

# Changing the car culture: 2008 Whitelegg Symposium

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Someone famous—I forget who—once said that ‘People can be relied upon to do the right thing –after all other avenues have been explored.’ Keep this thought firmly in mind as we look at the feasibility or otherwise of ‘changing the car culture’ in Melbourne and other Australian cities.

## Car travel in Australia: some statistics

Car ownership in Australia is about 550 per 1000 population. If LCVs are added in, it’s over 650—two vehicles for every three persons. About 86 % of the eligible age population have vehicle licences, and only among the oldest age groups is female licence-holding significantly lower than males. In the youngest age groups, a higher % of females hold licences, so the car culture in future could be a largely female one. In Australia overall, an average of about 9200 veh-km are done for each person. In the 8 capitals, the corresponding figure falls to about 8200, but of course public transport travel is greater. Petrol consumption rose from 525 litre/capita in 1960 to reach 1000 litres/capita in 1977, and since then has fluctuated around this value. Auto LPG, also almost entirely used by light vehicles, rose from near zero in 1980 to a peak of around 125 litre/capita in 2001, but has since fallen to 90 in 2006. It might be thought that work travel was declining in importance in Australia. But successive surveys have shown that *work-related* travel and journey to work travel once again together account for the majority of veh-km done by light vehicles, and are increasing their share.

Success in changing the car culture can only be measured by large drops in equivalent petrol consumption per capita, and drops in veh-km per capita. Changing people’s ‘attitudes’ is not enough.

## Why so much car travel?

As one sardonic biologist said, based on his experiences of micro-organisms in a petrie dish: ‘when organisms are unhappy, they tend to move around a lot’. You’re unhappy with that explanation? Let’s look a bit deeper.

### *Non-instrumental reasons*

Researchers have long hypothesised that car travel, particularly driving, produces psychological benefits, and that these are important in explaining the high

popularity of car travel. An earlier argument for such psychological benefits was put forward in 1986 by Marsh and Collett in their book *Driving Passion*. They saw the thrill of driving as involving the mastery of speed and acceleration, and its associated controlled risks, and acceleration as producing physiological changes in the human body. They further argued that cars provide their owners with a powerful means of self-expression, as witnessed by the popularity of personalised number plates and the customisation of cars. Their analysis was, however, short on empirical evidence for the psychological benefits of car travel, as distinct from car ownership.

More recently, empirical evidence for such non-instrumental motives for car travel has been published, including a special double issue of the journal *Transportation Research Part A*. In one study in this issue, Steg surveyed several hundred holders of driver's licences in the Dutch cities of Groningen and Rotterdam. Her studies found that several motives for car use can be distinguished. 'Symbolic or social motives refer to the fact that people can express themselves and their social position by means of (the use of ) their car, they can compare their (use of the) car with others and to social norms. Affective motives refer to emotions evoked by driving a car, i.e. driving may potentially affect people's mood and they may anticipate these feelings when making travel choices'. In this talk we will group symbolic and affective motives together as non-instrumental motives.

In the US, Mokhtarian and Salomon explored the concept of travel for its own sake, or travel affinity, as they termed it, in a 1900-strong sample of San Francisco residents. All modes of travel were found by at least some of these urban travellers to provide a positive experience, but as expected, the proportion liking car travel (nearly 60%) was far greater than for rail (30%), or bus (less than 10%). (I know, it's hard to believe, but some people actually prefer cruising down a lightly-trafficked highway to waiting at an unsheltered bus stop in the rain.) More generally, their survey found that nearly half of their sample agreed with the statement that 'getting there is half the fun'—so for many, it truly is better to travel than to arrive. In the U.K., a recent study found that the relative importance of instrumental and affective (non-instrumental) factors varied by purpose of trip. Specifically, instrumental aspects were found to be much more important for work trips as compared with leisure trips.

### *Instrumental reasons*

In contrast to psychologists, transport modellers, often engineers or economists, usually assume that travel motivation is almost entirely instrumental, or in economist terms, a derived demand. Travellers, in other words, are viewed as only being prepared to outlay time and money to access desired destinations. This view

is incomplete, given the importance of psychological motives in car use discussed above, but such a simplification may be needed to make the problem mathematically tractable. Steg again: 'Instrumental motives may be defined as the convenience or inconvenience caused by car use, which is related to, among other things, its speed, flexibility and safety.'

