's social problems'.

Against the anti-density tradition there is another that has emphasised the positive human benefits of increasing densities. Freedman (1975) developed a crowding model which tries to make sense out of the conflicting evidence from empirical studies, while also recognising the adaptability of humans. He suggests that 'crowding is not generally negative and it does intensify human reactions to other people'. It stimulates human interaction, which means the human effects of density are up to us. Higher density produces negative effects if we design it that way, but we can also make higher density into something beneficial.

This is why we can find examples of high density areas with problems, then produce examples where the opposite is true (studies summarised in Newman & Hogan, 1981). For example, Conway & Adams (1977), in a study of identical apartment buildings found one had a high level of social disturbance while the other did not; the difference was attributed to better management. Others have studied the role of individuals or collectives of residents who were the catalyst for social cohesiveness and stimulation as part of a high-density complex.

The growing literature on crime reduction through urban design mentioned before is based on the need for human scale at the street level with diversity and as much activity as possible (e.g. Gehl, 1994). The data are suggesting that if communities want to create livable areas, then it is essential that they are

brought together. Minimising crime and creating healthy cities, is not a crude process of simply reducing densities. In fact data from Durning (1996, p.24) suggests people in low density car dependent suburbs are more likely to die from a car accident than urbanites living in high crime areas are likely to die from violence.

Rural Lifestyles

Automobile dependence is inevitably created by the attraction of rural lifestyles in the suburbs with their associated promise of withdrawal from the evils of city lifestyles.

Cities with low densities and a great commitment to the private car, usually have an Anglo-Saxon tradition, and attempts to increase urban densities in Anglo-Saxon countries in the latter part of the 20th century have been met with strong opposition from the urban community. The reactions have been so emotional as to suggest that more than just environmental or economic factors are involved, and that such reactions probably lie deep in cultural attitudes.

Literature of an anti-urban character has frequently come from Anglo-Saxons suggesting they are scared of increasing densities because they have little of a pro-urban tradition. The dominant cultural tradition has never really been committed to the city. Artists and intellectuals from this tradition have not believed the city is a force for good, a place where culture can grow and all that is best in the human spirit can thrive. In general, English, American and Australian traditions have idealised rural places and their literary heroes are from the countryside, the prairie and the bush. Cities in this view serve only to corrupt the purifying aspects of country life.

This idyllic view of rural life, is called 'pastoralism' and asserts that the country provides solitude, innocence and happiness. This tradition has been seen as the answer to human yearnings right through the twentieth century and has its expression in some arcadian philosophy and to some extent has been continued in the ecology literature of today. It reached its zenith in the literature of nineteenth century authors such as George Elliot, Thomas Hardy and D.H. Lawrence in England and with Banjo Patterson and Henry Lawson in Australia. In the U.S. the tradition is based around authors such as Thomas Jefferson, Ralph Waldo Emerson, Henry Thoreau, Nathaniel Hawthorne, Herman Melville and Henry James.

The pastoral tradition has not led to a return to

village life; instead it has helped create the rationale for the suburban lifestyle. The pastoral anti-urban tradition appears to have been grafted into Anglo-Saxon cities by people withdrawing behind their private suburban walls to escape the negative impacts of city living. The rationale for this kind of living has been developed through town planning theorists like Frank Lloyd Wright, through organisations like the Town and Country Planning Association with its motto of 'nothing gained by overcrowding' and through the rural images promoted for each new fringe suburb by the real estate industry.

However, each new spacious 'rural' kind of suburb is soon surrounded and engulfed by more suburbs and the appeal of rural life is never quite what the real estate brochures promised. Indeed, most of the problems of the city seem to follow and distances are so large that automobile dependence is endemic.

European and Asian traditions are much less anti-urban and have always maintained strong commitments to cities where people can meet in the street and in public spaces, where green space can be a public facility rather than a large private space, thus automobile dependence is not an inevitable process arising out of these cultures.

Many social scientists have also criticised the romantic approach to rural life with its negative approach to cities. They instead have asserted that the city, particularly the high density city, can be a positive force of culture and human experience, just as rural life can be a source of deprivation and that the rural/urban dichotomy has directed attention away from more fundamental sources of social disorder and loss of innocence (Ellul, 1970). That is, the city need not be a source of human alienation and environmental disaster, but can in fact be the opposite. As Howarth (1976) says

'... it is impossible to describe a natural element for man, in contrast to which city life may be considered unnatural' (p.300).

