Greenhouse Friendly Bicycle/Land-Use Planning

Bicycle Transportation and Sustainable Urban Growth

Australian cities are good to live in, one important reason why Australia is one of the most urbanised countries in the world. Unfortunately our per capita emission of greenhouse gases and pollutants is one of the highest in the world. Our cities are reaching the limits of their environmental capacity. Emissions are predicted to increase because Australia through its immigration program is committed to high levels of population growth and past planning has created car dependent urban sprawl. An ecologically sustainable accommodation of population growth has to be found.

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Cycling is greenhouse friendly because it makes it easier to travel further with less human effort and to overcome the tyranny of distance in our cities. Unlike the car, it is not part of urban problems but part of the solution. The challenge for the future is to adapt and consolidate our existing cities to contain their physical growth and to create new cities designed from the ground up as sustainable settlements. The bicycle's potential to substitute for radial urban car trips of more than 10 km when used as a feeder to heavy rail systems has been proven overseas and there is great potential for bike/rail travel in Australia. Given the high proportion of non-radial urban circumferential bus and light rail trunk routes. Given the reality of urban sprawl, an innovative means of using the bicycle as a feeder to shared or pooled car and van systems has great potential. For the foreseeable future bicycle use can enable households to make better use of cars and avoid the purchase of second and third cars.

Melbourne, a typical unsustainable city

Melbourne's unsustainability is definable. Firstly, the metropolitan population will increase from 3.1 to 4.2 million and there will be around a million more cars and commercial vehicles on the roads by the year 2030. Secondly, before 2000 AD the hills surrounding the metropolis will ensure that unhealthy levels of air pollutants will accumulate most days and CO_2 emissions from motor vehicles will greatly increase. Thirdly, Melbourne is appallingly wasteful of space in the inner and middle suburbs; it is highly inefficient in providing access to jobs and modern public transport facilities.

There is also the problem of the decrepit rail system. The perceived fear of street crime, vandalised and dirty rail stations coupled with the overprovision of car parking (270 per 1000 employees) in the central area which have all contributed to decay of the central area and wasteful under-utilisation of the rail network that leads there. There is now unused accommodation for 100,000 workers. Meanwhile the infrastructure costs of providing homes in the outer suburbs has risen to $42,000 per block. The absence of large scale car and van pooling schemes, successful in the sprawling Californian cities, means more intense road congestion adding to vehicle emissions.

There is a long history of discrimination against cycling by state and local government. Until recently little has been done to encourage utility cycling. The steady increase in bicycle use since the early seventies took place in spite of government action, not because of it. Even now cyclists' legal right of access is threatened by bridges being built without provision for them and main roads have improved little. There is not one state implementation program that will realise the potential of bicycle transportation. All are in need of more funding and drastic revision. Professor Peter Newman's data clearly show that the low level of bicycle trip making in greenhouse-unfriendly cities is very much related to uncontrolled urban sprawl and the overall planning problems described here.

