Fifty years of transport cycling in Japan: 1950 to 2000

by ALAN PARKER

At the last three bicycle planning conferences in Australia, no-one spoke of Japan's great progress in encouraging bicycle transport. It is a pity that a white Anglo-Saxon cultural bias has prevented us learning much-needed lessons our neighbours there can offer. This article is about the evolution in Japan of a unique passenger transport system that is bicycle friendly, even in the outer suburbs of the Tokyo-Yokohama conurbation, home to over 20 million of the 125 million Japanese.

The inner areas of Tokyo, Yokohama and Osaka are "bicycle-hostile" but, for 100 million Japanese who live elsewhere, the high level of bicycle use speaks for itself. Despite the ice, the snow and the cold of Japanese winters, there are around eight times as many transport cyclists per thousand population as in Australia today.

This is because millions of commuter cyclists kept on cycling right through the 50s, 60s, 70s and 80s, instead of bicycle commuting fading away to less than 1% of all trips to work as it had done in Sydney and Melbourne by 1974. In Japan in 1974, 15% and, in some cities, more than 20% of trips to work were by bicycle. Today, nearly the same proportion of the population cycles to work or to a railway station.

Since 1988, Japanese consumers have been buying over 8 million bicycles a year.

A similar proportion of people live in cities in both Australia and Japan which are otherwise very different societies. To enable comparisons between such disparate populations, my approach is to measure what has happened using rates per 1,000 population, preferably over 30 or more years. This method clearly shows the long term impact of transport policy in encouraging bicycle use.

Reduced CO2 emissions

In terms of transport energy efficiency, the Japanese are already where we want to be in 2005. Per capita the amount of carbon dioxide emitted for all purposes in Japan (see graph 1) is half that in Australia and, according to predictions by their Ministry of Trade and Industry, will be maintained till around 2000 and then decline slightly. In Australia there is likely to be an increase of around 2.5% per year till 2000.

Graph 2 shows that per capita use of petrol for transport in Japanese cities is a third that in Australian capitals. Graphs 3A and 3B clearly show that public transport dominates Tokyo's transport system and three times as many people commute by walking or cycling as in Australian capitals. This accounts for the much lesser use of energy in Tokyo compared to Melbourne.

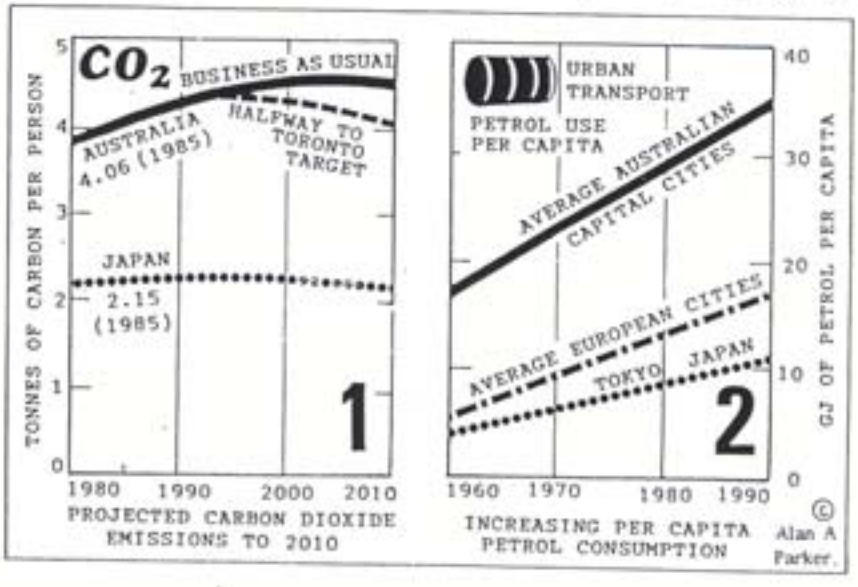
In Tokyo, 15% of all trips to work are by bicycle compared to 2% in Melbourne. Additionally, hundreds of thousands of other workers access the rail system by bicycle. Bicycles thus contribute to Japan's economic performance.

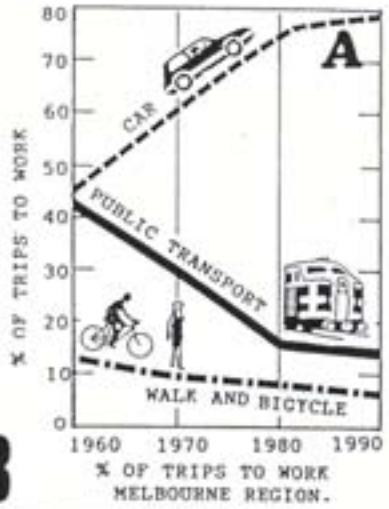
It was the economic shock of the 1973 oil crisis that led to formulation of policies to maintain bicycle and public transport use levels. The National Energy Security Policy's central goal was a substantial reduction in Japan's dependence on oil, 98% of which was imported.

