

URBAN TRANSPORT GROWTH: THE CHALLENGES AHEAD – THE NEW REALISM AND INSTITUTIONAL CHANGES

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Abstract

The focus of this paper is on urban traffic congestion and car dependency in the city of Kuching, where rapid motorisation in the last thirty years, and the spread of low-density suburban settlement patterns have seriously undermined and diminished the role of public transport and created unacceptable social and physical environmental problems. It explores the issues and challenges in the search for a change; what are the barriers to change - whether people are prepared to change their travel behaviours in the light of the increasing daily congestion situation for a more sustainable transport mode.

The paper starts by looking at the concept of urban transportation: mobility and accessibility and looks at how the demand for cars has shaped our dependency on private transport and its impact on the role of public transport. It explores the versatility of transport in developing countries highlighting the complexity of transport. In trying to address the challenges of the impact caused by high usage of cars, the paper highlights why people like cars in the first place and examine how this habit has become a culture.

The growth of transport from its rickshaw days to the urban traffic congestion in Kuching is now in commonality with many world cities. It critically looks at the change over time and how society has become absorbed with "car fetishism". It scrutinizes how the demand for private vehicles was influenced by land use policy and how this has made change difficult as car consumer has become caught in a cycle of "public transport poverty". The paper highlights bureaucracy and government institutions, aided by responsible for urban traffic congestion. The paper throws light on why car dependency that may soon plunge the city into an eternal urban social and environmental crisis if travel pattern does not change.

As part of the theme of this convention addressing the human dimension in managing the environment, the paper highlights the environmental degradation that results from human faults. It attempts to illustrate how the increased reckless use of cars causes and disrupts communal life and how urban traffic has lowered the quality of life. It also focuses on some of the effects of urban traffic on the environment such as air pollution, global warming and noise and explores some of the health risks particularly from air pollution.

The last part of the paper explores solutions that are practically based, and that would first serve to overcome routine administrative problems by allocating more funds for research purposes. The paper suggests that research and development should be expanded in the transport field to provide support for future land use planning and implementation of good public transport. It strongly invites a rethink on the city's land use policy to ensure that a viable public transportation network is established and more importantly, to initiate and carry out sustainable transport policies which has long been ignored by the Federal administrative apparatus for the State. Because federal administration was found to be associated with a biased implementation of transport policies, the paper argues for an autonomous regional authority with mutually controlled monitoring mechanisms based on a top-down and bottom-up planning approach as critical components for a more sound and honest approach for implementation of transport policy.

1. INTRODUCTION: TRANSPORT

In transport, mobility is defined as the ability to move from place to place and is measured by the number of trips made by a person per day (Vasconcellos, 2001) whilst 'personal mobility' refers to the use of personal transport; a car or a motorcycle or other non-motorised. Mosseley et al (1977) define accessibility as 'mobility for opportunities', that is mobility which allows the person to get to the desired destinations. That is why accessibility is not just the ability to overcome space but the ease with which one reaches destination merit for its own sake. Whilst many journeys are necessary and many of them are too far for walking or cycling, they need to be made with mechanical transport. So very often, in defining the function of transport, the view that transport exists to serve the people's needs is accepted without debate.

There is an emerging trend of thought today that there should be a distinction between mobility and accessibility. For instance, too much attention had been put on mobility when it is accessibility that should be the primary concern, for accessibility is more about the ability to reach employment centres and work places. Mobility is mostly associated with having a vehicle to move along a road. The use of cars by people leads to more traffic and more congestion on the road which affects accessibility. If mobility is emphasized rather than accessibility, the solution is to provide more roads. Vasconcellos' view in his discussion on transport and traffic management is that people's needs should be stressed (Vanconcellos, 1997a). There is therefore a greater need for transport planners to focus more on moving people and goods than on accommodating vehicles. Indeed, such is the current thinking that many transport planners are going further and refocusing their efforts away from a preoccupation with maximising mobility towards a new goal of maximising access.

Compared to developing countries, it is found that in the West, transport planning is about people. In Britain, the Department of Transport and the Road Research Council appear to be the forerunners in carrying out surveys on travel habits/pattern and modal splits (Banister, 1999). Other studies are carried out by academics and government agencies have also proven useful as those illustrated by Bannister (1997), the annual Reports of European Conference of Ministers for Transport (ECMT), Marshall and Bannister (2000), amongst

others. These are not all but it goes to suggest that there is a wealth of empirical data on travelling pattern and habits of people in western countries.

2. UNDERSTANDING THE DEMAND FOR PRIVATE TRANSPORT - THE EMERGENCE OF THE CAR CULTURE:

Most people and even contemporary transport planners would agree that the car is the best available reliable transport for door-to door-service (Elkin et al, 1981; Diestra and Kroon, 1997;). The motor vehicle is also seen as the most efficient way of optimising network performance from an individual point of view given their flexibility (Vanconcellos, 2001p151), as cities are not planned to rely on public transport (Lovelock, 1997, p35).

The use and demand for private cars can first be viewed from an anthropological perspective, in that it is seen as a symbol of power and status (Diekstra and Kroon, 1997; Sheller and Urry, 2000). Such argument finds support in Sheller and Urry's (2000 p729) work which tried to provoke contemporary thinking about car ownership by referring to the higher standards of living of former West Germans who sought after cars as cars provide status to their owners and users through 'sign value which are associated with cars'. It is found out that after the fall of the Berlin wall, such action also helped the former East Germans psychologically as they tried to catch up with the higher standard of living. From the above argument, the definition of car as a symbol of wealth may differ from one geographical location to another and may differ even further when it is viewed from a different culture. However, there may be reasons for challenging the anthropological explanation of car as symbol of wealth. There are places in industrialised countries and even in newly industrialised country such as Malaysia where the motorcar is sought as a matter of necessity to transport family members rather than a show of wealth. Similarly, Cullingworth and Nadin (2002) refer to the rural areas in United States where a car even of lower value is a necessity

Diektra and Kroon (1997) also suggest that cars are considered an extension of the human body, making us more powerful and energetic, and that younger car users particularly seek exhilaration in going fast. That is why car stylists emphasize horizontal lines that proclaim power and speed (Wright and Egan, 2000). Today, the car is probably the dominant culture that sustains a major discovery of what constitutes good life and what is necessary for an appropriate citizen of mobility (Sheller and Urry, 2000). To many people, the car has thus become an irresistible cultural icon that delivers glamour and status.

Diekstra and Kroon (1997) and Sheller and Urry's (2000) views are probably the closest explanation for the people's obsession with cars and the driving force behind people to own and drive thus creating a culture that may be difficult to contain; a culture that in itself may have led to the deterioration of the quality of life if pursued without restraint. Vasconcellos (2001 p157) accuses society of immersing the car deeply in its culture as an ideological being by replacing human beings with cars in people's minds. He justifies his statement by pointing out that pedestrians and motorists no longer see human beings in cars, rather what they see are merely *cars* on streets.

3. IMPACT OF URBANIZATION ON TRANSPORT IN THE THIRD WORLD

While rapid motorisation has caused conditions of urban transport systems in developing countries to deteriorate, it is the high rate of urbanization and related changes to the economic base of settlements that is by far the most influential factor contributing to this deterioration (Dimitirou and Banjo, 1990; Vasconcellos, 2001). Any growth in the city population and density of buildings only add further to the difficulties of traffic and in many cases this situation caused gridlock in cities (Drakakis-Smith, 2003).

Urban population growth thus plays a very important role in determining supply and demand of transport. As towns and cities sizes expand geographically, transport demand will increase proportionately as distances to services and workplace may become more dispersed. There would also be a greater propensity to travel when income had risen (Armstrong-Wright, 1993; Vanconcellos, 2001). This trend is similar to western experiences, until jobs and businesses begun relocating out of cities, urbanizing the suburb in the process (Thompson, 1977; Bannister, 2002; Cullingworth & Nadine, 2003). In most ASEAN countries, employment remains at the heart of the cities; however, in the case of Cairo (Eastman and El-Hawal, 1986) the commercial activities were relocated from the city centre due to serious traffic congestions which had made the city centre unattractive. Experiences in Cairo and Bangkok show most of cities' urban traffic problems are caused by missing links (secondary roads) in the road network that connect with the interior of the city, especially in the downtown area..

It was claimed that urbanization and motorization had occurred concurrently and as cities became larger, they tended to be more affluent and highly dependent on motor vehicles as in Singapore and Kuala Lumpur (Pendakur, 1984). The idea is that there is a neat distinction between those who use public transport and those who travel by private transport. Pendakur's view is not shared by Vasconcellos (2001) whose analysis on Latin American cities showed that there is great disparity and that urbanization need not necessarily mean a city had become affluent. Singapore and Kuala Lumpur are perhaps the only two cities in which affluence could be associated with urbanization. Parnwell (1993) illustrated that Manila became urbanized, but as many as 80% of its inhabitants were poor and had to rely on the cheaper jeepnies for public transport. Nevertheless, any increase in the demand for transport would naturally mean that the onus I on the government public transport facilities and services to be made available.

In urban studies, the concentration of employment opportunities, wealth and the enhancement of development opportunities in urban locations had in way, created a false image of urban areas. These conditions led to a widespread rise in land values, a new way of life that is totally different from those in traditional or indigenous societies (Drakakis-Smith, 2003). This absorption of urban value and 'modern' thinking in developing world countries creates a great impact on the socio-economy and has a bearing on the perception of travel and the need to own a private vehicle as a convenient mode of travel. Structural changes in the economy globally has also benefited and created new jobs in urban areas. Together with new service industries such as the tourist industry, commuter business and tourist traffic, these are cramped together in cities putting pressure on existing infrastructures which were not built for those purposes and to carry those volumes (Drakakis-Smith, 2000); for example

the city of Manila was not designed for 4.5 million people. This had resulted in the lack of spaces for both traffic and pedestrian, causing urban traffic conditions to deteriorate (Thomson, 1977; Hall, 1991) and vehicular movement disorganised.

High motorcycle ownership and use is a phenomenon in poorer cities particularly in Asia, though not consistently so. Motorcycles were able to gain a foothold in the presence of chronic congestion, in the absence of quality public transport systems and with decaying and neglected conditions for pedestrian and cyclists. Motorcycles in poor cities are the forerunner of cars, encouraging urban sprawl and are symptomatic of the failure of government transport planners to provide access and mobility to low and even middle-income people. Although many people own cars in big cities and towns, an even greater proportion of people do not own cars and have to rely on non- motorized modes.

Non-Motorised transport usually refers to walking and cycling (Vasconcellos, 2001); and Elkin et al (1991) suggested that 'walking' should be considered as a mode of transport and is complementary to motorised trips. Roth and Shepard (1984) and Dimitriou (1992) also consider cycle rickshaws and tricycles as a form of non-motorized transport. The analysis of such modes allows a straightforward approach to equity and environmental problems, since these means are the most vulnerable and the most environmental friendly forms of transport in contemporary cities (Vasconcellos, 2001)

Transport experts such as Hillman and Whally (1979) and Vasconcellos, (2001) are also quick to point out that pedestrian traffic had always been excluded from the main discussion of transport and traffic activities. Both experts recommend that it should be considered in any study of transport and traffic management. This suggestion lends credence to the Danish Traffic Study of Copenhagen which emphasises the neglect of pedestrian traffic in most traffic studies (Agency of Environmental Protection, Copenhagen, 1995).

Table 1: Non Motorised and Motorised Vehicle Fleet: Selected Countries in Developing Countries with High Non-Motorised Vehicle Use

City	Non-motorised (%)				Motorised (%)		
	Bicycles	Cycle rickshaws	Animals carts	Total	Buses	Motorcycles	Other motor Vehicles
Phnom Penh	47.1	4.2	0.2	51.5	0.0	43.6	4.9
Hanoi	84.6	0.4	0.0	85.0	0.0	10.8	4.1
Dhaka	10.7	53.3	0.0	64.0	1.3	16.0	18.8
Kanpur (India)	54.7	3.5	0.6	58.8	0.1	18.6	22.4
Shanghai	95.9	1.4		97.3	0.3	0.5	1.9
Surabaya (Indonesia)	40.1	4.6	0.0	44.7	0.3	38.7	16.3
Kuching ¹ (Malaysia)	0.0	0.0	0.0	0.0	0.37	46.2	53.63

Source: Vasconcellos, 2001 (p13) except Kuching

¹ Calculated from 1995 figures, Sarawak Statistical Bulletin 1996, by this researcher (see Table 4.3 Chapter 4)

The use of non-motorised transport shown in Table 1 illustrates the percentage usage of non-motorised and motorised vehicles used in some developing countries. With the exception of Phnom Penh, Surabaya and Kuching, all other cities shown in Table 1 show low usage of motorcycles and all the cities with the exception of Kuching, have low use in other motorised vehicles. Dimitriou and Banjo (1990) suggest that for the low income groups, this is the only other form of mobility that they can afford to own.

It is also shown in the same Table that in most poor cities in developing countries, there is a high use of non-motorised transport (bicycles, cycle rickshaws and even animal carts) (Plate 2.2 and Plate 2.3). In spite of the hostile street environment, theft, and excessive and inappropriate forms of regulation as seen in some Chinese cities, bicycles are widely used in many cities of the developing countries today. In addition, negative social and government attitudes towards this non-motorised form of transport are also responsible for their low status. For example, in Africa, using a bicycle is seen as a sign of poverty (Vasconcellos, 2001); while the mayor of Guangzhou puts it subtly: "Bicycles are a reminder of poverty" (Hilary, 1995).

Table 2: Share of motorized and non motorized vehicles: selected cities in Developing Countries

City	Vehicle Proportion (%)	
	NMV	Motor Vehicles
Shanghai (China)	87.2	12.8
Hanoi (Vietnam)	64.3	35.7
Kanpur (India)	55.7	44.3
Phnom Penh (Cambodia)	52.1	47.9
Dhaka (Bangladesh)	51.8	48.2
Metro Manila (Philippines)	33.8	66.2
Surabaya (Indonesia)	15.6	84.4
Penang (Malaysia)	6.5	93.5
Chiang Mai (Thailand)	2.2	97.8
Kuching ¹ (Malaysia)	0.0	100.0

Source: World Bank, 1995 except Kuching

¹ Statistic Department, Kuching, Sarawak (1995)

Table 2 shows that the share of motorised and non-motorised transport in cities may vary tremendously, from a minimum of 12.8 (Shanghai) to a maximum of 100 (Kuching). However, the high usage of non-motorised and motorised vehicles on the road do not guarantee that they will use a fair and safe division of road space (Vasconcellos, 2001). One of the reasons is because road space is calculated according to the number of vehicles on the road rather than to the number of people using it. It is argued that it was also calculated without any concern for safety of pedestrians and non-motorised traffic (Vasconcellos, 2001). In

developing countries, it is anticipated that the mixed mode of traffic stream will continue to exist and may worsen in several cities because of the use of new vehicles or because of increasing motorisation.

4. CONGESTION AND CAR DEPENDENCY

Traffic congestion today is seen more and more as a major transport problem affecting people who live in urban areas. Transport experts attribute this to automobile dependence' which is prevalent in many cities today. The term 'automobile dependence' refers to a condition of urban areas in which very high use of private cars has become entrenched in both the transport and land use system (Thomson, 1977; Newman and Kenworthy, 1989). In an automobile dependent city, cars dominate transport modes, and have in a sense become 'built in' to the urban fabric when assessed at the scale of the whole metropolitan area. Barter (2001) claims that automobile dependence varies from city to city rather than some absolute state. In its most extreme form, an automobile dependent urban area has most of its travel by private vehicles, extreme dispersal destinations, a very high provision of road capacity, especially expressways, and low spatial densities (Barter, 2001). The word 'dependence' with its connotations of addiction, seems appropriate since the entire system requires vast and apparently ever-increasing amounts of cheap fuel to maintain itself. Furthermore, all forms of non-car oriented transport and urban land use development options appear to have been but cut off in such urban areas.

According to Thomson (1977) the concept of car dependence recognizes that the transport system and the land use system each influences a range of possibilities that are opened to the other important ways. For example, urban environment built up to very high densities (as in Hong Kong and Singapore) cannot be served by transport dominated by private vehicles. Conversely, an urban area with very low densities and in which all its activities are dispersed widely would be extremely difficult or expensive to serve with anything but a large number of private vehicles (Thomson, 1997; Barter 2001). Henser (1998) and Barter (2001) suggest that very low density areas tend to emerge only in the context of very high car ownership.

In Malaysia, the urban areas like Kuala Lumpur, Penang, Johor Bahru, Kuching and Kota Kinablu have begun to be degraded along the path of car dependency as is the case in many cities in western countries.. Many other towns in Malaysia are also beginning to face similar trends, possibly even more since these cities and towns have even lower public transport supply and usage than the Kuala Lumpur metropolitan area (Rasagam, 2001).

Evidence of the car dependence scenario does not simply mean finding evidence of increasing car usage of private vehicle. It requires evidence of 'lock in' and other characteristics of a path of independent of irreversible phenomenon (Newman and Kenworthy, 1989; Barter 2001). Many aspects of built form are long lasting and difficult to change quickly. Land development patterns are therefore a key focus as we question whether an orientation towards private vehicles is becoming locked into urban fabric. The other major focus is the development of other major pieces of transport infrastructure, such as expressways and railways.

Today, high car usage not only creates and exacerbates traffic congestion on urban road networks, but also seriously undermines the role of public transport, which becomes less cost effective and less efficient through falling use and increasing congestion. This in turn causes more people to switch to personal transport as soon as they can afford to, thus contributing to the vicious circle of increasing congestion and pollution, and creating a cycle of diminishing public transport.

Through increased car ownership, household mobility increases as individuals tend to make more journeys than if they had to rely on public transport. The increase in car use generates congestion and can also affect the safety of other, more environmentally friendly modes, such as walking and cycling. (Hillman, 1977a). Several cities with large populations, which have traditionally depended on public transport, cycling and walking are now making more provision for car use. For example, Shanghai plans to reduce its 3 million cyclists by two thirds to provide greater road space for cars, while bicycles and rickshaws are being banned in Jakarta and Delhi, as they are seen to be 'old fashioned'.

5. DEVELOPMENT OF TRANSPORT PROBLEMS IN THIRD WORLD – THE RISE OF THE CAR CULTURE

In developing countries, streets are often more than just channels for transport as they are also active centres for trade and commerce. Very often the streets serve as residents' living room, kitchen or sometimes bedroom and businesses use the street as offices and warehouses (Meier, 1985). Peddlers and tradesmen also ply the street offering varieties of goods and services and some are clearly established at profitable interaction areas. Transportation is perhaps more vital in developing countries in Africa and Southeast Asia than the West where modern communication facilities are notoriously unreliable and where personal contact is all important to all social and business interaction (Girardet, 1996). Personal trips are frequent and often necessary; hence the vehicle must be especially economical, using as few scarce resources as possible and depending primarily on one resource plentiful in the area - human labour (Meier, 1985). There is thus a variety of traffic in the developing countries - animals, pedestrians and vehicles with two, three and four wheels all jockeying for passage through choked thoroughfares. Is it any wonder that traffic is chaotic in cities in developing countries?

In the study of transport policies and the urban structure, social issues and their relationship with motor car dependence, it is argued that the formulation of national plans or development plans often emanate from the public officials whose values are different from those whom they served (Mehmet, 1978). Dimitriou (1992) suggests that those who formulate transport policies in the light of their own values must have a clear understanding of 'development'. From the days when former colonies gained independence to neo-colonialism, the debate amongst policy makers had always hinged upon development. Lipton (1977), Harrison (1978) and Drakakis-Smith (2003) pointed out that generally, in most developing countries, socio-political developments are controlled by the elite groups who happen to be the ones with economic power. As a result, political decisions are heavily weighted on economic needs and development and this can often be interpreted as 'serving the interests of certain particular groups'. In "Why the Poor Stay Poor" Michael Lipton (1977), illustrates the urban

bias in development programmes that had led to tremendous rural-urban drift at the beginning of the 1970s.

Thus, when large cities experience growth and expansion of the economy, modernisation and migration are felt immediately. Intense urban construction and infrastructures are built to convey messages of 'modernisation' (Lipton, 1977) and to accommodate the latest technology - motor-cars. Parnwell (1993) and Drakakis (2003) assert that 'the old influences of Europeanisation and Westernisation' have been replaced by the term 'modernisation'. Modernisation in many ways has become a much more potent and widespread force for development and the private vehicles in the cities became an important sign. It is argued that the availability of cars was only limited to the selected few elites and middle class who facilitated economic policies and enabled them to enjoy prestige (Vasconcellos, 2001). This means that the lifestyle of the elites would heavily influence and lay the foundation of a society that would eventually succumb to car technology in the future.

In trying to understand how people with vested interests in cars tried to influence society, it may be appropriate to view the experiences in Brazilian cities whereby financial arrangements were devised to enable people to 'save for three years' so as to buy cars (Vasconcellos, 2001). Here, land laws were changed to suit the building of middle class apartment complexes in areas where the State made adequate and appropriate traffic provision. The Brazilian experiences could also be seen in other developing countries where policies were directed at a new kind of investment; an exclusive zone for the wealthy with expensive apartment and luxurious facilities – all catering for households with cars.

Sociologically, the large increase in travel was related to the broader economic and urban change that was demonstrated by middle class lifestyle in most developing countries. Before modernisation in the 1960s, the absence or lack of motorcars in the street would inevitably mean that inhabitants in neighbourhoods irrespective of income level would walk to the nearest stores for daily needs or use the modest public transport system that was then available (Alvares, 2001; Banister, 2002). Development and modernisation brought significant changes to the urban lifestyle and demarcated what would be the dividing line between the middle class and the low-income group (Lipton, 1977 and Vasconcellos, 2001). The car has become a powerful tool of expression for the upper income-group and they share the same ethos on urban living as those of the elite who run the country (Lipton, 1977). The car has now become a tool whose use is deeply embedded in the social, political and economic life of the city. Thus, the value and significance of the car is explained by the particular urban, economic and transport policies that are being promoted in developing countries; and these policies shape contemporary spaces in the third world in such a way that they induce the need for cars, thus reducing the role of public transport .

In the context of transport policies in developing countries, the question is whether governments would allow the status quo to continue to exist; parataxis, traditional modes, weak public transport system and increasing private vehicle, all in the face of difficult and increasing deteriorating environment conditions. It should be recognised that private vehicle ownership in developing countries had already passed the stage where few could afford to

buy cars, as there exists throughout developing countries many financial institutions that are very accommodating to potential car-buyers (Consumer Association of Penang, 2001).

6. IDENTIFYING THE PROBLEM - THE OVER DEPENDENCE ON CARS

In the last years of the 20th century, there had been an intense interest and rising concern in the world on transport problems in cities and the search for proper measures towards a better environment and sustainability of transport in the cities. In Malaysia, transport problems were mushrooming in the cities and towns because of conflicting policies. This problem can be seen by the dramatic increase in urban population growth and similar significant increase in motor vehicles in the especially large cities of the third world.

In the 1980s, when car manufacturers in industrialised countries were hit by an economic downturn, international manufacturers pursued an aggressive strategy and approach to marketing their cars. One of these strategies was to enter into agreements to assemble cars in developing countries. For example, Malaysia's agreements with Japanese Giant Mitsubishi enabled the car assembly plant to be built in the industrial hub of the highly urbanized State of Selangor in West Malaysia (Todd, 1986). Since then, PROTON has extended its manufacturing base even though it is thought to be losing to foreign manufacturers. In more recent times, Volkswagen and Audi manufacturers had also opened their plants in Shanghai, seizing the window of opportunity to cater for the 'unmet demand' of post socialist China. BMW's foothold on the huge China's market was spectacular as production hit 300,000 units and all units produced during the second half of 2003 sold within China (BMW news, 2004).

In an international seminar on Sustainable Transport and the Environment held in Kuala Lumpur in April 2000¹, it was noted that third world cities may have enormous problems as a result of multiple interplay of social economic factors and socio-political attributes. Delegates at the symposium were shown evidence of chaotic environmental consequences that would follow if environment issues in transport were to be continued to be treated with little importance. This has some similarity to the statement by Sir Ralph Ellison, Chairman of the Automobile Association in the UK who in 1990 warned that:

'There is a growing realisation that totally unrestrained vehicle owner-ship and use could destroy the lifestyle and freedom of movement that the car had brought' (Cullinworth and Nadin, 2002, p354)

¹: The Conference on 'Sustainable Urban Development in the New Millenium', the 6th International Conference on Pollution in Metropolitan Cities was held in Kuala Lumpur on March 20th-23rd 2000

Any unrestrained use of motor vehicles could spell an end to clean air as predicted by Mishan in the late sixties:

“...One consequence is that the pleasure of strolling along the street is more a memory than a pastime. Lorries, motorcycles and taxis belching fumes, filth and stench, snarling engines and unabating disturbances have compounded to make movement through the city an ordeal for the pedestrian at the same time as the mutual strangulation of the traffic makes it a purgatory for motorists’. (Mishan, 1969 p5-6)

The impact of urban consciousness and the need to modernise had indeed led to policies that help to generate the growth of car ownership. It is equivalent to the American acceptance of the motorcar when it was first mass-produced in 1905 that ‘progress means accepting what is new because it is new’ (Mumford, 1958 p170). In the United States when motorcars had become the accepted form of travel, many people took for granted that other modes of transport might not be required and highway plans were drawn up as if they would be the only form of transportation. Mumford suggested that in so doing Americans have ‘crippled the motorcar, by placing on this single means of transportation the burden of every kind of travel’. He stressed that neither the car nor any motorway could accommodate such loads (Mumford, 1958 p171).

Western experiences such as the impact of cars in urban areas causing grid lock, urban air pollution and extreme visual intrusion have not as yet been fully understood by most developing countries and those countries which had in the last decade been elevated to ‘newly -developed nation’. This include Malaysia. As a result, many cities in developing countries, led by Mexico City – one of the most populous cities in the world with a population of 21 million (Butler, 2003) are crammed with cars and experience daily congestion with tradition transport competing for road spaces (Meier, 1985; Tiwari, 2002).

7. THE INFLUENCE OF THE PROFESSIONALS

What had prompted and fuelled the use of private cars in developing nations like Malaysia? Whilst population, land-use and the search for employment may have played some role, Dimitriou (1992) says decision makers are partly to blame. He emphasises that the practices of ‘predict and provide’ by engineers had created additional problems. This method focuses on ‘growing points’ in intersection and traffic intersection or ‘critical areas’ where engineers applied formulae based on traffic growth relative to the growth capacity that yield critical ratios to justify increased investment (Mishan, 1969; Dimitriou, 1992; Vigar, 1997). Thus ad hoc decisions on building roundabouts, bridges, by-passes, flyovers, underpasses are applied whenever there is traffic congestion (Mishan, 1969; Dimitriou, 1992). Recent statements by politicians in both Sarawak and Sabah are a reflection of this continuous unhealthy practice.

The problem with many engineers is that they had adopted in their professional practice, aims which emphasise the operational aspects of transport systems rather than the system’s contribution to development (Dimitriou and Banjo, 1990). Perceptions of the engineers, being the largest professional group in the urban transport sector carry a lot of weight or influence.

In Third World countries, engineers have an overall influence on development, being an elitist group, with influential and trained technocrats. Some transport professionals remained wedded to engineering solutions based on meeting rather than managing travel demand (Vigar, 1997). For a long time engineers had relied extensively on the theories and techniques of road capacity optimisation, and measures of traffic flow efficiency that was first developed in the West. Such applications were found unsuitable in poor developing countries where mixed traffic is very common (non-motorised and motorised traffic). This pre-occupation and obsession with issues of optimisation have led to problems of congestion (Dimitriou and Banjo, 1990).

Today, the role of the car and roads seems to have been reversed; originally the motor vehicle was designed for roads. However, today they are designed to suit the city. Originally the motor vehicle was fitted into the pace of life; today life has to be adapted to the speed of motor vehicles. It was more likely that engineers had never bothered to ask "What's transportation for?" as these engineers would have taken for granted that transportation exists for the purpose of providing a suitable outlet for the car industry (Lewis Mumford, 1958). Moreover, across the developing world, 'some engineers have become amateur philosophers, politicians and economists proclaiming that people have the right to use their car freely on the road' (Thomson, 1977).

8. FULL MOTORISATION?

In 1995, when the Chief Minister of Sarawak declared open the first flyover at Simpang Tiga in the city of Kuching, he maintained that the flyover and other 'high investment' infrastructure facilities were the order of the day as 'we cannot stop people from buying cars' (Sarawak Tribune, 1995). This statement was a reflection of the city's motoring trend – the rapid increase of car use. By that time, this kind of sentiment had already been echoed by a great number of people throughout the world, proving what Thomson had predicted to be correct "...most governments regard the general desire for car ownership as irresistible" (Thomson, 1977).

It is not difficult to connect the remark made by the Chief Minister of Sarawak in 1995 with a similar remark found in HMSO Document 1946: "Design and Layout of Roads in Built Up Area" as quoted by Plowden (1972): -

"But shall we ever stand such a denial of individual liberty (as a policy of restricting the use of private car in town would represent)? If I am right in my opinion, that the right to use the road, that wonderful emblem of liberty, is deeply ingrained in our history and character, such action will meet with the most stubborn opposition. Our street space and more road space will have to be made provided whatever the plan for it or the cost for it" (Plowden, 1972 p24).

The statement above contain a precept as false as the social situation it perpetuates globally today. Today, there are constant debates in Britain and Western Europe over the use of the car as a mode of travel (Sheller and Urry, 2000). The battle for the environment in cities of western countries are being fought between those who are concerned about the damage

which motoring has caused and the car lobbyists who feel it is the right of the individual who has the power to purchase and drive. This debate can aptly be translated into a battle between private and public rights. This idea of public rights was originally introduced in the United States in 1967 when environment law was first tested and legislated³ (Mishan, 1969 p35). Mishan (1969) argued that the right of an individual can only be judged by the right of the public. Thus if a factory is seen polluting a stream by discharging industrial waste, any individual who is aggrieved by such action could initiate legal action against the factory in question as a member of the public.

A comparison on motorisation and transport policy should be learnt from Britain. In the wake of increase spending and investment on roads, Britain was caught in a conflict between those who wanted to have a quieter environment, lush green suburbs and the government who had to improve the system of road networks in order to generate economic growth (Aldous, 1972; Starkie, 1982; Stoker and Young, 1993; Sheller and Urry, 2000). In Malaysia, the awareness of the impact and damages caused by motorisation is low and the general public, the majority are car owners, seemed content with the continuation of road building programme to accommodate more motor vehicles.

In reality, most third world countries today, national governments are still searching for a viable social and political solution for an equitable transport system as the rise of motorisation presents acute transport problems from a socio-economic and political perspective. Many are in fact executing a 'balancing act'; allowing the masses of the informal sector to carry on whilst the conventional buses run at a loss and at the same time not rejecting the 'car culture' totally. The consequence is the emergence of self-styled 'public transport' ('Van Sapu (Malaysia), 'Fula-fula'(Zaire), 'Dolmus (turkey)', auto rickshaw (New Dehli), 'Bemo" and 'Becak' (Surabaya) etc.. operated by private owners in such countries. Albeit economically justified, their continued operation may contribute to greater traffic congestion in their respective countries (Dimitriou, 1992; Armstrong-Wright, 1993).



Plate 1: A motorised pedicab – similar to the German sedan or 'opelettes' (opelet).
Source: Photo was taken by researcher in Jixian, approx. 90km north-east of Beijing in Sept. 2002

As cities become paralysed with environmental issues, noise and the visual impact there is a strong drive towards sustainability in urban transportation. Private vehicles today have become the main means of travel of urban living not only in the west but also in developing countries. This is seen in some countries where people who could not afford cars turned to innovative ideas to travel on the roads alongside motor vehicles. In the outskirts of Beijing, gives them at least a sense of being part of the traffic system unlike pedestrians on foot. (see Plate 1 above).

9. THE IMPACT OF URBAN TRANSPORT

The most immediate impact of transport and traffic in cities are the visual effect impact. The increase in traffic has caused more open spaces to be used up for carriageways while street pavement is shelved 'to relieve traffic congestion'. As a result social interaction in neighbourhoods and streets has declined and the sense of community amongst inhabitants is lost. In terms of spatial planning, car culture has also caused great changes in land use. It has invited a new kind of consumerism; hypermarkets and out-of-town shopping by which more land areas are taken up for the convenience of customers who drive; others who take public transport and those who walk are left to feel the effects of vehicles and their emissions.

One of the most serious consequences of the growing use of private vehicles is road fatalities from road accidents which are seen as the third most serious health problem. Fatality rates are much higher in developing countries than in industrialised ones due to many factors: from heavy traffic mixed with poor maintenance of the infrastructure and to a lack of provision for pedestrians which results in conflict between them and motorised vehicles over the use of space. accidents are in every measure a cost to society - an externality which results from the action of others; creating a cost to those injured or the relatives of those deceased (Chin, 2003). For example, when a household head is killed or disabled in a road accident, poverty is significantly perpetuated or even increased. Perhaps this may not be as significant in countries where there is an entrenched legal and welfare system to protect victims of road crashes but in most developing countries, fatalities occurring to low income groups represent an almost immediate economic loss.

In the more advanced countries, several measures have been adopted to promote and ensure road safety, and the decline of road fatalities in Western Europe and Britain showed that these measures are succeeding in combating road crashes (Preston, 1997). In Malaysia and in some ASEAN nations, much had been done to reduce fatalities of motorcyclists in particular as motorcyclists represent a high proportion of road users (Road Safety Council and Putra University, 2002). However, the question of reducing road fatalities does not address congestion and the argument raised by proponents for more road improvement seemed misplaced (Bannister, 2002).

Motor vehicles are the single largest contributor of air pollution, and pollutant emission from motor vehicles depends on the type of fuel and the vehicle operating conditions. All pollutants, particularly nitrogen oxide (NO_x) and hydrocarbon and lead are considered a threat because they cause health problems. These include respiratory diseases and loss of

vision, asthma and chronic lung diseases, and severe neurological hazards, especially for children. Particulates can also lead to respiratory problems while CO also causes cardiac problems. Many people, especially those in developing countries are particularly exposed to harmful emissions because of their lifestyle and the way they carry out their economic activities. It is generally thought that the extent of health risks faced by people in developing countries is due to their lack of understanding of the magnitude of the health problem associated with these emissions.

Since the 1980s, the threat of greenhouse gas and carbon dioxide on global warming has led to calls for the reduction of carbon dioxide emission in all countries. Similarly too, the World Health Organisation is concerned about the exceedingly high level of lead and carbon monoxide in countries which show a high fatality rate as a result of these vehicle emissions. Many scientists now believe that world temperature will increase, leading to a rise in sea levels and submergence of coastal plains.

Noise pollution from motor vehicles is less significant in developing countries than in the west even although there are health implications for those who are exposed to extreme conditions. In some European countries, strict regulations protecting the public from unacceptable noise levels have been enforced and this differs significantly from developing countries where noise is almost an acceptable form of daily life.

If congestion is to be reduced, there would inevitably be a reduction in air pollution. Similarly when there is a shift towards public transport, the level of carbon dioxide could be reduced. Even if a special fuel were to be invented that is capable, at a minimum cost, of propelling vehicles without any detrimental atmospheric effect, there would still remain a myriad of transport issues to be tackled such as congestion and the impact of road and the motorways on the local population. Cleaner and quieter cars might even induce more people wanting to drive them and motorists would exacerbate those very congestion pressures, which irrespective of pollution would conspire to make urban growth unsustainable. Citing Kenneth Boulding, Lovelock cautioned that 'we must cease to behave as if we live in a cowboy economy with unlimited new territory to be conquered and resources to be consumed' (Lovelock, 1997, p28).

10. A NEW REALISM: TOWARDS SUSTAINABLE TRANSPORT

Environmental hazards in developing nations are not something that national governments are over eager to improve in view of their ultimate goal of improving the national economy (Porter et al, 2000). Whilst these nations continue to pursue technological advancement, they fail to keep up with the west in matters pertaining to the protection of the environment. One of the reasons is the inability to deal with the increase in traffic congestion in cities leading to the decline of public transport particularly in Southeast Asia (Barter, 2001; Rasagam, 2001; Barter et al. 2003). However, one good example of a radical improvement of a transport problem in the Third World is Bogota. This was when Enrique Pensola became the mayor of Bogota in 1998 and gave back the streets of the city to its inhabitants by restricting car use, providing parks and public spaces, building hundreds of kilometres of cycle paths and footpaths (Hagen, 2003). Sustainable Transport has thus become a reality.

In Western countries, though, a new paradigm for transport planning has emerged to overtake the 'predict and provide' approach (Goodwin, 1991). This new approach arose due to the concerns on 'impact of future roads on the environment, the inability of even massive road building programmes to tackle the rapid increase in traffic and the cost of road construction during a period of tight fiscal restraint' (Vigar, 1997). A key feature of the new realism is the understanding that all the different parts of transport policy have to be in harmony with each other (Goodwin et al, 1991). Nearly all Malaysian cities and towns, as well as most countries in developing countries particularly those in Asia and Africa have lagged behind in finding solutions to tackle the increase in car ownership and car use. An example of such a city is Kuching in Malaysia. There is now a growing view that transport planners have been over-emphasising car use and large-scale infrastructural projects at the expenses of cycling and lower cost public transport projects. Cities are increasingly re-orientating the goals of their transport policies (Cervero, 1998).

Following an awareness of a new paradigm, a 'new realism' in transport planning (Goodwin et al, 1991), many transport planners are refocusing their efforts away from the preoccupation with maximising mobility towards the goal of maximising accessibility. Vigar et al (2000 p 11) argue that this concept is centred on the demand management principle and which involves replacing the 'predict and provide' approach. However, in developing cities such as Kuching, engineers tend to cling to the idea that 'transport issues should be handled by engineers' and they also have a strong influence on ministers and political masters with regard to roads and infrastructural projects, particularly as these politicians need to 'maintain long standing commitments to particular road schemes' (Vigar, 1997 p183). There is therefore a need to restructure and reorganize the institutions and management structure in order to break out of the 'predict and provide' approach as such agencies or organizations often play a lead role in the implementation of a public transport policy which defines the role of public transport in the city (Barter, 2001).

Let us turn now to a city in Malaysia. One of the key issues in Kuching with regard to institutional problems relevant to urban transport planning is the lack of co-operation, inadequate and conflicting knowledge and lack of agreement over the nature of the problem (Cox et al, 1997; Vigar et al, 2000). It is acknowledged that co-operation between the traditional professions i.e. the engineers of the local authorities and the Public Roads Department and planners have never been close. In Britain, Vigar et al (2000) suggest that in the UK 'the traditional planning – engineer divide is being broken down...' In Kuching and in Malaysia generally, the divide has become a thorn in the flesh' as engineers tend to stick to their engineering solutions to solve traffic congestion. This is why there are numerous urban elevated expressways and flyovers in Kuala Lumpur (Bunnell et al, 2002); and in Kuching, engineers still advocate flyovers as the solution to solve urban congestion².

²: The third flyover at Mile 3, Kuching which begun in 2001 was completed in July 2004; relieving only congestion at Mile 3 roundabout but creating a bottleneck further down the road where there are traffic junctions. More recently Global Link announced that it was awarded a flyover to relief congestion at the Statutory Gyratory/Roundabout.

What needs to be done to ensure delivery of sound and sustainable (public) transport policies (Ciaburro and Haigh (1994).

In his analysis of the problem facing public transport in the Klang Valley, Barter (2001) argued that there should be a restructuring of institutions involved in transport planning. The British experience of the West Midlands and Newcastle suggests that the only way to revamp outdated thinking and ensure co-operation amongst people at different levels involved in the planning of urban transport is through dialogue, meetings, workshops and seminars (Vigar et al, 2000). Vigar et al (2000) also stress the need for an awareness of transport sustainability by stakeholders and policy makers to ensure the success of new policies. He emphasised that this will create a **'cultural community'** which have common interests and goals. Without shared objectives and similar goals, it is not likely that stakeholders and bus operators can achieve success in urban public transport.

Thus a vital prerequisite for this new idea is to break down deeply embedded ideas of the 'predict and provide' mentality amongst transport planners and policy makers. It is important to have shared concerns and thinking regarding sustainable transport policy which can lead to some level of success for public transport (Goodwin, 1991). The need to listen to alternative voices in the transport planning process is one way to overcome the 'wide screen view' of transport by many urban transport decision-makers who are known to have little experience in using public transport as adults (Dimitriou, 1992; Vasconcellos, 2000). In addition, the delivery of new policies depends on networking with user communities upon the maintenance of dialogues with the general public, and on configuring the social relationship of transport planning rather than the technical issues of 'predict and provide'. Practices in most European countries have shown that involvement by the public can be constructive and can make public policies more likely to be well considered by the public and be enforceable (ECMT, 2002).

Perhaps experience of a paradigm shift in transport planning can be drawn from Sibu, the second largest town in Sarawak where the mayor and town councillors of Sibu Municipal Council voted to introduce a better pedestrian network as the first step toward keeping traffic out of the town centre. The aim in that congested town was also to provide more pedestrian networks in the town to link to the town's bus terminal so as to encourage the use of public transport. With the expert advice of transport planners, they were able to improve traffic circulation, giving more spaces for cyclists and pedestrians in the congested town. A lesson should be learnt from this town; although it is not a high profile project, the idea behind the scheme is also to reduce traffic in town and to encourage cycling (cycling is very common among the low income group). Lessons too could be learnt from Britain and Western Europe where realistic ideas and policies to tackle urban transport problems is being practised (Goodwin, 1997; Vigar, 2000; Barter 2001). This is perhaps one of the best examples of how realistic policies can be tested with radical institutional changes, without which sustainable transport policies cannot be delivered.

11. DECENTRALIZATION OF AUTHORITY

In Malaysia as in the United Kingdom, the responsibility for financial allocation to regional authorities or local authorities lies with the central government (Laws of Malaysia, 1997; Vigar et al, 2000). In Malaysia, the improvement of the public transport system can only be carried out with central government's approval since the Transport Ministry holds absolute power over transport planning (Laws of Malaysia, 1997). However it is recommended that in order to have a successful transport policy in Kuching powers and responsibility for urban transport and environmental management, should be decentralization (Vasconcellos, 2001; ECMT, 2003).

Ideally, transport matters should be controlled and monitored by the two local authorities of the city. However since neither are empowered with (town) planning powers (State Planning Authority Manual, 1997), it is difficult to expect them to function effectively in transport planning. As transport matters are a federal listed responsibility under the Constitution of Malaysia (Laws of Sarawak, 1958; Laws of Malaysia, 1997), the only way is to delegate power to the State to handle transport matters in urban areas. Experiences in European countries have revealed that where problems in decentralization of powers are encountered, there is an inability to carry out public transport programmes (ECMT, 2003).

It has been argued that it is only through the delegation of powers to the State vis-a-vis federal-state relations that the eventual financing of public transport in the city could be achieved (Barter, 2001). However, even if there are 'devolved' powers, problems regarding financial allocation may still be encountered. Experiences in Newcastle, UK, show that while trying to achieve realistic goals and objectives in achieving sustainable transport, the local authority has found that funds from Westminster are not always readily available to implement sustainable policies (Vigar et al, 2000).

With reference to Sarawak, it is timely that one of the changes which should be made in Kuching City is to introduce a *new authority* to manage transport matters; an authority that would focus on the concept of the new realism as expounded by Goodwin et al (1991 and highlighted in Vigar et al (2000). A creation of an authority empowered to undertake the role as an urban transport authority is more appropriate as weaknesses experienced by the present management structure suggest that for public transport agendas and programmes to be prioritised and effective in the city, a new course of action is the only viable solution. The application of 'new realism' in transport planning may perhaps be an answer to the present untidy institutional structure involved in the city's urban transport.

12. ROLE OF A NEW AUTHORITY IN URBAN TRANSPORT

It is proposed that the new authority to be created should be a permanent body with full time staff and financial resources and would be entrusted with the sole responsibility for urban transportation and traffic planning in Kuching. It is suggested that since such decentralised authority for transport has never been created in the State of Sarawak or even in the country before, experienced staff may need to be sourced from outside the country in the preliminary stages. This means that it may be necessary to source transport experts from foreign countries well-qualified in the field of public transport to 'educate' staff who may be drawn

from existing government bodies (as is always the case in developing countries). Such an arrangement was experienced in Sustainable Urban Development Projects undertaken by the Natural Resources and Environmental Board of Sarawak. In that project, Danish experts from the Danish Corporation for Environment and Development (DANCED) were involved in training local government officers in the Inter Coastal Zone Management (ICZM) project in Sarawak's third largest town, Miri, and in a Sustainable Urban Development Project on Water Quality Studies in Kuching (Chong et al, 2000).

It is perhaps easier to change the attitudes of people or staff who have been specially picked from various government (stakeholder) bodies, if the role of the proposed authority has been clearly defined and it has a clear mandate to coordinate other players in urban transportation, traffic and related matters. It is therefore crucial to select serving officers/staff who have the skills and are competent in work related to public transport and the environment in order to move forward both in the public sector and beyond (Vigar et al, 2001). However, Adam (1981) suggests, policy makers who enjoy drive often makes bad policy decision for public transport. In addition, officers/staff who are drafted or 'head-hunted' to work particularly on public transport policy matters may also have problems initially to convince and find support from other organisations such as the business community or business associations, on sustainable transport policies that are intended to improve public transport. Vigar et al (2000) also points out in a case study of Tyne and Wear, UK. where problems persisted in the initial period, particularly in terms of getting bureaucrats and policy makers who sit in steering committees to show a commitment to realistic urban public transport policies.

It is suggested that the new transport agency should have defined roles and broad powers structured as the existing Land Transport Authority in Singapore. In Singapore, this includes motoring (issue of driving licences, certificate of entitlement, road tax etc); electronic development application (car parks) and electronic road pricing, public transport (bus transport and MRT), and Traffic Intelligence Management (the provision of one-stop comprehensive real time information for travellers to make travel decisions) (Pang, 1993; Land Transport Authority, Singapore). This means that the proposed authority will have responsibility over all land transport matters making it a state responsibility to act on the improvement of public transport.

The proposal for a new authority will require federal approval and could be formalized if the Ministry of Transport delegates the authority to the State Government. According to the Constitution and laws of Malaysia (Laws of Malaysia, 1997), the question of transfer of power i.e. decentralization, from federal to the state requires parliamentary approval. The transfer of powers from federal to the state government may take three forms; executive delegation; legislative delegation and administrative delegation as in the United Kingdom's devolution system (Pilkington, 2002). In the case of the creation of an authority for urban transport, all three forms of 'devolution or decentralisation of powers are required. It will provide the State Government with a legal and financial framework to deal with urban transport issues. Decentralization of powers is seen as an important factor in delivering transport policies as the central authority is seen to be unable to deal with local transport issues (Barter, 2001: Rasagam, 2001). It is recommended that this authority should be permitted to exercise full

discretion on matters pertaining to transport policies; meaning that federal policies could be challenged if they are found to be unsustainable’.

13. BARRIERS TO SUCCESSFUL IMPLEMENTATION OF POLICIES

It is evident that there is a ‘cultural mountain to climb’ in order to achieve success in reducing traffic in the city. The main barrier to achieve success is the ‘credibility gap’ between the policy ideas that exist in the minds of members of government committees in charge of transport, senior serving government officers and the public. Secondly, the local authority may not have the resources and capacity to deal effectively with the task entrusted to them, particularly at dealing with the public. Thus, in order to be successful in implementing new policy initiative, there is a need to rethink how to involve the public in transport policy making (Vigar et al, 2000).

In order for any transport authority to succeed in solving transport problems, it has to recognize that research on transport problems needs to be carried out in the city. Yet there is a limited amount of research that can be done due to the prevailing constraints in the city or the State. Amongst the constraints are, shortages of technically adept human resources in this area; shortage of funding for transport matters, lack of data for transport, and the difficulties in prioritizing the research to be carried to meet the needs of the city.

There is a need for a wider debate over transport policy in Sarawak in general and Kuching in particular, which focuses on the larger question of what kind of city they want for the future. Their decisions on transport will have a major impact on the sustainability of the city and it could mean better access to services in the city. In the final analysis, the decision lies with the inhabitants of the city. City residents do have a choice and do not have to follow their current trend towards car dependence if they do not want to. Survey results carried out in the past indicate that people want to have a choice of transport models; and may be prepared to leave the car for public transport. There is a general agreement that tackling congestion should be the priority and it should not involve road construction but as Vigar et al (2000) say, ‘in terms of changing their own behaviour, the public is far from ready for that sort of change...’

References:

Adams, John (1984), *Transport Planning: Visions & Practice*, Routledge and Kegan Paul Ltd.: London.

Aldous, Tony (1972), *Battle for the Environment*, Fontana: Glasgow

Alvares, Claude, (2001), “Sustainable Transport Issues and Challenges in Malaysia”– paper presented during Consumers’ Association of Penang national seminar on “*Changing Direction – Towards Sustainable Transport in Malaysia*”, 7 –10 September 2001, RECSAM, Penang, Malaysia

- Armstrong-Wright, Alan (1993), *Public Transport in the Third World*, London: HMSO
- Banister, David (1997), Reducing the Need to Travel, *Environment and Planning B: Planning and Design*, Vol 24, Pion Ltd. London 437 -449
- Banister, David (1999), Planning More to Travel Less: Land Use and Transport, *Town Planning Review*, Vol. 70, 1999, Liverpool University Press, Liverpool p313 -338
- Banister, David (2002) *Transport Planning* (2nd ed), Transport, Development and Sustainability Series, Spon Press: London and New York
- Barter, Paul (2001) Transport Choices for Malaysian Cities and Towns – paper presented during Consumers' Association of Penang National Seminar on “*Changing Direction – Towards Sustainable Transport in Malaysia*”, 7 –10 September 2001, RECSAM, Penang, Malaysia
- Cervero, Robert (1998), *The Transit Metropolis: A Global Enquiry*, Island Press: Washington D.C. and Covelo, California
- Chin, H.C. (2003), The Cost of Traffic Accidents in Singapore, Paper presented at the *Ninth International Conference on Urban Transport 2003: Urban Transport and the Environment in the 21st Century*, Organised by Wessex Institute of Technology, UK., on 10-12th March 2003 Capsis Beach Hotel, Crete, Greece
- Cox Partnership, Shankland, in Association with Coopers & Lybrand Associates Pte. Ltd. and Malaysia International Consultant Pte. Ltd.* (1974), Kuching Urban and Sub-Regional Study, Vol. 1 – Strategy and Structure Plan Kuching, Sarawak State Government, Dec. 1974
- Cullingworth, J.B. and Nadin, V. (1994), *Town & Country Planning in Britain* London: Routledge
- Diekstra, René and Kroon, Martin (1997), Cars and Behaviour: Psychological Barriers to Car Restraint and Sustainable Urban Transport in Tolley, Rodney (ed) (1997) *The Greening of Urban Transport*, John Wiley & Sons; London p147-157
- Dimitrou, Harry.T. (1992), *Urban Transport Planning: A Development Approach*, London & New York: Routledge
- Dimitrou, Harry T. Assisted by Banjo, George A (1990), *Transport Planning for Third World Cities*, Anthony Rowe Ltd.: Chippenham, Wiltshire
- Drakakis-Smith, David (2003), *Third World Cities: Introduction to Development Series*, Routledge: New York (2nd. Ed.)

- Eastman C.R. and El-Hawal (1986), Development of Traffic Management Policies in Cairo in Urban and Passenger Transport in Developing Countries, *PTRC 14th Summer Annual meeting (July 1986) Proceeding of Seminar*, London: PTRC Education & Research Services Ltd.
- Elkin, Tim; McLaren, Duncan and Hillman, Mayer (1991) *Reviving Cities -Towards Sustainable Urban Development*, Friends of the Earth: London
- Girardet, Herbert (1996), *Cities: New Direction for Sustainable Living*, Giala Books Ltd.: London
- Goodwin, Phil.; Hallett, Sharon; Kenny, Francesca and Stokes, Gordon (1991), *Transport - The New Realism*, Transport Studies Unit, Univ. of Oxford
- Hagen, Jonas (2003), Bogota: Sustainable Transport and Car Free, United Nations Chronicle on line *edition*
http://org/Pub/chronicle/2003/webArticles/022603_carfreedays.html
 accessed on 10.10.2004
- Hall, Peter (1991), Transport in World Cities: Overview, *Built Environment*, Vol. 17 No. 2 , Oxford: Alexandrine Press, p 87 – 91
- Harrison, Roy. M. (2001), 'Important Air Pollutants and Their Chemical Analysis' in Harrison, Roy, M.(ed.) 4th Edition, *Air Pollution: Sources, Concentration and Measurements*, Royal Society of Chemistry: Cambridge p.169-192
- Hensher, David (1998), The Imbalance between Car and Public Transport Use in Urban Australia: Why does it exists? *Transport Policy*, Vol. 5, 1998, Elsevier Science Ltd. :Uk
- Hillman, Meyer (1977a), Cycling as the Most Realistic Substitute for Car Use in Urban Areas: Burying the Conventional Myth of Public Transport in Tolley, Rodney (ed) (1997) *The Greening of Urban Transport*, John Wiley & Sons : London p100-111
- Hillman, Meyer and Whalley, Anne (1979) *Walking is Transport*, Policy Studies Institute, No XLV, No. 583, September 1979, Policy Studies Institute: London
- Lipton, Michael (1977), *Why Poor People Stay Poor: A Study of Urban Bias in World Development*, