

## TIME TO CHANGE GEAR

*“He who refuses to do arithmetic is doomed to talk nonsense.”*

*John McCarthy (computer pioneer, Stanford University).*

This note is in response to the CBI paper with the above title published in February 2009.

Over the past decade the traffic engineers have restricted capacity at the most critical points in the road network, namely the junctions. They have done that by a series of minor, almost insignificant measures e.g.

- (1) Arranging matters so that all the traffic lights show red long after green would be sensible at least somewhere.
- (2) Setting stop lines back by two or three car lengths at signal controlled junctions. That reduces the number of vehicles that can exit when the traffic lights turn green so generating queues when none need exist.
- (3) Channelisation schemes that allocate a particular lane to each turning movement. The result is congestion for the major movements while lanes for the minor movements stand empty.



- (4) Using road markings and traffic islands to restrict the number of lanes at stop lines to the number on the approach roads thereby ensuring that perhaps only half the capacity of the links can be use.
- (5) Banning turns; even left and straight ahead turns are not immune from that. The consequence is substantial detours and overloading at other junctions.
- (6) The installations of thousands of signal controlled pedestrian crossings that show red long after a lone pedestrian may have crossed.
- (7) Bus lanes that often carry as little as one vehicle every 10 minutes.

Those measures are in response to the dash for road safety and the green “equality for all” mantra - walking first (open to poor and rich alike), followed by cycling, then by buses plus trains and lastly by cars (to which the poor have less access than do the rich).

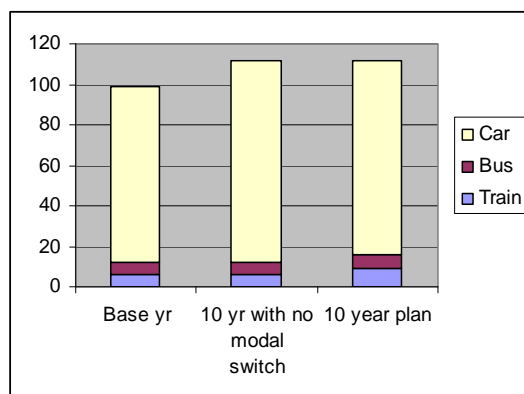
The effect has been devastating. For example, a one minute delay to 1,000 vehicles each day costs circa £82,000 per year <sup>(a)</sup>. Similarly a daily one kilometre diversion, at a speed of 25 mph, forced on 1,000 vehicles generates an annual cost of £180,000 <sup>(b)</sup>.

Nationally there are about 23 billion car trips per year. Their average length is 8.5 miles. If all of those, plus the journeys of other vehicles, suffer a two minute delay, because of these schemes, then the cost attributable to the schemes is circa **£11 billion annually** <sup>(c)</sup>.

We believe that the green mantra and the drive to “get people out of cars onto buses and trains” are entirely misplaced. The plain fact is that the car has enabled a dispersed land use that is impossible to serve by bus or train. If it were otherwise that land use would have arisen in the past but it did not. Consider the numbers.

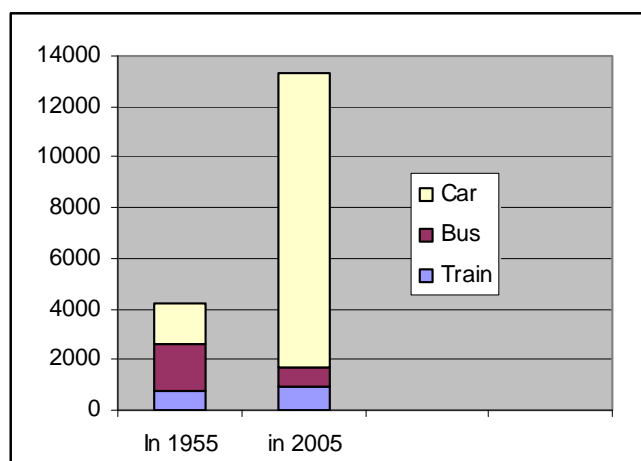
The target in the Government’s 10 year plan was to increase rail use by 50% and bus use by 10%. That, it was hoped, would greatly reduce road congestion. It was supported by, if not the brainchild of, the Commission for Integrated Transport, chaired by Professor Begg.