Thus there is an opposing tradition which stresses the positive aspects of dense cities and tends to have an anti-suburban rather than anti-urban thrust. In this tradition there is much more hope and attractiveness in the mixed, dense neighbourhoods of old cities with their variety and history. Such writing can be found in the midst of the more dominant anti-urban literature in Anglo-Saxon cities (Williams, 1985; Mumford, 1938; Kunstler, 1993). The writings of Jane Jacobs have provided a strong urban voice along these lines for town planners since the early 1960s. Gratz (1989), Holtz Kay (1997) and others have followed in this

organic city tradition and today youth culture in particular is far more celebratory about urbanism. Artists in many cities are some of the pioneers that help in the revitalisation of older urban areas and the re-urbanisation process described in this book is being driven by younger professionals.

The power of the anti-city myths cannot be underestimated as a continuing force in causing automobile dependence, but it is not an inevitable process. The task for this generation of urban politicians, developers and managers is to help facilitate some of the enthusiasm for urban life if the processes of anti-urban development are to be reversed. The evidence that it is possible to reverse is clearly there in virtually every Anglo-Saxon city, though some show it more than others (Newman & Kenworthy, 1999).

Road Lobby

Automobile dependence is inevitably created by the powerful combination of road interests.

The politics of transportation is dominated by an acrimonious conflict between road and rail lobbies. The most controversial story of this sort concerns the road lobby which dismantled the urban electric rail systems in U.S. cities. In the 1930s a holding company, National City Lines, which was made up of interests from oil, tyre and car industries, bought the private electric streetcar systems in 45 U.S. cities and then closed them down (Klein & Olson, 1996). According to Snell, the reasons for this were clear: 'one subway car or electric rail car can take the place of from 50 to 100 automobiles' (Snell, 1974). In 1949 a Grand Jury ultimately convicted General Motors, Standard Oil of California, Mac Trucks, Phillips Petroleum and Firestone Tyres on a criminal indictment of anti-trust conspiracy, but the damage had been done. Los Angeles was the worst affected with 280 million passengers a year being pushed into buses and cars and within a few decades there were four million cars in LA and the era of automobile dependent U.S. cities had begun. (Snell and others (e.g. Holtz Kay, 1997) also highlight the role of the so called 'National Highway Users Conference', pioneered by General Motors' Alfred Sloan which, in 1932, brought together automobile, oil and other highway interests to lobby for road funds and an end to mass transit funding. The result was the U.S. Highway Trust Fund through which the U.S. government spent \$1,845 million on highways between 1952 and 1970, while rail systems received only \$232 million. The establishment of this fund and its massive spending on the U.S. Interstate

Highway System set in place automobile dependent trends that have continued to grow steadily to the present day. Between 1981 and 1995 the spending on Federal Highways in the U.S. grew from \$9 to \$19 billion whilst transit stayed at \$4 billion. It is not hard to see why U.S. cities continued their rapid car use growth in the 1980's.)

Similar lobbies exist in all countries (Hamer, 1987) but not all are as successful as in the U.S. The political power of the road lobby everywhere is strong but not overwhelming; governments are answerable to the wider public as well as to the lobbyists. The influence of strong private industry lobbies for the automobile in many European and Asian countries has been minimised by equally powerful lobbies for transit. Data show that transit support and funding can be given a high priority, and recent trends in transit demonstrate that it can influence the future direction of our cities. The political appeal of new and upgraded rail systems in conjunction with urban villages, can be a powerful force to reshape automobile dependent cities, just as road lobbies previously shaped them.

Land Developers

Automobile dependence is inevitably created by the powerful interests of land speculators and developers and there is little that planning can do to stop them.

In the same way that transportation politics can determine transportation priorities and hence urban land use, it is possible to examine land politics and see how it determines urban land use and thus transportation patterns.

