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Accessibility the First Step

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Source: *Economic and Political Weekly*, Vol. 44, No. 33 (AUGUST 15-21, 2009), pp. 43-51

Published by: Economic and Political Weekly

Stable URL: <https://www.jstor.org/stable/25663446>

Accessed: 23-08-2019 17:55 UTC

REFERENCES

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Urban Transport Policy as if People and the Environment Mattered: Pedestrian Accessibility the First Step

MADHAV G BADAMI

The rapid growth in motor vehicle ownership and activity in India is causing a wide range of serious health, environmental, socio-economic, and resource use impacts, even as it provides mobility to millions, and contributes to employment and the economy. The loss of accessibility for pedestrians is one of the most important of these negative impacts, which remains neglected by policy.

Urban transport planning is fundamentally about moral and political choices – about what kind of cities we want for ourselves and our future generations, whether urban space is primarily for people or motor vehicles, and what we owe each other. While motor vehicles play a vitally important role, as do planning and infrastructure for them, and technological measures to mitigate their impacts, an urban transport policy that focuses on these measures to the exclusion of infrastructure for walking and other non-motorised modes is likely to prove futile, even counter-productive. There is, therefore, an urgent need for an integrated approach that addresses multiple impacts, caters to multiple modes and road users, and is sensitive to the needs, capabilities and constraints in the Indian context.

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Bangalore's roads are falling apart at the seams. With over 33 lakh vehicles on the road and around one thousand vehicles joining in every day, the city's infrastructure simply can't cope. ...It's time we think out of the box to solve Bangalore's traffic nightmare. ...We need elevated roads, MRTS, bypasses, underpasses, flyovers and express highways. We need to think fast, decide fast and build fast before the whole city comes to a complete and grinding halt.

– Unlock Bangalore Campaign, *Times of India* (2008b)

Adding highway lanes to deal with traffic congestion is like loosening your belt to cure obesity.

– Various attributed.

Solvitur Ambulando. Lat., lit. "It is solved by walking."

– Attributed to Diogenes of Sinope, 4th century BCE.

A Rapidly Worsening Problem

The rapid growth in motor vehicle ownership and activity in India is causing a wide range of serious health, environmental, socio-economic, and resource use impacts, even as it provides mobility to millions, and contributes to employment and the economy.

Perhaps the most serious of these impacts in health and welfare terms result from road traffic accidents. Road traffic deaths, which stood at 15,000 in 1971, increased to around 93,000 in 2004. Pedestrians and cyclists, the most vulnerable road users, and two-wheeled motor vehicle users account respectively for 50-67% and a quarter of road fatalities, while car users do so for only around 5% (CIRT 2007; Sundar et al 2007; Mohan 2004). The sad irony is that the road users and modes that are the least responsible for traffic fatalities (and other urban transport impacts) are the most adversely affected. While what attention that this serious problem does get focuses on fatalities, it is estimated that for every traffic death, there are around 20 serious and 70 minor injuries (Gururaj 2008). Tragic as traffic deaths are, traffic injuries are no less so, since they also occur during the most productive phase of life, and economically devastate families for generations. Traffic fatalities, already the ninth, are projected to become the fifth leading cause of death globally by 2030 (WHO 2009). Because of the large and growing number of traffic fatalities, and the considerably larger number of traffic injuries, road accidents are a major – but largely neglected – public health issue. So also, by the way, is traffic noise, which is given virtually no attention at all.

The urban transport impacts that have perhaps attracted the most serious policy attention are congestion and vehicle emissions.

While the newspapers regularly report on traffic congestion, the problem is by no means news to the public; after all, it is an inescapable part of their daily existence. As for vehicle emissions, they contribute significantly to the poor air quality in Indian cities (CPCB 2006; Gertler et al 2001). In Delhi, for example, suspended particulate matter levels have exceeded World Health Organisation (WHO) guideline limits almost daily since the 1990s. Particulates below 10 microns diameter (PM_{10}) levels, which are strongly linked with respiratory and cardio-vascular illnesses and deaths, also exceed the WHO limits, particularly in high traffic areas (CPCB 2006).

The local impacts of motor vehicle activity are of course serious, but there are also important regional and global impacts, in terms of energy consumption and greenhouse gas emissions. Globally, energy consumption has increased more rapidly in road transport since 1971, except for the residential sector since the early 1990s. Transport-related energy consumption has serious security implications, since this sector already consumes around 57% of the world's petroleum, and petroleum demand is growing far more rapidly in this than in other sectors. Lastly, although the OECD countries account for nearly 70% of energy consumption in road transport, the growth over the last three decades has been the most rapid in Asia (IEA 2006). In India, road transport accounts for around half of petroleum consumption, which has very nearly doubled in just the last decade. The gap between production and demand has grown rapidly; consequently, about three-quarters of India's oil requirement is imported. The future is worrisome, given projected trends in motor vehicle and other energy-intensive activities, vulnerability to world oil prices, and the highly limited domestic oil reserves (TERI 2002).