However, that policy did not take account of the blindingly obvious, namely that the bus and train each accounted for only 6% of the passenger-miles travelled. Indeed, rail accounts for less than 2% of passenger-journeys. Hence, it was inevitable that, even if the targets could be met, there would be little impact on the increase in car use, which has in fact grown by 10%. The figure below illustrates the point. There the difference in car use that the policy may generate is difficult to discern.



**Figure 1 Passenger-km % base year**

If that were not enough to illustrate the naked stupidity of the plan, consider the history. In 1955, the bus and train (including London Underground) accounted for about 60% of the passenger-miles travelled. Today, 85% are by the car. Furthermore, passenger-miles by car have increased sevenfold. The figure below illustrates these overwhelming changes.



**Figure 2 Passenger-km per head by mode (d)**

Despite that billions of pounds have been spent on the presumption that congestion really could be solved by getting people out of cars and on to public transport.

Those wishing to claim success will point to the increase in train usage that has occurred over the decade. However, the percentage of passenger-miles by national rail remains close to 6%. Further, since rail serves destinations that are difficult to reach by car and the car serves journeys impossible to make by rail, the probability is that very few people have transferred from one mode to the other. Instead, at great cost to the nation, we have encouraged typically rich people to commute relatively long distances by rail, thereby establishing lifestyles that can be sustained only by massive public subsidy.

With regard to buses, outside London there has been a 10% decline in usage. That will be because of rising car ownership and because employment and retail have deserted town centres in favour of places that cannot be served effectively by bus, let alone the train. Ironically, that dispersal of land use has been encouraged by well-meaning policies such as limiting car parking in town centres and charging excessively for it. Congestion charging, if it becomes wide-spread, may very well accelerate that trend and the consequential decline in bus use.

The reality is that the car, the second most expensive purchase any family makes, is the principal and preferred way of meeting the travel requirements of the population. The bus and train (especially the London underground), are only major players in our larger towns and cities, and only for journeys to and from the centres. Even in London, outside the centre, the car accounts for 70% of motorised trips, probably 80% of passenger-miles.

As for the speed cameras, we find that since their introduction the long established decline in the deaths has flattened off instead of accelerating despite the cameras being supported by many thousands of speed humps and the traffic management measures that have so damaged the capacity of the road network.

Furthermore, it has been put about that 30% of accidents are due to “speed” or “inappropriate speed”. However, only a trivial proportion of accidents are attributed to “speeding”<sup>(e)</sup> (which is narrowly defined as breaking the speed limit). Consequently, despite the official rhetoric, the potential for the cameras to save lives scarcely exists.

As to “the environment” – a subsidised bus with as many as 5 passengers aboard is more damaging than many types of car containing the driver alone.

If the attack on the motorist is misplaced then the belief that the public has in rail is sufficient to beggar belief. For example, it is put about that rail is overwhelmingly safe compared with road transport, has the higher capacity to move people, and is in some magical way sustainable and green. However, our detailed calculations show, among other, that:

- (1) The deaths per passenger-km by rail, including trespassers but not suicides, are 50% above that for the motorway and Trunk Road network <sup>(f)</sup>.
- (2) If the national rail function were discharged by express coaches and lorries using the rights of way currently enjoyed by the railways then carbon emissions would be reduced, let alone the benefit to the many thousands of lorries and other vehicles that would divert from the unsuitable rural roads and city streets that they now clog. <sup>(g)</sup>
- (3) If all London's crushed peak hour surface rail commuters had seats in 50-seat express coaches and if the rail network were paved then those coaches would occupy only one fifth of the network's capacity <sup>(h)</sup>. The picture illustrates.

## The waste at Battersea



Picture courtesy of National News & Pictures

Astonishingly, even in the peak hour and in central London this immense rail network, offering 10,000 miles of superbly engineered right of way, is, in highway terms, substantially disused. Indeed, averaged over the network as a whole the flow per track is equivalent to a pitiful 300 coaches plus lorries **per day**, a flow that would not trouble one lane of a motor road for more than 30 minutes <sup>(i)</sup>.

Meanwhile the subsidy from the taxpayer is vast. Over the 20 years to 2015 £100 billion will have been spent. That amounts to circa £4,000 for every household in the land at a time when half of us use a train less than once a year and when those from the top quintile of household income travel five times as far by rail as do those from either of the bottom two quintiles.