Australia needs a national strategy to lift the share of public transportation in our capital cities to at least 30% of all trips to work and the percentage of bicycle trips direct to work or to access public transport to around 15%. That is what the public transport contribution to Ecologically Sustainable Development entails.

Transport cycling becomes safer

Per capita bicycle sales figures for Australia and Japan indicate that Japanese bicycle ownership has been high since the 1960s. With 8





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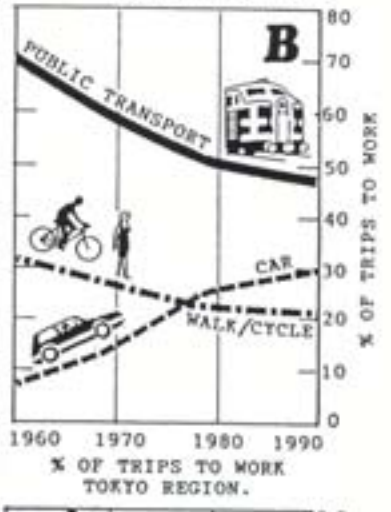
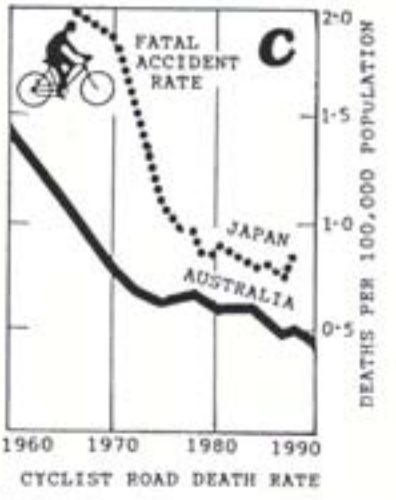




times as many Japanese as Australians per 1000 population cycling for transport, the slightly higher fatal accident rate for Japan shown in figure 3C means cycling in Japan is much safer. This is a very good indicator, especially given there is no Japanese law enforcing wearing of bicycle helmets.

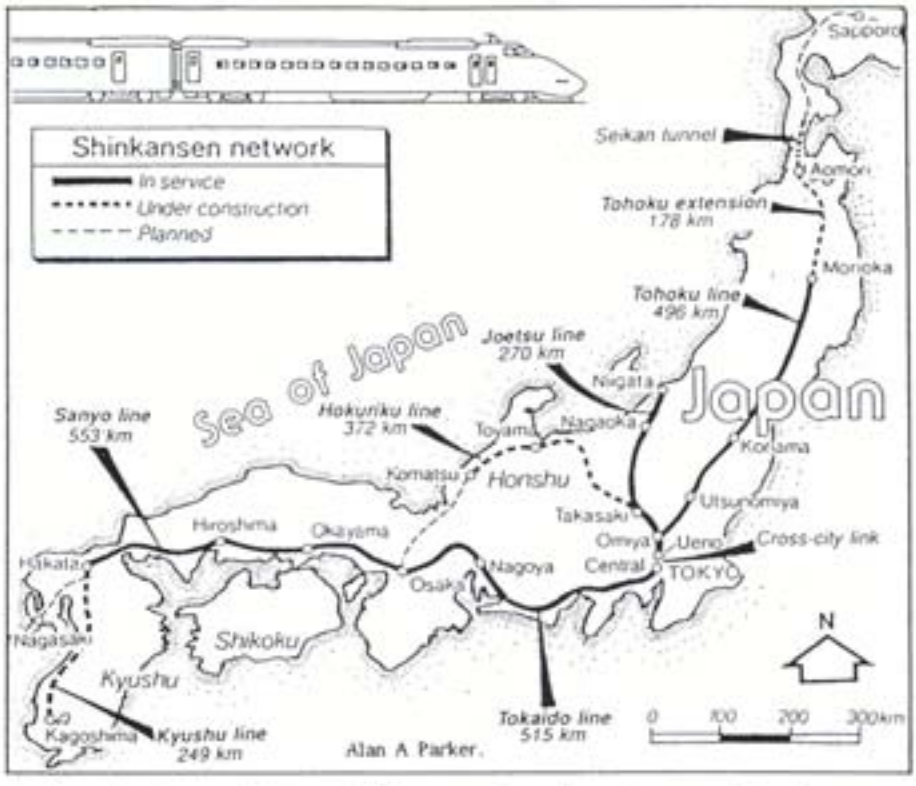
Bicycle safety in Japan is being improved in many ways, the most important being better driving. This is best indicated by the death rate for motorists which is half that of Australia.