But of all the impacts due to rapidly growing motor vehicle activity, the loss of accessibility, in particular for pedestrians, is likely to be the most important, in terms of its implications for the overall urban transport situation. Again, while there have been reports and articles written in the media about this problem (for example, Badami 2008; Das 2008; Ghosh 2009; *Indian Express* 2009a; Velupillai 2008), and the issue has even been raised in the Lok Sabha, prompting Home Minister, P Chidambaram, to make a statement on it (*Indian Express* 2009b), neither such reports nor road accident statistics, nor the raising of the issue in Parliament are necessary to remind us of what we know from our daily experience, which is that the pedestrian environment in Indian cities is so severely vitiated, that walking, the most natural of human activities, has become an extremely unpleasant, if not a hazardous activity. Indeed, it may be said that in a nation of pedestrians, the pedestrian has been rendered a third class citizen.

The loss of accessibility and other urban transport impacts, which are already serious despite motor vehicle ownership and activity levels that are, notwithstanding the rapid growth in motorisation, significantly lower than those in the OECD, are likely to become even more serious as these levels rise. For example, while India's traffic fatalities are more than twice that on the United States (US), with a fraction of its motor vehicle activity, and per capita traffic fatalities in urban areas are similar in the two countries, this rate (and per capita traffic fatalities nationally) is increasing in India (and other Asian countries), while

declining in the US (and other high-income countries) (Kopits and Cropper 2005; National Crime Records Bureau 2001; Nantulya and Reich 2002).

Road Capacity Addition: Triumph of Hope over Experience

Policymaking related to urban transport has focused predominantly on road infrastructure development and transport system management to accommodate and improve the traffic characteristics of motor vehicles, along with technological measures to mitigate the impacts of motor vehicle activity per vehicle-kilometre, with a particular focus on congestion and air pollution. A recent survey in Bangalore revealed that congestion is the most important public concern, and the poor quality of roads the "No 1 reason...", followed closely by poor traffic management and lack of proper (*sic*) infrastructure like flyovers" (*Times of India* 2008a) for the problem. The former set of measures has comprised road widening, grade-separated intersections (known commonly as flyovers), limited access expressways, synchronised signals, and area traffic control systems (Tiware 2002). For many governments (for example, Government of Andhra Pradesh 2008; Government of Karnataka 2009), the construction of such infrastructure is proof of their commitment to development and modernisation. In the case of the latter government, a recent full-page advertisement proclaiming its achievements boasts of the "widened straight roads, good (*sic*) flyovers and underpasses" – for motor vehicles – in Bangalore.

Urban road infrastructure projects are being implemented at great public expense. For example, Mumbai's 50-odd grade separated intersections, completed about a decade ago, cost nearly Rs 2 crore each, and in Delhi, 30 new grade separated junctions had been approved at the same time, at about Rs 3-30 crore each (Tiware 2002). In Pune, a 5.5 kilometre four-lane elevated highway, projected to cost Rs 195 crore per kilometre, has just been proposed (Patil and Khape 2008).

As for vehicle emissions, a wide range of measures, including increasingly stringent emission and fuel quality standards, inspection and maintenance, the phasing out of old commercial vehicles, and the conversion of auto-rickshaws, taxis and buses to compressed natural gas, have been implemented since the early 1990s (CSE 2002; BIS 2000; Kojima et al 2000). Finally, while the Ministry of Urban Development recently announced an initiative, under the JNNURM, to fund the purchase of 40,000 buses to enhance urban transit capacity, very significant investments are also being devoted to rail-based metro systems. Delhi's metro system, and the one currently being built in Bangalore, cost roughly \$40-45 million (around Rs 200 crore) per kilometre to build (Delhi Metro Rail Corporation 2008; Bangalore Metro Rail Corporation 2008). Several other cities, such as Amritsar and Cochin, are proposing to build metro rail systems to address rapidly growing traffic congestion (Mohan 2008). It is not clear to what extent these massive investments will be cost-effective in relieving congestion – which after all, is a major public concern, and is stated as their primary justification – and other urban transport impacts over the long term. Meanwhile, budgets for the provision of infrastructure and facilities for pedestrians and cyclists have been minuscule.

While both the public and policymakers set great store by road infrastructure development – by way of road widening, flyovers, and highways – as the principal response to traffic congestion, which is seen as the primary urban transport problem, building our way out of this problem is not only very expensive, it is, worse, an exercise in futility, even in resource-rich contexts. Capital and maintenance expenditures on us highways have increased 15% and 19% per annum since the 1970s (as against an annual growth in motor vehicles of 3–4%), and in 2000, amounted to an astounding \$350 million every day (Federal Highway Administration 2000). Notwithstanding this massive investment, congestion has worsened, and is expected to continue to do so, particularly on urban highways (Texas Transportation Institute 2007).

This trend in congestion despite continuous road-building is not surprising – as international experience has shown, while road-building may improve speeds for motor vehicles and ease congestion in the short term, these benefits tend to be neutralised over the longer term, by diverting traffic (from other routes, times, and destinations), and increasing travel in personal motor vehicles, by shifting trips from public transit and other modes, and by causing longer and new vehicle trips (Litman 2007). This becomes a vicious spiral over time, leading to more motor vehicle activity and congestion, and the need to build more roads. The net result is that road-building as a means of addressing congestion is not only futile, it is counter-productive, since it worsens, indeed contributes to, congestion and the other urban transport impacts that it is intended to alleviate. The conclusion reached by the Texas Transportation Institute, based on monitoring traffic congestion over decades in the us, is instructive in this regard:

Additional roadways reduce the rate of increase in congestion. It appears that the growth in facilities has to be at a rate slightly greater than travel growth in order to maintain constant travel times, if additional roads are the only solution used to address mobility concerns. It is also clear, however, that ... there must be a broader set of solutions applied to the problem ...

Neglect and Loss of Pedestrian Accessibility: A Tragedy of Enclosure

On many roads in Indian cities, there are no footpaths (sidewalks), and where they do exist, they are largely unusable, on account of, among other problems, poor design and maintenance, vehicles being parked on them, electrical transformers and junction boxes, uncollected garbage, or encroachment by local businesses and hawkers. Worse, what little existed by way of footpaths are being lost due to road widening and flyovers. Further, there are few if any facilities for pedestrians to cross roads safely and conveniently; where such facilities do exist, they are spaced too far apart, motorists show no concern whatsoever for pedestrians, and the crossing times are often inadequate. This situation is further exacerbated by the long blocks that characterise urban Indian roads, coupled with the hard, often barricaded medians that are increasingly implemented on these roads, for the purpose of ensuring smooth motor vehicle traffic flow (notwithstanding all of this, it is hawkers that are often perceived to be the most important obstacle to pedestrians; see, for example, Venkat 2008).

The cumulative effect of these conditions is to severely compromise accessibility and safety for walking and other non-motorised modes, rendering their use both extremely inconvenient and hazardous. Travel distances and times are greatly increased for pedestrians and cyclists, and since controlled pedestrian crossings are few and far between, they are forced to cross roads wherever they can, often at mid-block, where motor vehicle speeds are very high. It is precisely because of the lack of pedestrian (and cyclist) infrastructure and facilities, and therefore the inability to walk and cycle safely, that such an overwhelming proportion of traffic fatalities is accounted for by these two modes. The sorry plight of pedestrians was brought home most poignantly to me late one evening in Delhi, as I was speeding along in a taxi on Lodhi Road, when the taxi headlights caught a group of pall-bearers dashing across the road towards the crematorium, with a corpse precariously balanced on its bier. A recent example of how urban transport policy and planning is focused exclusively on motor vehicles, without any concern for people, is the largely “signal free” highway linking Yelahanka and the new BIAL airport in Bangalore, on which automobiles travel at speeds considerably above the posted limit, with the result that the highway has become a “death trap” for hapless pedestrians and area residents, with 17 road traffic fatalities and 36 injuries in the first five weeks after the highway was opened (Kurup and Gandhi 2008). There are countless other such examples, perhaps the most egregious of which is the AIIMS interchange in the nation's capital, which is designed as if people on foot did not exist, right in front of the nation's premier medical institution, to which countless patients flock, many of whom have no access to motor vehicles.

The lack of pedestrian accessibility affects all, since everyone, including motor vehicle users, is a pedestrian at some stage of their travel, but groups such as young children, the elderly, and the physically disabled, are particularly disadvantaged, and at serious risk of being hurt or killed in road accidents. While children below the age of 14 account for a third of the Indian population, which gives an indication of their potential exposure to road traffic accidents, the population will also age rapidly, as it begins to stabilise in the coming decades (UN Population Division 2008). But the group most seriously affected by the lack of pedestrian (and cycling) infrastructure and facilities, in terms of time and productivity losses and road safety, may well be the poor, who for the most part have no choice but to walk or cycle, regardless of how arduous it might be to do so. The poor benefit the least from urban transport infrastructure, but are affected the most severely by motor vehicle activity, and the least able to cope with its impacts, which further exacerbate their poverty.

Pernicious Loss

Therefore, while there is a range of negative externalities associated with motor vehicle activity, the loss of pedestrian (and cyclist) accessibility is particularly pernicious, because unlike vehicular traffic congestion, it is a user on non-user externality, which is rendered all the more serious by being caused as a result of discriminatory transport policy and planning. It is pernicious also because it is not merely a matter of time and productivity losses, and increased risk of fatalities and injuries, for pedestrians

(and cyclists), but is directly linked, and is a major contributor to other serious urban transport impacts.

