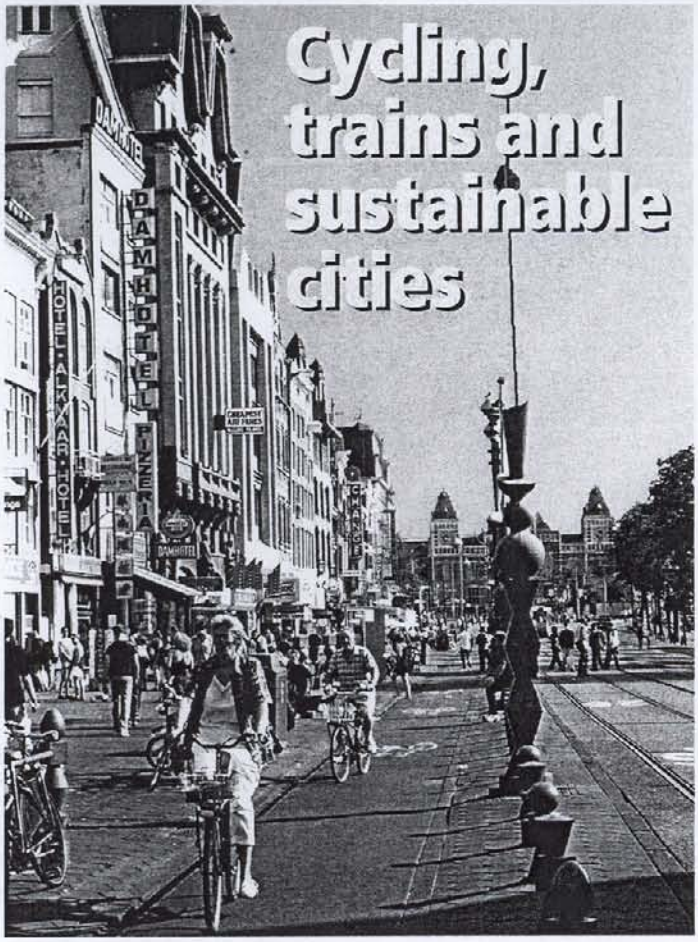


Cycling, trains and sustainable cities

ALAN PARKER (of People for Ecologically Sustainable Transport) critiques a new World Bank Report on urban transport

BEFORE reading the new World Bank Report (WBR) on urban transport, I spent three wonderful weeks sampling the bicycle paths and rail station bicycle storage systems in 10 Dutch cities. I could see how planners and engineers had been working hard to make Amsterdam and other cities more sustainable. When I returned and read the WBR *Indicators of Transport Efficiency in 37 Global Cities*, I learnt cities elsewhere had become less sustainable. Some were wealthier, but not greener.

Transport and real wealth

The WBR concludes building more railways is the principal way to make large cities sustainable. However, analysing bicycle trip indicators from other sources shows the most sustainable and wealthy cities have high levels of bicycle use as well. Clearly a large investment in bicycle facilities is needed in parallel with rail investment for sustainable growth – a conclusion the WBR could not make because it did not collect data available on bicycle trips.

Apart from this flaw, WBR is an important resource for environmentalists, bicycle advocates and transport planners. Written by Jeff Kenworthy and others at WA's Murdoch University, WBR uses economic, transport and environmental indicators to assess the 1990 performance of urban transport systems in 37 cities, including five Australian ones.

The WBR is important for its analysis of efficient rail networks as a catalyst for more efficient land use and greenhouse-friendly wealth creation. Wealth is measured by the gross economic product of the region in which a city is located (GRP). WBR thus differs from the Australian Industry Commission report on Urban Transport and the current Parliamentary Inquiry into Rail Networks. The latter looks at rail in isolation from specific economies served and ignores its role in reducing carbon dioxide levels, polluting emissions and transport accidents.