The replacement of public transport and non-motorised modes by car travel has greatly increased door-to-door travel speeds. Hence a possible reason for car travel growth is that people can participate in extra activities, since they now have available a higher speed mode. For example, with public transport or walking, many trips—those too long for walking, or those requiring a modal change—simply cannot be made during a restricted time frame such as an employee's lunch hour, but they can be done by car. These extra activities made possible may well be regarded as worth an increase in travel, even if total time (and money) outlays for travel also rise.

How did ever-rising car travel manage to maintain its speed advantage over public transport? In contrast to the radially oriented fixed rail public transport network, the ever-expanding road network made non-radial travel easy. The progressive suburbanisation of activities meant that most trips were less and less oriented to the centre than was the case in the public transport era. Such a dispersion of destinations meant that car travel speeds could be kept high even as car ownership rose to about one vehicle for every two residents. Only for work trips to the CBD could public transport, especially rail, compete with car travel on speed. Again, only for CBD journey-to-work trips will instrumental and non-instrumental travel motivations conflict, rather than reinforce, each other.

An analysis of data from Newman and Kenworthy showed that, for 37 cities in Europe, North America, Asia, and Australia in 1990, average annual car travel rose with average car speeds. It is likely that non-instrumental benefits of car travel also rise as average car speeds rise and traffic congestion is reduced. Travel distance and speed data from a 1985/86 national Australian survey support this argument, since, again, higher daily travel levels are correlated with higher average speeds. For example, female pensioners averaged only 15 km daily travel by all modes—motorised and non-motorised—at an average speed of 23 km/hr, whereas males working full-time averaged 52 km of travel at 35 km/hr. Interestingly, higher average speeds resulted in more, not less, travel time: female pensioners spent only 40 minutes per day travelling, compared with nearly 90 minutes for males in full-time work.

Car travel is not only faster than alternatives, but is regarded as having a number of other instrumental advantages. These additional perceived advantages include greater security and privacy, all-weather protection, and ease of transporting young

children or goods. These advantages vary little from city to city. Along with car air-conditioning and stereo systems, they both increased the attractiveness of car travel over public transport, and encouraged increased trip making. Another change that has increased car travel is the rise of chauffeuring of both children and the elderly. Consider the case of a parent chauffeuring a child to school, (replacing the child's former walking or cycling trip) and then returning home. In terms of passenger-km, three vehicular trips have replaced the former non-motorised trip—one for the child and two for the parent driver.

### **Some approaches to changing travel behaviour**

Many people see car-oriented cities as the ultimate historical endpoint for urban transport; no further change is necessary—or possible. Business corporations, governments, and the majority of the urban population are seemingly happy with this solution to urban travel. So why even consider change? One reason is that a number of researchers who are far from hostile to the car have done so. Various approaches to how our apparent obsession with cars might change (or be changed) have been proposed by others, including:

1. Information technology will make the problem go away. (Years ago, we engineers were obsessed with slide rules. IT cured our addiction.)
2. The need to shift to rapid transport because of time budget constraints will greatly reduce car passenger travel.
3. Changing land-use, particularly increasing urban density, will greatly reduce car travel.
4. Advances in social/environmental psychology can be used to shift individual travel behaviour toward environmentally friendly modes.

1. This view has been argued at length by MIT planner William Mitchell (originally from rural Victoria) in a series of books, one with the intriguing title: *e-topia: "Urban Life, Jim, But Not as We Know It"*. He argues that advances in the new Information Technology (IT) will make much travel, including urban travel, redundant, and uses the term 'demobilization' as a general term for the substitution of work, shopping, and other trips by networked computers. Pelton, also from the US, has a similar view, but sees security as an additional driving force for radical changes to urban form and hence transport.