It is because it is so time consuming, if not unsafe, due to the lack of adequate pedestrian facilities, for people to walk even over short distances, that many trips over these distances are by force of circumstance – and needlessly – conducted by motor vehicles, and often converted into longer motorised trips. This is especially true of the elderly, who often need to use a motor vehicle just to cross the road (and if they can neither drive nor walk, they suffer greatly by way of restricted activity, and lost opportunities for social interactions). In the report referred to earlier (Kurup and Gandhi 2008), Manjula, who sold fruit for 18 years along the Bellary Road, is quoted as saying that, as a result of the new highway to the BIAL airport in Bangalore she now thinks of the other side of the road as if it were a different town, and that “people like me cannot cross the road carrying our goods, and have to rely on autorickshaws just to get across”. Also, children are often driven to and from school, because parents are too wary of letting them walk, and because of the shortage of school buses. The largely avoidable use of motor vehicles for short distance trips, which account for a significant proportion of all urban trips, exacerbates congestion, which, in turn, increases vehicle emissions and energy consumption. Indeed, short distance trips are the most polluting per vehicle-kilometre, on account of the constancy of trip-end emissions regardless of trip length.

The increased congestion that results from these avoidable short distance motor vehicle trips renders walking, cycling and public transit even more compromised and unviable than before, further increasing the need for motor vehicle ownership and use, and forcing motor vehicle owners to needlessly drive even for short distances (the low marginal cost and time competitiveness of two-wheeled motor vehicles is crucial in this regard). In short, motor vehicle activity and planning for it to the exclusion of other modes lead to ever more motor vehicle activity and congestion, as people use motor vehicles to protect themselves from other motor vehicle users.

Above and beyond the wide range of urban transport impacts discussed, the loss of accessibility for pedestrians and other non-motorised modes resulting from planning to prioritise motor vehicles compromises health and well-being, degrades the public sphere, and renders social interactions in public spaces, which make for vibrant streets and liveable cities, extremely difficult. Motor vehicles fundamentally alter the way people see themselves, in relation to others and the world around them. In a short story titled “Interurban Queen” by R A Lafferty (1970), a character testifies to their socially destructive power:

Consider the man on horseback, and I have been a man on horseback for most of my life. Well, mostly he is a good man, but there is a change in him as soon as he mounts. Every man on horseback is an arrogant man, however gentle he may be on foot. ... Believe me, young man, the man in the automobile is one thousand times as dangerous. The kindest man in the world assumes an incredible arrogance when he drives an automobile ... I tell you, it will engender absolute selfishness in mankind if the driving of automobiles becomes common. It will breed violence on a scale never seen before. ... It will destroy the sense of neighbourhood and the true sense of nation. It will create giantised cankers of cities, false opulence of suburbs, ruined countryside ... It will make every man a tyrant.

Garrett Hardin, in his influential article “The Tragedy of the Commons”, argued that common property resources are inevitably degraded and depleted to the detriment of all (Hardin 1968). While Hardin was describing a real and important problem, what he was characterising was not so much a tragedy of the commons, for there are many community-governed common property resources that are effectively conserved, but a tragedy of open, unrestricted (and unregulated) access, under which conditions users are motivated only by short-term private benefits and costs, without regard to even their own, let alone society’s, long-term interests. Urban transport infrastructure is in many respects characterised by these conditions, and thus prone to over-exploitation, and excessive negative externalities. But the extent to which common property resources are degraded and depleted, even under these conditions, depends on the mode of use and the technology employed. If urban travel was exclusively by non-motorised modes, for example, the environment would not suffer, and neither would users, relative to one another, since the power to use the resource would be equally shared. The urban transport situation is not merely a tragedy of open access, but a tragedy of *enclosure*, as *The Ecologist* (1993) points out, with the public domain, both in physical and institutional terms, being expropriated for the benefit of personal motor vehicles and the dominant minority that uses them. As more of it is fenced in for their benefit, not only is the public domain degraded, but the vast majority, who do not have access to these vehicles, are fenced out, and made vulnerable, at public expense.

Pedestrian Accessibility:

The Foundation of Urban Transport Policy

An urban transport policy focused predominantly on “growth in facilities”, in terms of road capacity addition to prioritise and improve traffic characteristics for motor vehicles, “at a rate slightly greater than travel growth in order to maintain constant travel times” is likely not merely to be infeasible in the Indian context, given inadequate resources to accommodate even present levels of motor vehicle activity and impacts, and ever growing multiple demands on those resources, but is also highly undesirable, given the high urban densities and poverty levels.

While incomes, and motor vehicle ownership and use are growing rapidly in Indian cities, large sections of their population have low incomes or are poor, and cannot afford even the least expensive motor vehicles, and indeed, even public transit fares (Tiwari 2002). Even in Delhi, the average per capita annual income is roughly Rs 67,000 at current prices (NCTD 2008a). And while there are even now only around 340 personal motor vehicles per thousand people in Delhi (NCTD 2008a; NCTD 2008b), far less than that proportion of Delhi’s population are likely to have access to such vehicles. As much as 45% of Delhi’s population lives in unauthorised colonies, slums and jhuggi-jhopdis (Yamuna Action Plan 2008). Crucially from the urban transport standpoint, the poor in our cities often live cheek by jowl with, and are therefore affected by the travel of wealthier groups. The confluence of rapid urbanisation, and growing incomes and motorisation on the one hand, and poverty (and consequently, low motor vehicle ownership and use) among a significant

proportion of the population on the other, is an important factor contributing to the severity of urban transport impacts.