WBR concludes that, in large cities, rail networks form the basis of the most environmentally friendly, economically efficient and technically innovative transport systems. It also finds that cities implementing plans to increase non-motorised transport are likely to see immediate and long term benefits. Conversely, increases in car ownership and commuting make cities less economically productive, generating low density urban sprawl which drain cities of wealth long-term. WBR observes that US cities which expanded their road systems have seen car use increase from 8,800 km per capita in 1980 to 10,870 per capita in 1990. Australian car use expanded from 5,794 km per capita in 1980 to 6,536 km in 1990.

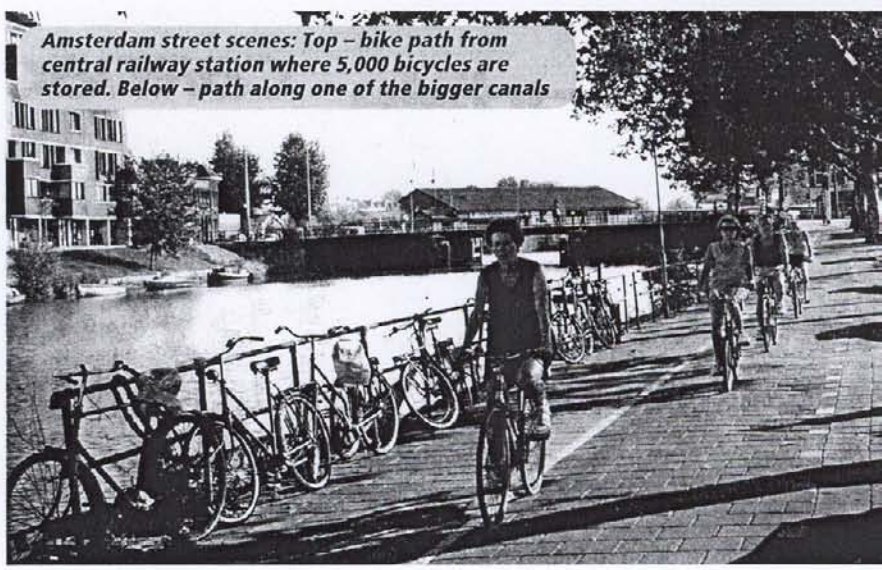
A city's per capita wealth is greatest where effective fixed rail public transport systems can compete with the car (Chart 1). The six European cities of Amsterdam, Zurich, Stockholm, Copenhagen, Munich and Vienna – with only 30% to 45% of private trips to work by car or motor cycle – have the highest GRP. These cities are more tourist-attractive and livable precisely because they limit car use and are reurbanising, providing better for walking and cycling and upgrading railways.

To focus more specifically on the benefits of bicycling, I have separated the six European cities with lowest car-commuting from the eleven European cities grouped together in the WBR. Five of the six have high bicycle use, mostly for short, point-to-point trips. In three, bike/rail trips also substitute for a significant number of long urban car trips. All six have mixed transport systems, strong reliance on light and heavy rail, compact urban development, high levels of walking and (apart from Vienna) high levels of bicycle use.

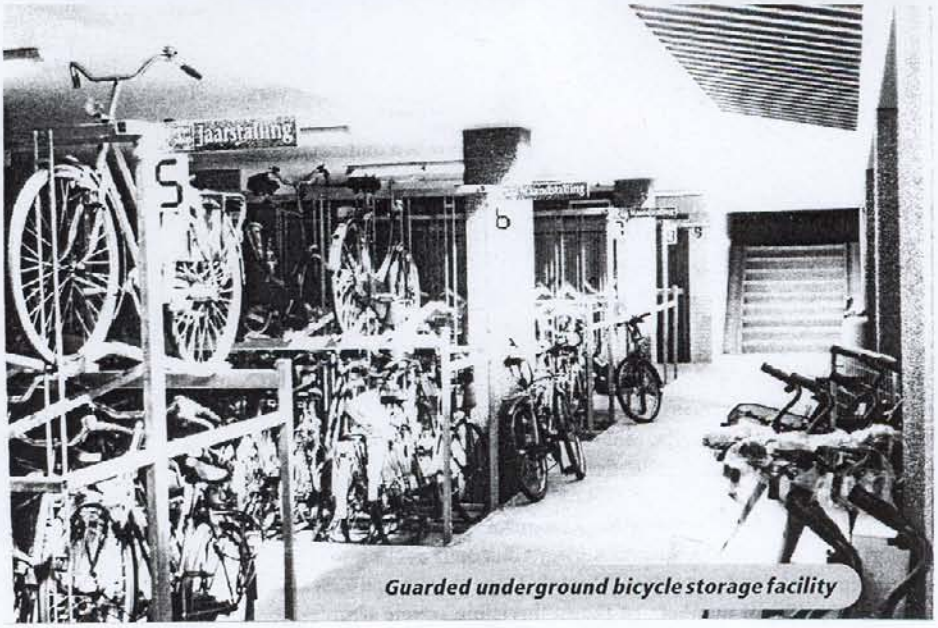
Urban transport and greenhouse performance

Where cycling levels are insignificant, the economic potential of cities drops and carbon dioxide emissions increase (chart 2). Cities with the lowest level of public transport and which rely on buses (whose low average speed prevents them competing with the car) have the highest carbon dioxide emissions.

In Houston, with 93% of trips to work by car, per capita carbon dioxide emissions are 3.5 times Amsterdam's – and still rising. The average bus speed is less than half the car's. In 1990, car travel accounted for 85% of trips to work in 10 major American cities. Australia's capital cities had 80% trips to work by car. Compare this to only 40% car commutes in Amsterdam, 38% in Munich, 36% in Zurich, 31% in Stockholm, 29% in Tokyo and 22% in Singapore. In



Amsterdam street scenes: Top – bike path from central railway station where 5,000 bicycles are stored. Below – path along one of the bigger canals



Guarded underground bicycle storage facility

all these places average train speeds are much higher than average car speeds for the trip to work.

Compared to Australian cities in 1990, the European and Asian cities produced only half the passenger transport CO2 emissions. Beijing was in a league of its own with only 6% of trips to work by car and a massive 58% being cycling trips (Song, 1989). Planning Beijing and other cities' roads for high levels of bicycle use have helped China create the world's largest and fastest growing economy.

Tokyo is the wealthiest of the 37 WBR cities (Chart 1) and has a more sustainable transport system than any American city (Charts 2, 3 & 4). In Tokyo 49% of trips to work are by public transport and 22 % by walking and cycling. In outer suburbs, around 30% of trips to rail stations are by bicycle (Replogle 1993).

High-density Tokyo is physically very different from Australian cities. However it is important to recognise the bicycle's contribution when Japanese cities reconstructed urban and rail infrastructure after World War 2. An economist (HOOK,W.1994) has analysed the impressive post-war performance of the Japanese economy and says this about rail transport and non-motorised travel:

Japan's decision to discourage the use of the private automobile and encourage the use of rail based mass transit and non-motorised modes was part of a broader policy to nurture its domestic industries, constrain consumption and encourage savings and minimise the costs of inputs to industry...By minimising aggregate transportation costs, Japan has been able to minimise their production costs, making their goods more competitive in international markets. Further by discouraging the use of automobiles and encouraging savings, a larger pool of potential investment capital was created... and encouraged investments in modern technology... the bicycle far from being a symbol of economic backwardness is rather more a symbol of a society able to meet its passenger transport needs in the most cost effective and least environmentally damaging way, allowing scarce economic resources to be invested elsewhere.

It is a pity WBR did not spell out this message to the city and national governments currently building unsustainable cities.

The WBR shows other emissions – nitrogen oxides (NOx), volatile hydrocarbons (VHCs), particulates and sulfur dioxide (SO2) – having a similar distribution to that of C02 in Chart 2. Levels were greatest in North American, Australian and some developing Asian cities.

The lowest per capita emissions are in the six European cities, Hong Hong and Tokyo. On all indicators, particularly urban air pollution, the data suggest that railways, competently planned, make a major contribution to sustainability. More efficient European countries regularly upgrade their rail systems and encourage bike/rail travel for this reason.

