

A Continuous Pedestrian Network

Mayer Hillman

Abstract

There is considerable research evidence to indicate that the wider public interest is better served when journeys are made on foot rather than by motorised means. For this reason, there is a strong case for re-ordering existing transport priorities in favour of pedestrians through the medium of road space allocation.

At present, the road network provides a continuous even surface for wheeled vehicles which often travel so fast as to inculcate fear in people getting around on foot, particularly when speed limits are poorly enforced. Pedestrians are exposed to danger when they cross roads, their journeys are lengthened, and restrictions on children's freedom to get around on their own is extended to an ever later age in their formative years owing to parental concern for their safety.

A radical solution is proposed for local authorities wishing to be in the vanguard of forward thinking on ways and means of making walking safer and more convenient. It entails adopting a strategy to create an uninterrupted ***Pedestrian Network*** within their administrative areas, giving pride of place to people getting about on foot. The construction of this network, consisting of pavement-level linkages across the road would be staged first, outside schools, park entrances, lesser shopping areas, bus stops not on strategic routes, and road intersections in residential areas.

The advantages on environmental, energy-saving, economic, health, and social and equity grounds would outweigh the disadvantages of the minimal time loss for drivers of having to slow down to cross the network on their journeys.

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Introduction

Forty-five years ago, together with a colleague, Jonas Lehrman, I designed a New Town for a site in the south east of England (Hillman, 1957). Its layout was calculated to promote walking as the principal means of travel. No more than a third of a mile was needed to walk from the residential areas to reach its attenuated town centre strung out along the linear spine. A convenient and frequent public transport service was planned to run up and down its length. Car use was possible but not advantageous. Sadly, neither the plan nor the concept behind it was adopted.

Politicians, advised by their transport and planning ‘experts’, were and largely continue to be on a different wavelength. For the last four decades, they have anticipated a future of ‘universal car ownership’ in which the geographical limitations of walking would be removed through the medium of technological advances enabling travel at higher speeds. Access to a vastly increased catchment of opportunities, it was assumed, would lead to enrichment of the quality of life. Eventually, nearly everyone would be able to enjoy the benefits. This perception of the importance of the car remains: for instance, the UK government forecasts an increase of a third above the present level in the number of cars on the roads over the next 20 years, and an even greater increase in car mileage.

Research evidence

The findings of many of the research studies in which I have been engaged since co-designing that New Town, however, appear to reinforce the case for asserting that, rather than the car, walking (and cycling) are deserving of far higher priority in public policy than is accorded to them at present in countries all over the world (Hillman and Whalley, 1979; Hillman, 1997a). They have scope for catering for significantly more journeys than can public transport (Hillman, 1998). In marked contrast to travel by all forms of motorised transport, the greater the role that they can play as means of travel in our lives, the greater the social, economic, environmental, energy-saving and health benefits.

Equity

What continues to be overlooked is that the three pre-requisites for independent car use – adequate age to be allowed to drive, adequate competence to pass and retain a driving licence, and adequate income to afford a car and its running costs – preclude, and always will, the majority of the population from enjoying this advantage (Hillman, Henderson and Whalley, 1973; Hillman and Whalley, 1977). Children are included in this calculation for, of course, they have an equal right to safe *and independent* travel outside the home. Moreover, this majority relies far more heavily on walking and bus use and, where relatively safe provision is made for it, on cycling. Yet, the attractions of these three modes are diminished by the use of the car: in the case of the non-motorised

modes, owing to increased danger and pollution. In the case of the bus, reduced demand has resulted in poorer services and, in most cases, higher fares. At the same time, those more dependent upon walking have been further disadvantaged. Land use planning changes have been made in response to the wider availability of cars, resulting in an extension of the distances they need to travel for many of the journeys they make in their daily lives (Hillman, 1996a).

Public expenditure

It is not only on grounds of equity that policy should reflect the desirability of transport planning favouring the non-motorised modes. In the sphere of economy in the use of public funds, our examination of the cost-effectiveness of providing alternatives to the car has revealed that a major transfer from urban journeys currently made by car is far more likely to be achieved by constructing networks for walking and cycling, followed by improvements to bus services. It is illusory to believe that the solution lies in pouring large sums into high quality public transport in the hope that that will attract people out of their cars (Hillman, 1996b). It is salutary to note that the costs of providing safe routes for pedestrians and cyclists is far lower than it is for catering for people travelling by car *or* public transport.