Under these circumstances, large-scale road infrastructure building to address congestion on an ongoing basis will likely cause considerable social disruption. Thousands of poor families have already been displaced to the periphery because they have been priced out of land markets in the urban core, but also as a result of transport infrastructure projects, with significant adverse implications for their travel-related time and monetary costs, and their ability to access education, health, employment and other essential services, on account of poor accessibility and inadequate public transit provision in the areas to which they have been displaced (Arora and Tiwari 2007; Srinivasan and Rogers 2005; Tiwari 2002). Worse, an urban transport policy that not merely accommodates motor vehicles, but actively discriminates against other modes (increasingly the case in Indian cities), will only exacerbate the already serious access and time loss, and road safety impacts for the users of these modes, and for the urban poor in particular.

While high population densities, intensive mixed use, and low income levels make large-scale road building undesirable, these characteristics lead to short and medium distance trips forming a significant share of urban travel, which, in turn, make walking and other non-motorised modes both possible and necessary. Indeed, the vast majority of trips in Indian cities are made by non-motorised modes and public transit, even as motorisation increases, despite the natural advantages of the urban form having been lost due to rapidly growing motor vehicle activity, and the poor quality of the pedestrian environment and public transit service. The high mode shares for walking characterise not only the small and medium sized cities, but also the metropolitan centres in which average trip distances are much higher. As much as 40% of all trips were conducted within 2.5 km, and walking accounted for 32% of all trips in Delhi, according to the RITES/ORG (1994) survey, despite the city being very large, and the most motorised in India. Walking even now accounts for 21%, and cycling and public transit for 12% and 43%, respectively, of all trips, according to a more recent report (Wilbur Smith Associates 2008). The same report puts the walking mode share in Mumbai, a wealthier city than Delhi, at 27%, but a survey by Baker et al (2005) indicates that this figure could be significantly higher. The walking (and cycling) shares are of course higher among the poor than for the urban population as a whole.

Need for Synergies

The urban transport challenge in India is how to cater for rapidly growing mass mobility needs, while minimising environmental, health and welfare, and socio-economic impacts, and being sensitive to resource constraints and other contextual realities. Given this imperative, it would be desirable for urban transport policy and planning to achieve synergies by simultaneously addressing the wide range of urban transport impacts, and focus on problem avoidance or prevention by minimising motor vehicle activity and the need for it. It is especially important to pay attention to the needs of low-income groups, and the modes on which they depend, even as we plan for motor vehicle activity and apply

technological measures to mitigate its impacts. This is important because of the large shares accounted for by these groups in the population, and by the modes that they rely on in trip-making. Finally, the medium sized cities also require urgent attention since population and motor vehicle growth are at least as rapid, and the ability to deal with it is likely to be far more constrained, in these cities than in the metropolitan centres. Whereas the walking and cycling shares, taken together, are unsurprisingly larger in the medium sized cities than in the metropolitan centres, so are the personal motor vehicle shares, because of significantly lower public transit use; more disconcertingly, the walking mode shares have declined dramatically in the medium sized cities in the last decade (Wilbur Smith Associates 2008).

The achievement of these objectives will call for a wide range of measures including public transit that is reliable, convenient, affordable, and widespread; pricing of road use that internalises, to the greatest extent possible, the social costs of urban transport, and provides incentives for minimising motor vehicle activity; and in view of the foregoing discussion, restoring accessibility for all, and in particular pedestrian accessibility, as the foundation of urban transport policy and planning. It is important to stress that accessibility, which was the natural advantage of Indian cities, needs to be *restored* more than *created*, since it has been destroyed by motor vehicle activity and planning to accommodate it.

Enhancing the delivery of public transit service is vitally important in Indian cities to meet rapidly growing mass mobility needs, because low-income commuters are likely to continue to depend on it for their economic survival, and if it is to have a chance of attracting personal motor vehicle users, thereby curbing motor vehicle activity. Additionally, public transit accounts for lower energy consumption, emissions, fatalities and road space use on a passenger-kilometre basis than personal motorised modes.

Rational Pricing of Land Use

The effectiveness of measures to minimise motor vehicle activity and its adverse impacts depends on, and must be supported by, the rational pricing of road use. While bus rapid transit (BRT) and metro systems would improve the time-competitiveness of public transit, internalising the costs of motor vehicle use would render these systems more attractive by increasing the marginal cost of motor vehicle use relative to transit (note the low marginal cost of two-wheeled motor vehicle use). Also, by restricting motor vehicles to their most highly valued uses, this measure would allow transit to operate more efficiently in mixed traffic. In this regard, one aspect of motor vehicle use that needs serious attention is parking. As long as parking is abundant, and priced low or is free, commuters will have little incentive to consider mass transit, high quality though it may be, and avoid personal motor vehicle use. Parking control and pricing will be difficult to implement, especially for two-wheeled motor vehicles, which can be parked anywhere, but it would help curb motor vehicle activity, free up footpath space to make walking more easy, and serve as a means of funding public transit.