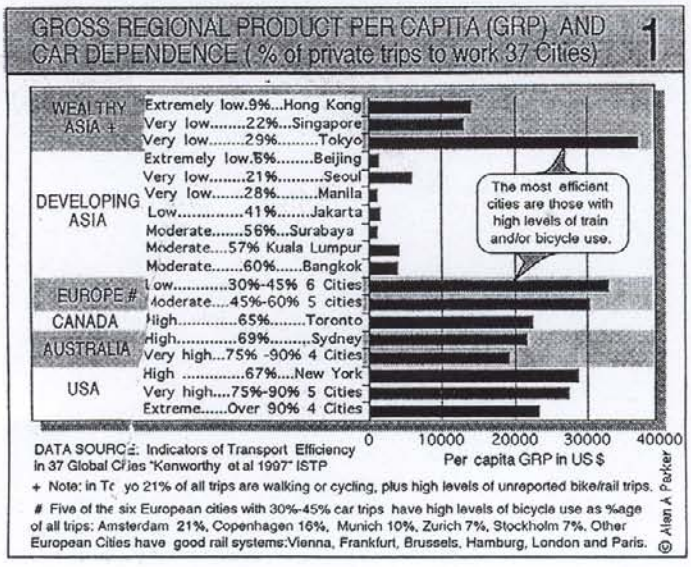
The Dutch have also gradually introduced legislation to clean up trucks, so their fleet is now the cleanest in Europe. In Australian and Canadian cities, NOx emissions are nearly as bad as in the US, despite lower per capita travel, due to the high proportion of dirty old gas guzzlers in vehicle fleets. Likewise developing Asia imports old cars that Japanese air pollution laws do not allow. Very low labour costs also help keep cars, trucks and buses on developing Asia's roads long after their "use by" date.

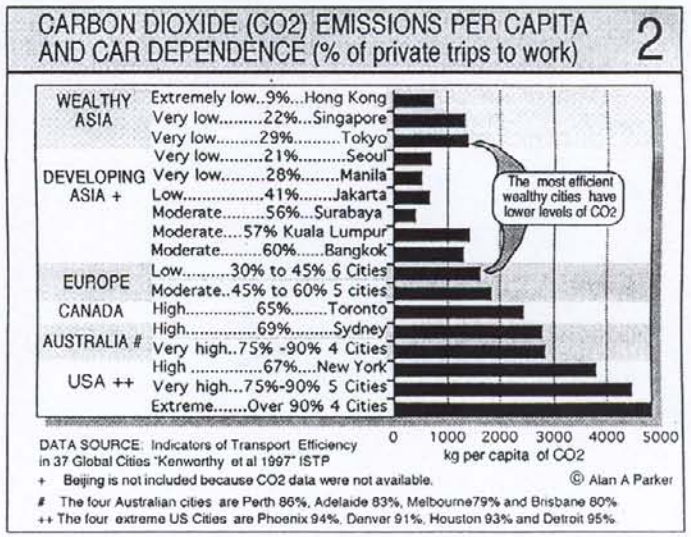
Car-domination a health hazard

Chart 3 shows the huge variability in road safety performance of the 37 WBR cities. Kuala Lumpur ,Seoul, Phoenix and Houston have the highest death rates per 100,000 population. The lowest death rates are in the European cities, Toronto (with its metro) and the wealthy Asian cities of Tokyo, Hong Kong and Singapore. In these cities, railways make a great contribution to road safety by taking cars off the roads.

Privatising passenger transport in the form of mass car use is inherently dangerous: the world's car fleet kills around 270,000 people each year. From 1945 to 1996, 135,000 Australians died in road accidents and 1.8 million were hospitalised (compared to 85,100 killed in both World Wars).

WBR notes the importance of non-motorised transport and specif-





ically refers to cycling as being safe in the right environment. Amsterdam and Copenhagen with the highest cycling levels have very low death rates per 100,000 population.

The WBR rightly says cycling need not be unsafe but understates its actual and potential contribution to an integrated and non-violent transport system. The Netherlands figures (Chart 3) show it is possible to have both the most bicycle-friendly and overall safest road system. Transport systems with bicycle use also facilitate integration with public transport modes which are all safer than the cars they replace.

A serious defect of WBR is the merging of walking and cycling as "non-motorised" trips. Data for cycling trips to work and for all trips were not even requested from the city agencies consulted, not because they do not exist but presumably because they were considered trivial. The WBR thus continues the long-standing practice of discriminating against cyclists in data collection, reducing the credibility of an otherwise excellent report.

Chart 4 shows bicycle data alongside the WBR non-motorised trips to work data. Note that transport surveys discount cycling to stations in rail trips; Tokyo, Amsterdam, Munich, Copenhagen and Stockholm all have significant numbers of these "invisible" cycle trips.

The six European cities with the most non-motorised trips have a high level of bicycle commuting (an average of 9%). Beijing stands out with 57% of all trips to work by bicycle; unfortunately we don't have bicycle and rickshaw trip data for developing Asian nations.

In the US, with the most car-dependent and unsafe transport system, seven of the 11 cities have less than 5% non-motorised trips to work. Bicycling trips to work are 0.5% in Washington, 0.7% in Chicago and 2.4% in Phoenix and 0.2% in New York. The percentage of bicycle trips to work in major cities has halved between 1975 and 1990.

Australian cities are little better. Here, non-motorised trips to work average only 5%. The bicycle figures are: Sydney 0.7%, Melbourne 1.1%, Brisbane 1.45% , Perth 1.7% and Adelaide 2.0% (ABS 1991).

The Chart 4 data could also be used, in combination with indicators for exercise and sedentary work patterns, to help assess the health benefits of providing better infrastructure for pedestrians and cyclists. In developed countries, mass motoring encourages sedentary lifestyles, with lack of exercise and obesity costing billions of health dollars. At the same time traffic deters people from healthy daily exercise, walking or cycling to work or the station. Deaths and injuries related directly or indirectly to sitting in a car far exceed deaths and injuries in road accidents. If ever the WBR is revised, some health indicators would be valuable to assess these hidden hazards of car-dominated transport systems.

A model for sustainability

Amsterdam is part of a larger conurbation which may be compared with Sydney or Melbourne. Amsterdam's average citizen is wealthier while per capita emissions of carbon dioxide, NOx and volatile hydrocarbon are lower, as is the risk of being killed on the roads Health data also show Amsterdam's citizens are lighter and fitter from so much walking and cycling to work, school or shopping. All that aside, Amsterdam is a great place to be and the Dutch plan to keep it that way.

The Netherlands has invested around $200 million per year (1990 prices) for 21 years in trams and trains. Recent transport investment includes high speed train routes to reduce intercity air travel, high speed rail freight links to get trucks off roads and efficient multi-modal freight transfer systems in Rotterdam and other ports to reduce cost and energy use.

Improved bicycle access to stations and secure bicycle storage have also increased rail patronage. Netherlands Railways are well on the way from 9 billion passenger km in 1987 to 17 billion passengers in 2010 (RGI 1996). The time saving that comes from cycling to a station instead of walking gives Netherlands Railways the edge when competing with door to door travel by car. Commuting experience in Denmark, Switzerland and Japan also shows the value of bike/rail (Replogle 1993).

Australia also needs more bicycle use, faster trains and safe and secure bicycle access at both ends of a railway or express bus trip. Sadly the Commonwealth government has ignored the need for railways within the context of a national environment plan, like the Netherlands'. The Commonwealth has no strategic plan of any kind which could reverse the unsustainable transport trends in our cities.

The Commonwealth is failing in its responsibility to create incentives for other governments and agencies to build rail and bicycle facilities. "Four wheeled Russian roulette" kills ten times as many Australians as the gun, but the government's main transport preoccupation is to privatise new ashphalt "killing fields" and ignore railways.

The Commonwealth government has chosen to repudiate the former government's commitment to implement the Climate Treaty and to treat key environmental issues as a public relations exercise. It is betraying the environmental concerns of ordinary people who want their leaders to walk tall, do what is necessary to make our cities more livable and accept our Climate Treaty obligations.

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