Capitalism is based on the accumulation of wealth and its investment into physical assets which produces further wealth. Cities appear to have been built in cycles with most construction related to the level of capital accumulation. Suburbanisation is explained as the need to invest capital in both the land and transportation systems to service it (Harvey, 1973; Walker, 1978). Most suburbanisation follows economic booms and when the economy contracts, so the city turns back into itself rather than expanding on its fringe.

North American and Australian auto cities have been analysed to show how suburban land has been developed in response to capital accumulation (Cox, 1978; Sandercock, 1975, and Badcock, 1984). In these cases urban planning is seen as having little power to direct urban growth for public purposes; private capital just maximises private gain wherever it likes.

But not all capitalist cities have optimised

private gain in an automobile dependent way. Many European cities, in particular, have managed to create a far less car dependent kind of urban growth. Developers still make money, but their capital is used to create the kind of densities that enable social goals to be achieved, such as walkable and transit-based cities.

The statement is often made that developers in the U.S. and Australia would not put up with this kind of socialistic control over their development 'rights'. We are not so sure that the systems in Europe and the U.S./Australia are that different.

The land development system in U.S. cities and Australian cities is still under planning control. The process has many built-in subsidies which favour capital to invest in land on the urban fringe. Primarily the building of large roads from Federal grants opens up the land which normally would not be worth developing. Then local government offers a range of incentives to have the development come to them rather than in other areas. Both of these processes are market interventions. In other places they would be described as socialism.

Then the developer takes the large set of regulations which have been developed over years of suburb building and dutifully carries them out in their development – again it is a process controlled by planning. Undoubtedly the process of achieving less automobile dependent cities is helped if there is a city-wide planning agency which is deliberately attempting to minimise sprawl. However, a city-wide planning agency can also facilitate car dependent sprawl.

In the late 1990s some developers are realising that profits can just as readily be derived from urban development practices that are more socially and ecologically responsible. Such developers are putting their capital into re-urbanisation, transit-oriented development and New Urbanism development. For them, the planning process in the U.S. and Australia is hopelessly socialistic, full of inappropriate subsidies and out-of-date regulations. The revitalisation of the inner city in Australia, the New Urbanism suburbs in the U.S., the transit-based development in Portland, and the growth management in Boulder, Colorado, are all forging new, more sustainable ways of physical planning. Some of this is given direction by public agencies but frequently the new alternatives are coming from private sector sources who are pioneering ways to create more sustainable settlements in a public planning milieu dominated by out-of-date, automobile dependent

assumptions. A more sustainable public planning can be further facilitated, but much is already happening without this being the driving force.

Planning is always going to be needed to guide the development process. To change development away from automobile dependence does not need draconian planning intervention – that is often already there. It just needs a new professional praxis which can facilitate development of a different kind in different parts of the city. Investors can still make money, but the process is helping to build in sustainability not automobile dependence.

Traffic Engineering

Automobile dependence is an inevitable outcome of the standard processes of transportation planning.

The most important of the technical procedures in transportation planning is the land use/transportation modelling process which emerged in the mid-1950s as a distinct area of study. The purpose of these studies was to plan for anticipated growth in population, jobs and traffic as far ahead as 20 years, so as to ensure an equilibrium between the supply of transportation facilities and demand for travel as it arises out of land use.

The concept of the 'grand transportation study' was embraced with enormous enthusiasm with virtually every developed city at some point between 1955 and 1975 undertaking at least one major transportation study. They were part of what a city had to do to be 'modern'. The 1950s and early 1960s were a very optimistic and prosperous period characterised by booming car ownership and the political expectation, at least in the U.S. and Australia, that the car would be the future of urban transportation. Thus right from the outset land use/transportation studies tended to be strongly associated with planning for roads and cars rather than a balance of transportation modes, and most of the U.S. and Australian land use/transportation studies pioneered the building of elaborate highway and freeway systems.

Transit, especially rail, was glossed over and almost eliminated from cities like Detroit, Phoenix and Houston. Most forecasting was based on private transportation growth and land use patterns based around this. Once such land use is in place the only transit that can service it is an inefficient bus service, thus the conclusion is inevitably reached that a massive increase in road funding is needed to provide the 'grand plan' needs.

Most major cities which built extensive freeways then found that this process spread out land use and

generated more and more traffic, until very soon after completion the freeways were already badly congested.