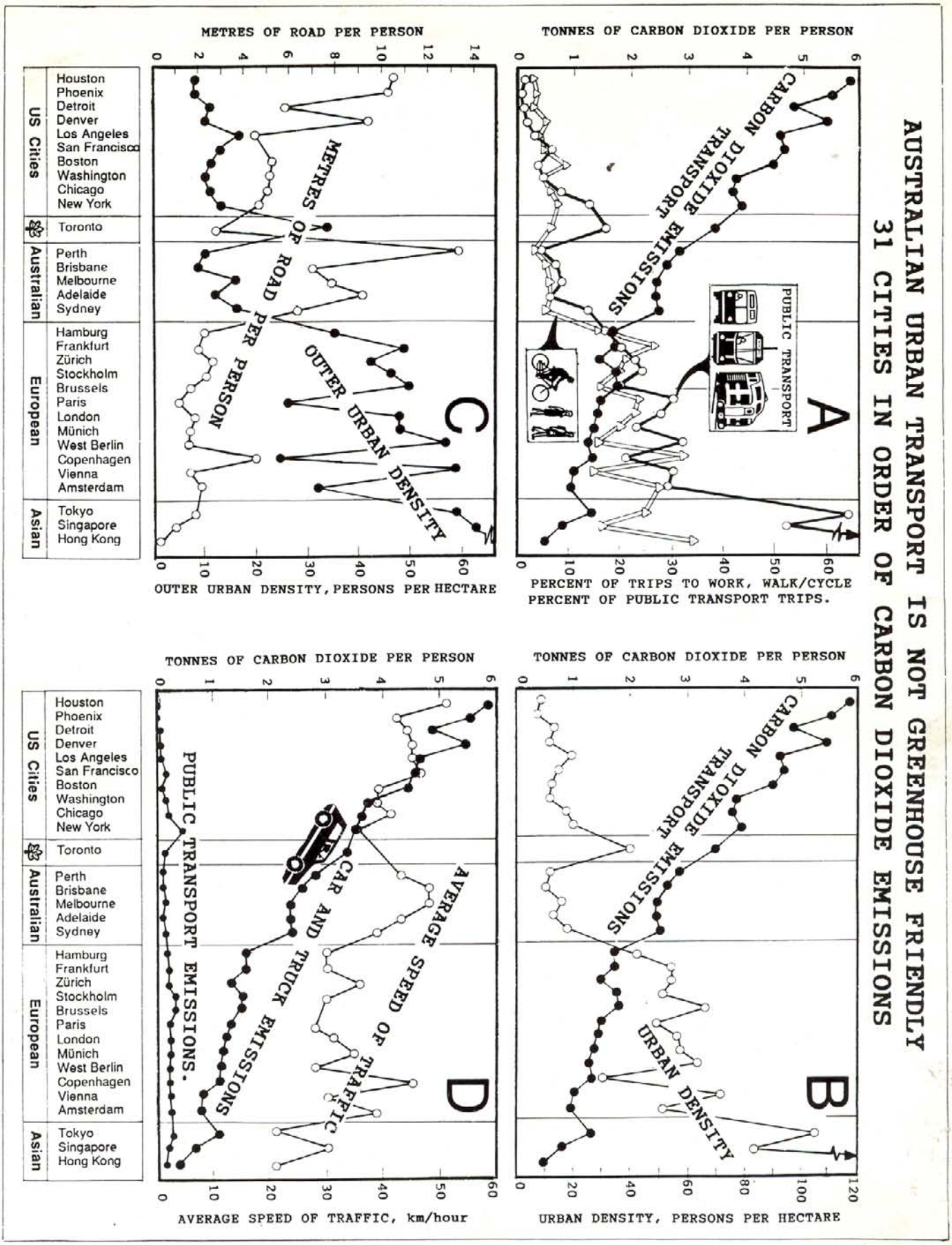
Using Newman's data I have drawn figures — A, B, C & D. The relationship between the levels of bicycle use, CO_2 emissions and urban density in 31 cities is very clear. Note the high per capita amount of road in Australian cities (Figure C) and the trend that as average road-speeds go down, so do CO_2 emissions.

Transport, urban form and New Towns

In the fifties and sixties Los Angeles was used as a planning model in Melbourne. The successful European experience of building New Towns linked by rail to existing cities was ignored. These experimental New Towns showed how to avoid locating houses that are only conveniently accessed by car, how to conserve the best agricultural land and to minimise infrastructure costs. It enabled a green belt to be preserved between older cities and the New Towns (Schafer 1970).

The Europeans avoided the "Los Angelisation" of their historic city centres, but from 1975 so many intercity and outer ringroute motorways were built that it generated an incredible overuse of private cars, a decline in public transport and negated many of the benefits that could have been derived from the New Town infrastructure. Even so, the per capita transport emissions of CO_2 are half (or less) of Australian capital cities. By 1990 there was

Cambridge, England:
No Way for cars; Go Way for bicycles, helping to preserve the historic core of older cities.



DATA SOURCE: Tables 1,2,3.Cities, Transport and Greenhouse - Expectations and Practical Solutions. Newman, P.

near universal consensus (Burtenshaw 1991) that "no amount of ingenious juggling by engineers and architects is capable of adapting long established centres to accommodate large flows of traffic and vast highways, except over a period and at a cost that is an irrelevancy." The lesson from Europe for the '90s is that the best land use planning achieves little unless the growth of motorised mobility is constrained. (Barde and Button 1990)

The more recent experience of the Japanese in building New Towns and expanding provincial cities along high speed rail routes, is that rail infrastructure is crucial in channelling population growth away from the major urban conurbations. Note, that Peter Newman makes the case for building medium density urban villages on and over rail lines.

European and Japanese New Towns provide for bicycle use and public transportation. The inhabitants have the option of safe bicycle travel because separate and more direct bicycle access is provided. (Parker 1991)

Indeed New Towns (50,000 to 120,000 population) and small cities generally have high bicycle trip levels for most purposes and far lower transport CO_2 emissions. The New Town is an essential urban growth option because several studies suggest that the Victorian government's proposal for urban consolidation is only a partial solution which can cope with just 30% of predicted population increase.

Ecologically Sustainable Development (ESD)

The bi-partisan approach of government, opposition and conservation movement to reducing Greenhouse Gas (GHG) emissions is by the economic pathway known as Ecologically Sustainable Development (ESD). Progress has been made. The nine Reports of the ESD Working Groups were released last December. These are long term strategies for agriculture, forest use, fisheries, mining, tourism, manufacturing, energy production, energy use and transport.

The Transport Report recommends the increase in bicycle use as a substitute for short urban car trips and as an access mode to public transport, making the following very important recommendation:

"25 (b) That a national cycle strategy which is integrated into national transport planning be developed and implemented."