Fossil fuel use

In the sphere of the use of resources, our studies have identified a crucial failure of governments to recognise that the most effective way of minimising energy-wasteful patterns of travel, especially to conserve finite fossil fuels, is by promoting the non-motorised – *nil* petroleum-dependent – modes (Hillman and Whalley, 1983). In the UK, at current occupancy levels, fuel use per passenger kilometre by public transport is only about 20 % lower than by car. The conventional route of applying technology to deliver more kilometres to the litre should come *after* applying policies and practices on reducing the demand for motorised travel, not before. Otherwise it leads to *more* traffic generation by lowering the unit cost per car kilometre.

Road safety and road casualties

On the issue of safety, we have highlighted significant reasons for questioning the validity for policy of casualty rates by mode. These indicate the *far* higher level per kilometre travelled by the non-motorised modes compared with that by car or public transport. What is overlooked is that the level of casualties is only a partial measure of road safety, particularly where cyclists and pedestrians are concerned. A fall in their number is so obviously explained by their vulnerability - greater danger from the rising volume and speed of traffic - rather than any intrinsic risk of injury travelling by these means (Hillman and Plowden, 1984; Plowden and Hillman, 1996). Moreover, we have shown how essential it is to differentiate casualties according to whether the injured were 'inmates' (of vehicles) or 'outmates' (pedestrians or cyclists). Given that nearly all the injuries of the 'outmates' result from a motor vehicle (mainly a car) colliding with them, far from it being unsafe to cycle or walk, it is clearly unsafe to drive (Hillman, 2000)! The policy implications of this clearly run counter to the self-interest logic of travelling by car, ideally one that promises its driver and passengers a high survival rate in the event of a collision, and discounting raising the risk for non-motorised road users.

Physical and mental health

In the sphere of health, we have revealed the damaging consequences of feeding the addiction to car travel both from a personal viewpoint in terms of that making it less likely that the exercise of walking or cycling on a daily basis occurs, but also from a community viewpoint in that the dangers posed by increased car use make it less safe and therefore less likely that other people will make their journeys by cycle or on foot. Survey after survey in the high-car ownership world reveals that the majority of the population – young and old alike – are getting insufficient exercise and are therefore at greater risk of heart disease and other life-threatening and debilitating illnesses. They are also denied the enhancement that improved fitness brings to the quality of their lives and to their mental well-being (Hillman, 1997b).

Climate change

Finally, and in my view most importantly, reference can be made to our work on the implications of climate change for personal lifestyles and transport's role in this. In affluent countries, carbon emissions must be reduced by over 90% if the contribution of their populations is not to destabilise the planet's eco-system (Hillman, 1998). This needs to be translated into our inescapable responsibility and obligation to present and future generations. If this target is not met, we will witness the awesome consequences of climate change. Attempting to limit the escalating damage then will be far more costly. Every aspect of our fossil fuel-dependent activity must come under scrutiny, including transport, whether by air, rail or indeed regular longer distance public transport travel services - patterns of travel generally which are not local and which cannot be met on foot or cycle.

Discussion

This brief *tour d'horizon* has outlined key issues that must be taken into account in policy appraisal. It has provided grounds for a substantial re-ordering of transport priorities in order to derive the wider benefits of promoting use of the non-motorised modes, and deliver practical solutions to a broad range of personal, community and global problems that go well beyond those in the transport sphere. Their scope is considerable: national travel surveys show that the majority of journeys currently made are over distances that can be covered on foot or bicycle without unacceptable costs in terms of time and effort – and indeed providing recommended levels of daily exercise.

It would be churlish, however, not to acknowledge that the themes referred to have gone unrecognised everywhere. In the UK, the government is supporting projects favouring walking, such as part-funding of central urban area pedestrianisation and its ***Safe Routes to School*** initiative, and 20mph speed limit residential areas. The need is now also seen for incorporating the traditional social role of the street in the albeit few ***Home Zones*** projects with lower limits than this. It has produced a guide for local authorities encouraging them to determine a strategy for walking in the annual plans and bids they make for central financing. In its 10-year financial review for transport expenditure, it has allocated more of the necessary funds than have been available in the past for this. Nevertheless, the inadequacy of schemes to encourage walking is reflected in a continuing fall in the proportion of journeys and mileage made on foot.