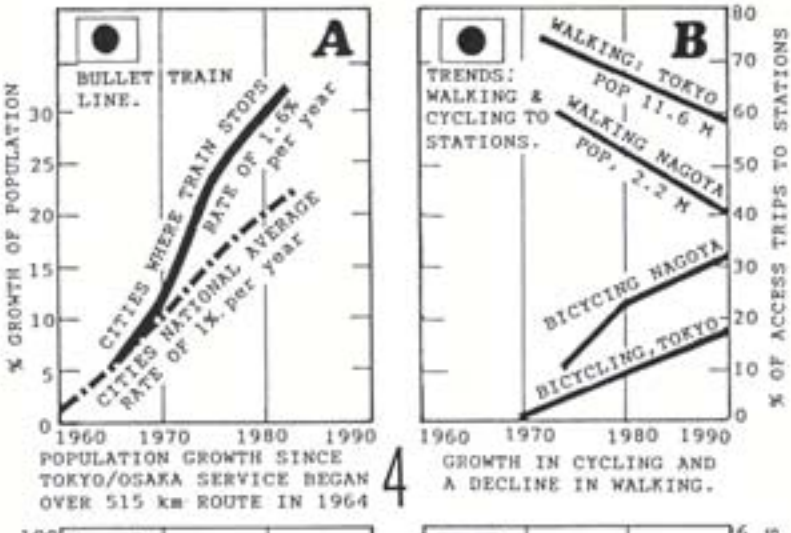
Urban cycling's changing pattern

Bicycle activists in most countries maintain that bicycles and trains go together naturally. In Japanese cities, the marriage has been consummated, with a dowry of secure bicycle storage facilities valued at over $A3.5 billion. In many outer urban areas and satellite towns, bike/rail commuting is a way of life. For cyclists who have fold-up bicycles as hand baggage, bike/rail travel extends to the inter-city bullet trains. In Japan, it is often more convenient to use public transport than the car and, for most, long distance rail travel is cheaper and more convenient than flying.

Japan's great achievement in bicycle planning is to use bicycles as feeders to the rail system in large cities where commuting journeys may be over long distances.

Along the bullet train routes experimental cities have been built designed to make it easy to cycle, walk and use public transport. Many more bicycle friendly cities are planned. The reason is that, after 1964 when the 515 km Shinkansen route was completed, cities grew where the trains stopped. The Government realised this was the way to decentralise population growth away from the two largest conurbations. These had acute air pollution similar to Mexico City.





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Having understood it must limit car use, over the last 15 years the government has installed 3 million secure bicycle storage spaces at rail stations and modal interchanges.

Secure, space-saving bicycle parking systems combined with police crime prevention programs have reduced the bicycle theft rate to one fifth of Australia's. Bicycle theft is therefore not a deterrent to everyday cycling, in particular to school or work.

The Japanese government did not just talk about bike/rail planning. It set up a special planning unit in the Japanese Ministry of Construction that does nothing but encourage bicycle use for access to rail stations, supermarkets and workplaces. It ensures secure bicycle storage spaces are provided and given priority over car parking. This Bicycle Parking Planning Unit liaises with storage equipment manufacturers and funds research and development of new systems, such as the very advanced automatic storage of 2000 bicycles in multi-storey installations.

Growth of bike/rail commuting

The '70s marked the start of the period of growing prosperity in Japan and millions of people bought new houses in outer suburbs. With shops and schools much farther apart the Japanese housewife needed transport. The use of bicycles satisfied a real demand.

Over the last 20 years the proportion of long trips to work entirely by bicycle has declined a great deal. In 1978, 17% of all bicycle transport trips were 8—11 km and this is now observably less. There is no sign as yet that the use of bicycles for transport is in decline overall, but there is a big difference in who is cycling, for

what purpose and how far. The 20-year trend to cycle instead of walk to a station is shown on graph 4B. This trend towards more personal comfort is clear for both Tokyo and the much smaller city of Nagoya.

The Japanese, like us, have grown a bit lazy due to modern creature comforts, not least being the high proportion of households with one car. It is impossible for most households to have more than one car — with compact housing schemes, there is no place to legally park another one and massive fines for illegal parking are a real deterrent. Not surprisingly, the easily stored bicycle is used for the trip to the station, on average a short 2.3 km and rarely above 5 km.

The distribution of trip lengths to the rail station in Tokyo (sample of 1089 in 1980) and Melbourne (sample of 289 in 1986) is shown on graph 7. The patterns are very similar: 70% of the trips are between 1 and 4 km in Tokyo and 70% are between 1 and 3 km in Melbourne. It is reasonable to assume the pattern of trip lengths in Tokyo in 1992 is more like the 1986 Melbourne trip distribution.

Cycling toward 2000

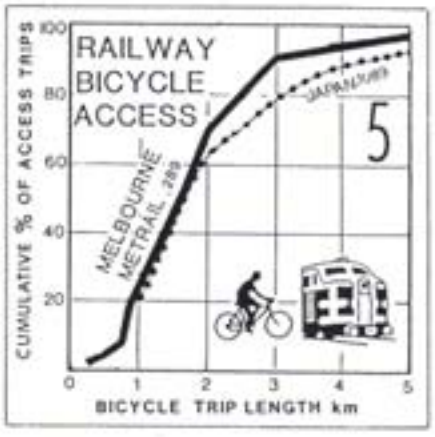
Their rapidly rising standard of living no doubt inclines the Japanese towards over-using cars and giving up cycling. However, as they are locked into a transport system that makes certain trips difficult if not impossible by car, transport cycling will continue to increase. In Japan in the 1990s there will be even fewer direct bicycle trips above 5 km to work, but more bike/rail trips as the length of urban trips to work increases. Surveys show that users find bike/rail more convenient and faster than taking the bus or walking. As most bus services in Japan are feeders to rail, the hordes of peak hour bike/rail commuters reduce peak loadings on the buses, thus bringing more economies and making the public transport system even more competitive with cars and air travel.

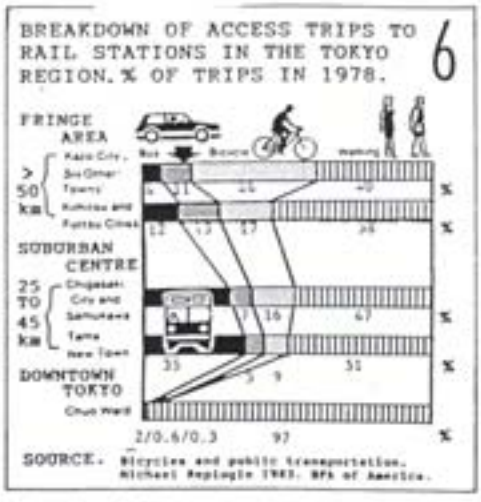
By 2000, there will probably be over 5 million bike/rail users (see graph 4D). Bike/rail travel is really an outer urban phenomenon. Out in the distant suburbs, 50 km or more from central Tokyo, 44% of station users at Kazo City and six other towns were bike/rail users (see bar chart 8). That was in 1978; today, given the national trend towards bike/rail, the percentage is probably higher. Visitors to these places say that bike/rail commuting is not just a means of transport but is a way of life. Some stations have over 1,000 parked bicycles.

Reducing car travel demand

The Japanese have a highly effective carrot-and-stick approach to conserving energy and reducing air pollution — on the one hand encouraging public transport and on the other restricting car use and parking. Michael Replogle's study (1992) describes some of the government-imposed constraints on traffic levels:

1. Traffic calming and pedestrian streets particularly in shopping areas near railway stations.
2. Two yearly car registration fees of $2,000.
3. In major cities car owners must prove they own or rent a car parking space before they can register their car.
4. Parking fines up to $2000.





5. Petrol prices three times higher than in Australia.
6. Tolls on inter-city expressways of typically $25 for a car and $55 for a truck for a 100 km one way trip.

Due to stringent regulations on use of old cars and emission requirements for new cars, the Japanese car fleet is far more energy efficient than ours — average fuel consumption is 40% less than the Australian average. Absent are company cars, worker car parking and company petrol as part of the salary package. Employers subsidise yearly rail tickets; high speed rail services the outer suburbs while bullet trains run between cities. It's no surprise that only 30% of Tokyo region employees uses cars to get to work, a figure typical of Japanese cities. One resulting achievement is that over the last 20 years air pollution levels have dropped in Tokyo/Yokohama conurbation.

National Bicycle Strategy

Australian Transport Ministers recently endorsed a National Bicycle Strategy. I would argue that such a Strategy is likely to succeed if it uses the Land of the Rising Sun as a planning model. We have to set in place a Strategy that, in 30 years, will make a major contribution to the greening of Australia's state capitals. We talk about integrating the bicycle into our transport system but the Australian reality is a patchwork quilt of uncoordinated state transport plans with no real vision for an ecologically sustainable transport system. That situation must change.