The obvious response to the failure of freeways to cope with traffic congestion is to suggest that still further roads are urgently needed. The new roads are then justified again on technical grounds in terms of time, fuel and other perceived savings to the community from eliminating the congestion. This sets in motion a vicious circle or self-fulfilling prophecy of congestion, road building, sprawl, congestion and more road building. Automobile dependence is inevitable in such traffic engineering.

Awareness of this phenomenon, now called induced or generated traffic, is increasingly common in the literature. In fact, traffic is now being referred to not as a liquid that flows where it is directed, but as gas which expands to fill all available space (Litman, 1998).

There has developed an alternative to this kind of road planning treadmill which is comprehensive land use/transportation planning that develops alternative transportation systems and different land use patterns aimed at minimising unnecessary movement. The comprehensive plan is a much more community-based project that invites a city to envision its future and then seeks to find the appropriate infrastructure. This process requires a much more creative role from planners and engineers who need to provide the land use and transportation mix most able to meet the complex needs of the community. Other models are now available such as LUTRAQ from Portland that allows all options including new transit systems to be tested rather than just road options (1000 Friends of Oregon, 1993, 1997a & 1997b). There is also clear evidence that if road capacity is removed then a high proportion of traffic just disappears; this 'traffic evaporation' or 'traffic de-generation' also gives another tool to cities struggling with how to manage their future (Goodwin, 1994).

Urban planners and the general public are now in a key position to assert their roles in the development of cities. New goals and objectives can be given to the transportation/land use modelling process based around balancing the roles of various modes and minimising total travel in the urban system. The need to revitalise city centres and to protect neighbourhoods threatened by traffic means that the technical road planner using 1960s models cannot be the sole determinant of decision making. The U.S. TEA-21 legislation gives the framework for their new

approach.

Pressure from the community has meant that traffic calming is now on the agenda in virtually every developed city and many in the developing world. This European concept has been a major focus for many traffic engineers in European cities for 20 years, but is now a central issue for engineers and planners in every Auto City.

Technical planning tools and the politics which seems to go with them will always play a role in the area of transportation planning, but there is no necessary reason why these should favour roads and suburban sprawl to the exclusion of other transportation modes and more compact patterns of development. Many cities are indicating how this new balance can be found.

Town Planning

Automobile dependence is inevitably regulated into cities by local town planning.

Low density suburbs around the world are often very similar in form as well as function. They can frequently be traced to a similar set of urban codes that have been developed and become known as 'town planning' regulation. Such heavily automobile dependent suburbia if left to a process of standardised mass production will inevitably create more and more of the problems outlined earlier.

This kind of planning is also facilitated when 'town planning' is considered to be what occurs at the local subdivision level and no overall strategic direction for the city or its regions is ever created.

However, strategic planning is now a much more developed process and especially where a city-wide government or co-ordinated set of governments, can provide a plan for the whole city. In such plans there are strategic networks of transportation, strategic land use that complement this and comprehensive processes and incentives to encourage the plan's implementation. In the U.S. such plans are required as part of TEA 21.

Conclusion

The ten myths of automobile dependence are still alive and well in urban transportation policy discussions. However, the underlying basis for them seems to have lost its edge and the professional certainties are no longer so clear; indeed the evidence is growing daily that automobile dependence is not economically, environmentally or socially good for cities. However, the problem of how to do detailed planning at the local level which is not automobile dependent is still not solved. The regulations on set

backs, road widths, design, densities and mix, all favour the suburban model we see in nearly every new suburb. Developers wanting to change this find the process very hard. This is the one area of inevitability which still seems to be true. The few new suburbs which have broken the mould have not yet been absorbed into professional praxis. Thus groups, such as the New Urbanism, are trying to develop a new praxis or code of development which is not so automobile dependent.

Each of the first nine myths are important to show that they are not inevitable, but this tenth myth about town planning is particularly important to overcome. All the other myths depend to a large extent on how well a city can plan, i.e. how well the broader goals and aspirations for a city's future can be translated into practical community processes where the public realm is improved, not slowly eaten away. And how detailed design can create attractive, ecologically sensitive, low auto-dependent development This final myth must be finally robbed of its inevitability through new town planning practices.

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