The vehicle or the pedestrian network

One obvious way in which current priorities with regard to the role of walking could be enhanced considerably is through the medium of road space allocation. At present, the road network provides a continuous even surface for wheeled vehicles that are often driven too fast, particularly when speed limits are poorly enforced. On the other hand, pedestrians are provided with a set of pavements which does not represent a *network* as it is interrupted at every road intersection. This arrangement results in pedestrians being exposed to greater danger when they cross roads. Owing to parental concern for their safety, the arrangement also results in restrictions being imposed on children's freedom to get around on their own to an ever later age in their formative years (Hillman, Adams and Whitelegg, 1991).

In this traffic environment, pedestrians are obliged to run the gauntlet of moving vehicles when wishing to get from one 'safe haven' of pavement on one side of each road to the other side. Alternatively, usually by making a detour, they may be able to use a zebra or pelican crossing which then reduces the risk of being struck by a motor vehicle. Even so, it should be noted that, in the UK, nearly 10% of pedestrian casualties occur on pedestrian crossings. The effect of making the detour and waiting to cross the road in relative safety, is that the average walking speed in urban areas is reduced from 3mph to not much more than 2mph.

If the priority at road intersections was reversed, rather than the vehicle network being uninterrupted, the pedestrian network, consisting of linked pavements, would be uninterrupted. To achieve this, two elements of the traffic engineer's toolkit need to be integrated – the pedestrian crossing and the road hump (sleeping policeman). Pedestrians then walk across speed tables – broad level-topped humps – which are the width of conventional crossings, and are paved with similar materials and laid at the same level as the pavement. Likewise, the full 'square' at road intersections is raised and paved at pavement level. The effect of this is to create the continuous *pedestrian network* and give drivers a distinct visual clue as to who has the priority.

Evidence from the UK and the Continent shows that vehicle speeds are reduced sharply when drivers cross road humps and that vehicles are driven slowly and considerably on paved areas that are *unambiguously* the preserve of pedestrians. The pedestrian network would ensure greater convenience for people getting about on foot as they can follow diagonal desire lines if they so wish, as well as, of course, making it much safer for them. Such an arrangement can also give parents the confidence they have been losing at an alarming rate to allow their children to make school and other journeys on their own as the risk of a vehicle colliding with them is considerably lowered.

Local authorities, with the support of their governments, could take this concept on board adopting a 10 or 15-year strategy of linking existing pavements in this way to form a pedestrian network within their administrative boundaries. That would result in people, and especially children, having to cross fewer and fewer roads. It seems likely that such a strategy would command considerable public support. It could be suggested that the construction of the linkages would start first outside schools, park entrances, lesser shopping areas, leisure facilities, bus stops not on strategic routes, and road intersections in residential areas. The costs of doing so would be considerably lower than those entailed in catering for – if not subsidising – people to travel by any form of motorised movement, including public transport. A declaration of intent by these

authorities would put them in the vanguard of forward thinking on ways and means of transforming their urban areas to make walking safer and more convenient, and with generally more attractive environments for people living and working in them.

Three reservations could be expressed about this proposition. First, reference could be made to the risk that, in the same way that the availability of a cycle network can lead to drivers claiming that cyclists have no right to cycle on roads not designated for them, the same would hold true with a pedestrian network when people walked in the road. That would certainly not be the case for it is only the linkages across the road that would need to be put in place in order for the network of existing pavements to be a network for safe pedestrian movement. After all, in the absence of the *pedestrian* network, we have a continuous *vehicle* network!

Second, it could be argued that it is more realistic to cater for pedestrians at road intersections by dropping kerbs to road level. However, this solution is far less desirable as it contains within it the need for pedestrians to continue to defer to wheeled traffic by waiting until it is safe rather than drivers of wheeled vehicles having to defer to pedestrians by slowing down to allow pedestrians to cross in safety.

Third, it is obvious that this re-allocation of road space would reduce the speed of motor vehicles thereby incurring a time loss. However, drivers would only be delayed for a few seconds by having to slow down at each of these locations. On typical journeys, this would represent a very small increase in their overall travel time.

Conclusions

At the heart of the matter in this domain of public policy lies the difficulty for decision-makers to consider radical alternatives to the conventional approach. So far they have pandered to the public's addiction to the car and the illusory belief that, where there are problems of congestion, better public transport will deliver the solution to the clear limits on feeding the addiction. They need to be informed by objective evidence of the unsustainability of this process. A strategy on delivering a pedestrian network by converting the existing vehicle network in the way outlined above would not only deliver many of the objectives of transport policy – and at low cost – but also a wide range of social, health and local and global environmental objectives.

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