But arguments to the effect that IT will radically reduce urban travel needs have now been made for three decades. Actual results so far have been disappointing. As one commentator pointed out, if teleworking is so good for productivity, why aren't more employers encouraging it? Teleshopping, or e-commerce, similarly has not

fulfilled its early predictions: e-commerce still only accounts for a tiny share of retail sales. And even if (say) 10% or even 20% of retail sales were done over the Internet, it doesn't follow that shopping travel itself would be much affected, since a large variety of purchases are usually made on each shopping trip—there are few single-purpose shopping trips. Household shopping trip frequency may remain unchanged. And given the child-minding functions of school education, tele-education is even less probable. Even for tertiary education, initial enthusiasm for IT-based 'virtual universities' has waned. As virtual university critic Noble points out, they are really just a fancy term for the old correspondence colleges.

Nevertheless, recent developments in IT could have some indirect impact on future urban travel, by reducing the perceived psychological benefits of the car. The development of 'intelligent' air bags has in turn led to the development of an Electronic Data Recorder, similar to an aircraft's 'black box'. This device can continuously record data on steering wheel angle, engine speed, acceleration/deceleration etc, and will consequently be of great value in both accident reconstructions and the design of safer vehicles. The data for the last five seconds of a crash have also been used in court cases. Further, a simplified black box, now on sale, will allow parents to monitor the driving behaviour of their teenage children, or car-rental companies to monitor their customers' use of their vehicles. Should such devices become widespread, the surveillance they enable could profoundly affect the psychological benefits that adolescents, particularly, obtain from driving. In other words, for urban residents, it is at least possible that car travel could lose much of its non-instrumental value.

2. An interesting variant on painless solutions comes from Schafer and Victor. In a series of papers, they argue that in all countries people have a fixed travel time budget. They argue that the shift from slower modes—public transport and non-motorised modes—to car travel has allowed people to travel further for a given time outlay. In order to accommodate their projected large rises in personal travel levels out to 2020 and 2050, they foresee absolute declines in the level of car travel for present car-oriented countries, and huge increases in high-speed travel (air and very fast train travel). Car travel—particularly in cities—will in future be too slow for a fixed time budget of an hour or so per day, they argue. A variant of this approach foresees maglev trains travelling at high speeds in evacuated tunnels displacing car travel for both urban and longer-distance trips.

Air travel within urban areas is not an option. It is also unlikely that short or even medium length urban trips can ever be made at high speeds, even by rail, given the physiological limits to acceleration/deceleration of the human body. It is, possible, but unlikely, that long-distance rapid travel, either inter-urban or overseas, could

*displace* urban travel. But my own research has found that it is doubtful that people do in fact have constant travel time budgets, even when aggregated at the city-wide or even national level. Further, different sub-groups have very different average travel time outlays, as shown above by the more than two-fold travel time difference between female pensioners and full-time working males. Further, as Lyons and Urry stress, the increasing ability to use travel time for other activities argues against individuals having fixed travel time budgets.

3. The idea is that high density of residents (and workplaces) can increase the relative attractiveness and economic viability of public transport, and by increasing car congestion, reduce car travel. Further, vehicular travel levels are reduced by the closer proximity of origins and destinations—workplaces, shops, schools etc. Yet it is one thing to have the historically very high densities of many Asian cities—up to 10 times Australian levels—but another to try to convert historically low density cities to high density. Our major cities vary by roughly a factor of two in urban density. Yet the two densest cities (Sydney and Melbourne) had the same average level of LV veh-km per capita as the three lower density smaller mainland state capitals (Brisbane, Perth, Adelaide).

So even doubling their urban density would achieve little in the way of travel reductions and would take many decades. It would also be enormously unpopular, and would in effect replace the resistance to policies that directly reduce car travel with equally unpopular policies that might indirectly reduce travel. And not only is it unnecessary (we can easily reduce the convenience of car travel, given the political will, by taking away the privileges we have granted the car, such as speeding through residential areas), but an environmentally sustainable city might need somewhat lower density living, to allow for own-provision of water, and at least some food and energy. Sustainable transport is only one aspect of a sustainable city—if indeed the latter is not an oxymoron.

4. In Australia, particularly Perth, this has taken the form of Travelsmart interventions. The main idea is to target the less-committed motorists, to recognise that while some trips have to be made by car, for many others environmentally-friendly modes (EFMs) are a real option. By providing information on these EFMs, Travelsmart programs try to shift some trips to these modes. Let's look at the experience of Perth, where such programs have now been in operation for a decade. The result? Perth has higher levels of light vehicle veh-km per capita than any other Australian city. Not promising. But governments are willing to try these programs because it puts the responsibility on individuals to make the changes, rather than on politicians facing re-election.