This extraordinary misallocation of funds coupled with the war on the motorist arises because policy has been developed in defiance of the facts. That can only change if there is a solid group of experienced people who will lobby down the years in favour of the truth rather than fairy stories.

Transport-watch, March 2009

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## Notes:

- (a) The value of time for the average vehicle is from the DfT's Transport Analysis Guidance (WEB TAG) module 3.5.6. Paragraph 1.2.30, provides £11.28 per hour at 2002 market prices. Inflating to 2008 by adding 20% yields £13.54 per hour. Hence 1,000 vehicles delayed for one minute generates £225.60. Multiplying by the 365 days in the year yields £82,344.  
[http://www.dft.gov.uk/webtag/webdocuments/3\\_Expert/5\\_Economy\\_Objective/3.5.6.htm](http://www.dft.gov.uk/webtag/webdocuments/3_Expert/5_Economy_Objective/3.5.6.htm).
- (b) The same reference also provides formulae that generate vehicle operating costs. We used those to obtain a market price for those costs. Adding the time cost generated 40.5 pence per vehicle-km at 40 kph at 2002 prices. Within the calculation we inflated the resource costs of fuel by a factor of 4, so as to capture the tax paid, and other operating costs by 20.90%, as advised by the WEB TAG, so as to capture other tax. Adding 20% to convert to 2008 prices and multiplying by 1000 vehicles and by the 365 days in the year yields £177,390
- (c) The 2006 National Travel Survey provides 430 car/van driver trips per head per year, NTS table 3.4. If we assume 55 million people then the total car driver trips per year amounted to circa 23.5 billion. Their average length was 8.5 miles (NTS table 3.2). Applying the average time cost for all vehicles (£13.54) to the 23.5 billion and setting delay to two minutes yields £10.7 billion at 2008 prices. Cars and vans account for about 92% of traffic flow. Hence the total cost of a universal 2 minute delay per 8.5 miles of travel trip is circa £11.6 billion.
- (d) Figure 2 is derived from Table 1.1 of Transport Statistics Great Britain.
- (e) Statements to do with speed cameras are derived from Table 2 from Transport Research Lab Note TLR323  
[http://www.trl.co.uk/online\\_store/download\\_form/download\\_complete.htm?id=2486](http://www.trl.co.uk/online_store/download_form/download_complete.htm?id=2486)  
and Table 2 from the paper with the title "Contributory Factors to Road Accidents" by David Robinson and Richard Campbell of the Road Safety Department of the DfT.  
<http://www.dft.gov.uk/162259/162469/221412/221549/227755/contributoryfactorstoroadacc1802>  
and from the road deaths available from Transport Statistics Great Britain
- (f) We divided the deaths by rail to passengers, staff, postal workers and trespassers but not suicides by passenger-km and compared that with the equivalent deaths per passenger-km on motorways and rural trunk roads. In the calculation we excluded a collection of deaths by rail, such as falling down escalators. For the decade to 2007 the comparative rates were 4.1 per billion passenger-km by rail compared with 2.4 per billion on the motorway and rural trunk road network. Detail available on request.
- (g) See Facts Sheet 5 available on our web site [www.transport-watch.co.uk](http://www.transport-watch.co.uk).
- (h) We have from table 1.3 of Transport Statistics Great Britain close to 500,000 passengers entering central London in the three hours 7 am to 10 am. Hence probably fewer than 250,000 do so in the peak hour. There are at least 25 pairs of tracks serving London's terminals. Hence we have 10,000 passengers per inbound track. If they were seated in 50-seat coach they would all find seats in 200 vehicles. 200 coaches would occupy one fifth of the capacity of one lane of a motor road the same width as required by a train..
- (i) Over the network as a whole we have circa 45 billion passenger-km and 20 billion tonne-km. Dividing the passenger kilometres by 20, to represent express coaches with as few as 20 people aboard, and the tonne-km by 15, to represent lorries carrying 30 tonnes outbound empty back, and adding the results yields 3.6 billion vehicle-km equivalents. Dividing by the track length of 32,000 km and by the days in the year yields the trivial flow of 307 vehicles per day per track. That arises despite the network serving the hearts of our towns and cities.