The Australian Conservation Foundation (ACF) was not happy with numerous other recommendations and has produced a 250-page evaluation. It is clear that many changes are required to make the Reports more relevant and prevent the economic rationalists in the bureaucracy from turning implementation into token measures. Many additional ACF transport recommendations back up the need for a national cycle strategy and encourage cycling as the following two recommendations show.

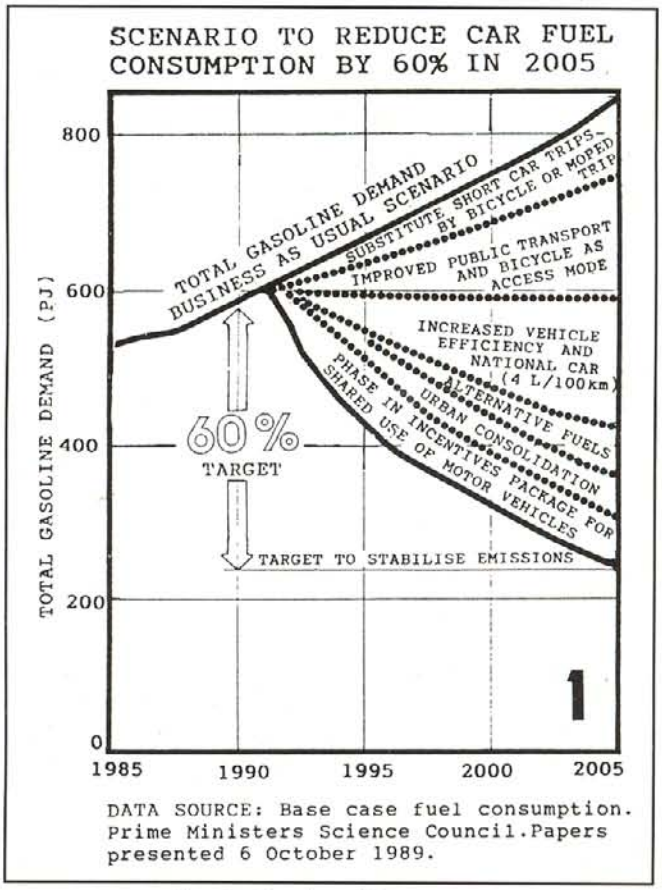
"Tax measures

That tax deductibility be introduced for bicycles purchased for business purposes and increased for public transport, so as to provide incentives to companies to offer these transport options as part of salary packages and for employees to use them. That tax deductibility of car costs paid by companies be reduced."

"Integrated planning approach

That the administrative arrangements governing land-use and transport planning in urban and non-urban areas be reviewed, with the objective of achieving an integrated planning approach that facilitates development of multi-modal regional plans. (It includes regional bikeplans.)"

This last recommendation is essential because bicycle planning will be most successful when it is part of such a planning process. Unfortunately, the institutional means for this to happen does not yet exist.



DATA SOURCE: Base case fuel consumption. Prime Ministers Science Council.Papers presented 6 October 1989.

Towards an ecologically sustainable transport system

ESD needs a commitment to changes in how we live. There is no instant solution because uncontrolled traffic growth is only a symptom of failure to sensibly plan for population growth. Free market economics is no solution because after 10 years of deregulation there is no sign that the system can take into account the external costs of emissions (Pusey 1991) let alone all the hidden subsidies that encourage urban sprawl. ESD is feasible but requires, as well as economic rationalism, social engineering, intervention in the market place by government, self regulation and behavioural change by individuals and companies, to make it happen. An ongoing commitment to reducing the need for motorised travel, and making better use of cars, is needed; but only token road demand management measures have been proposed so far.

The use of a four- or five-seater car for a one-person long urban work trip or a short car trip on a cold engine which could easily be made by walking or cycling is unsustainable. Many urban cyclists ride 8,000 km, walk 3,000 and use public transport occasionally so their overall mobility is similar to the average motorist. In parallel with long term land-use / transport planning that is bicycle friendly, there is a need for education and encouragement programs.

Apart from New Towns, urban village and urban consolidation there is a need to take advantage of the planning opportunity presented by the favourable climate and mostly flat terrain in most Australian capital cities to create a continuous network of bicycle routes mostly on light traffic streets. Safe and secure bicycle storage can be provided for most buildings. Funding should not be a problem as unemployment is unlikely to fall below 10% before 1995 and job creation schemes will be required — building of bicycle facilities is very labour intensive (around 50%). An $85 million job creation package has been proposed. (Parker 1991B)

At federal level the recommendation for a national bicycle strategy must be vigorously pursued. The multi-modal approach (includes bike plans) to transport planning is a step in the right direction. One package of passenger transport measures that could reduce CO_2 emissions is shown on the graph and illustrates the range of transport measures that need to be introduced in parallel. Those seeking further information on the role of the bicycle in that package should consult a paper by the author. (Parker 1990)

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