## **A different approach to how change occurs**

Both Australian and world transport face the twin problems of global climate change and oil depletion. Climate change can be denied/avoided for a while longer—indeed this is the present, grown-up, response—but this is not an option for global and Australian oil depletion. In climate science, the relevant term is ‘external forcing’. I believe that the car culture will only change in a major way under ‘external forcing’ in our transport systems. People might undergo profound religious or political conversion, but still don’t give up their cars. (‘I converted on the road to Damascus—but still use my car to finish the trip’.)

The only time when the (fledgling) car culture was seriously challenged in Australia was in 1929. Car ownership rose rapidly in the 1920s, but the Great Depression, followed by World War II and petrol rationing stalled the rise of the car for two decades. And the recent high petrol prices has at least temporarily lowered car use. Australian petrol consumption is still below its 2004 level, despite strong economic growth and low unemployment. National petrol sales rose 1.5 % in 2004, but fell 3 % in 2005, and 2 % in 2006, which is unprecedented in an era of strong economic growth. (True, diesel and ethanol for light vehicle use are rising, but are offset by falling LPG use.) On the other hand, Melbourne’s public transport patronage is growing rapidly. Average weekday trips grew 5 % in 2005/6 and 8 % in 2006/7. Are we seeing glimpses of Melbourne’s future travel? Both examples show the importance of externally imposed constraints on reducing car travel.

How crises, such as global climate change or oil depletion, get interpreted is important for policy responses. Fortunately, when the level of Melbourne’s water reservoirs started their sharp decline, we didn’t have ‘Melbourne reservoir water level sceptics’ to tell us that there really was plenty of water in the reservoirs, nor boosters who assured us that in any case there were plenty of great substitutes for water if only the price was right. So we were able to act fast and introduce policies to cut water use. We did this in part by banning certain categories of water use—not by bringing in a ‘water-use trading scheme’. But for what most of here recognise as the severe challenges posed by oil depletion and global climate change, there are many who don’t see a problem, or if they do, think that one or more of a variety of tech fixes will make the problems go away, without the need for any change in our lifestyles.

So the government response to what is a global crisis for car manufacturers is to promise taxpayer’s money for a ‘green car’, rather than to use the crisis to wind down an industry that has no future in this country—or probably any other. This brings us to another important question: whether incremental change (such as a

green car) will really help in moving to an environmentally sustainable society. An analogy: to get a couple of metres closer to the moon, leaning a ladder against the back shed will suffice, but it is a dead-end approach for closer approaches to our moon. For that we must build a rocket. However, other incremental approaches are a very good fit to deeper change, including efforts to move people onto public transport, or to make our suburbs more accessible by active modes.

Another thing that doesn't help achieving change is inconsistent government responses to the various problems facing car travel. An example: for 51 weeks of the year, our state government lectures us about driving carefully: 'speed kills', they scold us. But for the Grand Prix week, 'speed thrills'. Then back to 'speed kills'. When individuals behave this way, we call it schizophrenia.

More and more we are coming to realise our commitment to continued economic growth is an obstacle to ecological sustainability, just as the necessity for literal interpretation of the bible was for scientific advance. At present, any proposal that would hurt economic growth can be dismissed out of hand. However, with the present intense focus on the economy, global climate change may well move off the front pages. (Of course, when the global economy enters a bad patch, atmospheric CO<sub>2</sub> molecules think: 'O my god! The economy's in trouble; we'd better stop absorbing and re-emitting infrared radiation!' Don't they?)

Changing the car culture, I believe, is first and foremost about changing our economic growth culture, and our magical view on technology. Let us be frank: the car culture provides an excellent fit to growth-oriented capitalism. The demand for high speed travel modes is part of our obsession with economic endless growth, which seems to require ever-rising labour hours from households. Time becomes at a premium. If we all worked part-time, and eased off consuming things, we could all slow down and work far fewer hours. I'll be provocative and leave you with the following idea: if we are really serious about stopping urban transport's contribution to global climate change, then we'll have to turn our backs on continued economic growth.