Last but not least, restoring pedestrian accessibility should be the very foundation of urban transport policy and planning, if we are to effectively address the urban transport challenge in India.

Providing infrastructure and facilities for pedestrians (and cyclists) is only logical and fair, given that the majority does not own personal motor vehicles, that a significant proportion of trips are conducted by these modes, and that pedestrians and cyclists, and the urban poor, in particular, bear the brunt of road traffic fatalities and injuries, among other urban transport impacts. But the benefits of this measure would go well beyond those for these groups, and in terms of traffic accidents – making walking and cycling more safe and easy would help reduce short distance motor vehicle trips, which are both the most avoidable and energy consuming and polluting on a per-kilometre basis, thereby contributing to reductions in congestion, energy consumption and emissions with high cost-effectiveness, and to that extent obviating the need for expensive end-of-pipeline technological cures.

Because pedestrians and cyclists are forced to share road space with fast moving motor vehicles, traffic flow is rendered inefficient, severely hampering bus operation and service provision, besides compromising access and safety for the non-motorised modes. Providing segregated facilities for pedestrians and cyclists would not cost much, but would allow all modes, including personal motor vehicles, to operate more efficiently, render bus service more attractive and effective (by improving access to it, and helping improve its operational efficiency), and potentially allow the movement of a significantly higher number of people per hour overall (Tiwari 2002). In this regard, note that pedestrians (and cyclists) use space far more efficiently than personal motor vehicles, even without accounting for parking; a 3.5 metre lane can carry more pedestrians per hour than car users, even when the cars are travelling on an arterial road at a speed considerably higher than the current peak-hour average (Indian Roads Congress 1989 and 1990; Wilbur Smith Associates 2008). Coupled with the advantages of public transit, these benefits are critically important in a context in which transport impacts already overwhelm scarce resources.

Walking and cycling shares are high despite adverse circumstances, but could be higher still. Apart from the large share of short and medium distance trips, to which they are naturally suited, and their highly efficient use of space, these modes are competitive in terms of door to door journey times with motor vehicles and public transit over these distances, if adequate infrastructure and facilities are provided for pedestrians and cyclists, as the European experience shows (Whitelegg 1993). The weather is undoubtedly a factor, but people tend to walk more as well as over longer distances when the quality of the pedestrian environment is improved. “Build it and they will come” is as true of pedestrians (and cyclists) as it is of motor vehicles.

Three-Legged Stool

Enhancing public transit service, rational pricing of road use, and pedestrian accessibility comprise a three-legged stool, with each measure depending on the other two. Improving the attractiveness and effectiveness of public transit, as discussed, depends importantly on ensuring safe and convenient pedestrian access, and curbing personal motor vehicle use, through pricing to increase its marginal cost relative to transit. At the same time,

measures to curb personal motor vehicle use would be politically unacceptable without the provision of convenient and affordable transit options, and safe and easy pedestrian accessibility. Finally, increasing the attractiveness of walking and cycling depends not only on the provision of infrastructure and facilities for these modes, but also on reducing motor vehicle congestion. Because this, in turn, depends on reducing motor vehicle use through pricing, and more effective public transit, one can see how these measures rely on, and reinforce each other.

To urge making pedestrian accessibility the foundation of urban transport policy is not to suggest that personal motor vehicles are not important. They undoubtedly are, for example, when speed is of the essence, or for long distances, or when passengers need to be carried, or, say, late at night. They become problematic when used – or when they have to be used, because viable alternatives are lacking – excessively, especially for trips for which these conditions do not apply. Whereas pedestrians and cyclists are highly vulnerable in a system designed for motor vehicles, the latter can operate efficiently in one that takes the needs of pedestrians and cyclists into account. Besides, while the poor have no choice but to walk (or cycle), not all who do so are poor. Finally, while the provision of infrastructure and facilities for pedestrians and cyclists is important for achieving social justice, it is of great benefit for all, including motor vehicle users.

Pedestrian Accessibility: Overcoming the Barriers

Given the serious and worsening urban transport situation, and the need for, and desirability of pedestrian accessibility, it is tragic that the state of pedestrian infrastructure and facilities is so very poor, hardly any attention is devoted to pedestrian accessibility, and indeed, that non-motorised modes are discriminated against, even as we cater for motor vehicles (the significant reduction in walk shares in medium sized cities and in Delhi in just the last decade should be seen as a warning sign).

To what may one attribute this state of affairs – a lack of awareness of the benefits of pedestrian accessibility, or a lack of political will, or that we do not care about pedestrians and cyclists? It may be argued that decision-makers have what might be called a *car windshield view*, in part because, while those who walk and cycle have no say, those who have a say do not walk. But it is also the case that while there is intense frustration among the public with the rapidly deteriorating urban transport situation, there appears to be a sense of resignation about the inevitability of growth in motor vehicle traffic, coupled with an abiding faith in technological solutions to the problem. This faith, on the part of the media as much as the public, is exemplified by the pleas in the “Unlock Bangalore” campaign quoted in the beginning of this article to address the urban transport problem, defined exclusively in terms of traffic congestion by building more roads.

While the media do carry reports on the plight of pedestrians, they ignore walking and cycling for the most part, and at worst, portray them as obstacles to solving the urban transport problem. When the BRT system was being implemented in Delhi in 2007, it was critiqued (see for example, *Times of India* 2007; *Pioneer* 2007) for, among other reasons, the setting aside of road

space for buses and cyclists, which the writer of the latter article saw as representing “vehicular apartheid” against motor vehicles. Further, s(he) argued:

In the best of times, this stretch is marked by unruly motorists/scooterists and even more unruly pedestrians. Once they are legitimately given the right to scamper across the road, the ensuing chaos can be easily visualised. Presumably, traffic lights will be installed to allow pedestrians to cross, thus further interrupting the flow of all other traffic at intervals of every km or less. Besides, Delhi pedestrians are not the most law-abiding people in the world; they believe it is their fundamental right to amble across a road anywhere, any time, especially if they spot a bus coming their way.

This perversely car windshield view of the world blames the victims, who bear the brunt of urban transport impacts, while contributing the least to them. If pedestrians cross roads wherever they can, it is not because they are “unruly”, but because safe pedestrian crossings are few and far between. And if there is “apartheid” on Indian roads, it is directed at their most vulnerable users, for whose benefit, by the way, the writer considers traffic lights spaced even a kilometre apart to be an excessive hindrance – to motor vehicles.

Sadly, and perhaps most importantly, the bias in favour of personal motor vehicles, and the sense of inevitability in motor vehicle growth, among decision-makers, the public, and the media, is mirrored in (and contributed to by) urban transport planning in India, which focuses mainly on relieving traffic congestion for motor vehicles, while assigning lower importance to, if not ignoring, the non-motorised modes, and urban transport impacts such as accessibility and safety.

Motorisation Not Inevitable

First of all, we must refuse to accept that motorisation is inevitable. For example, the urban car modal share in Sweden is significantly lower than in Canada (The Neptis Foundation 2007), despite similar per capita incomes and motor vehicle ownership, and not dissimilar densities (and average winter temperatures). Interestingly, the significantly lower car use in Sweden is not so much because of higher public transit use (indeed, the public transit share in Canadian cities is higher), but because of significantly higher walking and cycling shares relative to Canada. The key lesson is that public policy does have a vitally important role to play in influencing motor vehicle use, notwithstanding per capita incomes and motor vehicle ownership rates (of course, public policy should also aim to reduce the need to own motor vehicles in the first instance). The tragic irony is that while countries like Sweden and the Netherlands, which have significantly higher income and car ownership levels, provide first class pedestrian and bicycle facilities for their citizens as a matter of enlightened urban transport policy, walking and cycling are considered to be retrograde in a nation characterised by poverty such as India (in response to my urging the promotion of cycling in Indian cities in a seminar last year, a member of my audience suggested that I was advocating going back to “bullock carts”).

But hopefully, things are changing – the National Urban Transport Policy (Government of India 2006) stresses the importance of putting people before motor vehicles in urban transport policy

and planning, and commits to prioritising non-motorised transport. At the same time, large amounts of funds are being made available for urban infrastructure under the JNNURM. One hopes that these funds, and those forthcoming from international funding agencies, will be used strategically to ensure that infrastructure and facilities for pedestrians and cycling are incorporated in urban transport projects. While these funds hold great potential for promoting pedestrian accessibility, it is not at all certain that they will have the desired outcomes, even if they are deployed to that end. Unfortunately, pedestrian infrastructure is often poorly designed and implemented; besides, there appears to be an increasing tendency, in the name of providing pedestrian infrastructure to make inappropriate, and needlessly expensive, technological choices, by way of, for example, pedestrian over-bridges and underpasses. There might indeed be situations in which such facilities may be called for, but what is needed is not a few pedestrian over-bridges or underpasses, which is what would be possible given their very high cost, but for pedestrians (and cyclists) to be able to cross roads conveniently and safely, at grade, across the city, and to make it possible for them to do so at low cost. Apart from the unattractiveness and very limited utility – from the point of view of pedestrians – of a small number of over-bridges and underpasses, there is a more fundamental issue. Underlying such facilities is the assumption that motor vehicle traffic is primary, and something which pedestrians should not disrupt.

The extent to which investments that are intended to promote pedestrian accessibility in fact do so will depend on pertinent codes and practices, and the integrity and competence of public works personnel, but more importantly, on what is understood to constitute, and how investment outcomes are measured in terms of “pedestrian accessibility”. Pedestrian accessibility is achieved not merely by means of good quality footpaths and crosswalks, important as they are, but more generally by enabling people to walk safely, conveniently, and seamlessly, from wherever they might be to wherever they might want to go, at a time of their choosing, at low cost. When understood in this manner, pedestrian accessibility involves a wide range of issues, including street lighting, road drainage, tree cover, modal segregation (by way of, for example, bus bays), traffic and parking management and control, garbage collection and disposal, the design and integration of electric and other utilities, and the provision of public toilets. Beyond this, urban roads need to be designed as public spaces for multiple groups, including pedestrians and cyclists, motor vehicle and transit users, the elderly, the young and the handicapped, and local businesses, including street hawkers – in short, as “complete streets”.

Breaking the Hegemonic Dominance

But perhaps the most important task in confronting the urban transport challenge is to expose and counter the conceptual underpinnings – and thereby break the hegemonic dominance – of conventional urban transport planning, which assumes ever increasing motor vehicle activity, and prioritises motor vehicles by assigning high value to small time savings for them, which, in turn, is used to justify highways designed for high speeds. The

prioritisation of motor vehicles is based on their perceived superiority relative to other modes, in part because overcoming the "friction of distance" is considered to be the essence of the urban transport problem.

In providing for high speeds for motor vehicles, access for other modes becomes severely compromised, because high speed travel requires infrastructure that consumes vast amounts of space, and can be ensured only by limiting access (Whitelegg 1993). As the theologian and historian Ivan Illich observed in his 1974 classic *Energy and Equity* – which by the way demonstrates why public policy should not be left to the professional experts – beyond a certain speed, "motorised vehicles create remoteness which they alone can shrink. They create distances for all and shrink them for only a few." Automobile passengers become "consumers of other people's time" (Illich 1974); indeed, as Whitelegg (1993) stresses, transport and spatial planning for motor vehicles *steal time from (poor and other disadvantaged) groups and reallocate it to (usually) richer groups*. But the substantial time and productivity losses for the disadvantaged groups, including the very large number of pedestrians and cyclists, are not accounted for. Neither is the fact that the projected time savings for motor vehicles are neutralised over the long term due to induced demand, because of the short time frame of analysis. Further, there is no reason why time savings for motor vehicles should always be counted as a societal benefit; indeed, there are many instances – for example, in improving road safety or neighbourhood livability, or conserving fuel – in which time losses may be beneficial (Whitelegg 1993; Goodwin 2004). Lastly, the urban transport problem in India is at least as much about the *friction of motor vehicle activity*, which impedes

(and often endangers) the vast majority who travel on foot by bicycle, or public transit, as it is about the *friction of distance*, the overcoming of which necessitates high speeds.

By assuming (and accommodating) ever increasing motor vehicle use, urban transport planning only serves to make it more inevitable, as Brown and Jacobson (1987) observed, thus becoming a self-fulfilling prophecy. As planning for personal motor vehicles leads to their increased use, the system is designed more and more to suit them; what is worse, the fact that the other modes are becoming increasingly unviable is used as an excuse not to provide for them, which, in turn, makes them even less viable, and makes those who rely on these modes more vulnerable. And the more impacts they create, the more personal motor vehicles are seen as the solution to those impacts, thus becoming self-perpetuating.

As motor vehicles become more and more inevitable, the assumption is that their growing dominance (and the increasing unpopularity of other modes) reflects traveller preferences, which transport policy and planning must cater for. But the growing dominance of motor vehicles (and their assumed superiority) results precisely from the enclosure of the commons to adapt our cities to motor vehicles, as a consequence of which other modes are prevented from performing effectively, and people are forced to use motor vehicles. And the *iatrogenic* nature of transportation planning, that is, its tendency to exacerbate the very problems it purports to address, leads to the need for more expertise, and transportation planning (and planners), like personal motor vehicles themselves, become self-perpetuating. It is in this light that Illich's claim that the transportation industry exercises a *radical*

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monopoly by creating and shaping the need which it alone can satisfy, is profoundly important.

In the end, urban transport planning is fundamentally about moral and political choices – about what kind of cities we want for ourselves and our future generations, whether urban space is primarily for people or motor vehicles, and what we owe each other, especially the disadvantaged. While motor vehicles play a vitally important role, as do planning and infrastructure for them, and technological measures to mitigate their impacts, an urban transport policy that focuses on these measures to the exclusion of planning, infrastructure and facilities for walking and other non-motorised modes is likely to prove futile, even counter-productive, despite great public expense. There is an urgent need in order to effectively address our urban transport

challenge, for an integrated approach that addresses multiple impacts (access loss, road safety, congestion, air pollution, energy consumption, and climate change), caters to multiple modes and road users, and is sensitive to the needs, capabilities and constraints in the Indian context. Such an approach, comprising pedestrian accessibility as the very foundation of urban transport policy, along with quality public transit, pricing of motor vehicle use, and land use-transport integration, would minimise the need for, and curb rapid growth in, motor vehicle activity, allow all modes (including personal motor vehicles) to operate more efficiently, enhance the effectiveness of mass transit, and help achieve an urban transport system that is cost-effective, health promoting, resource conserving, environmentally benign, and socially equitable.

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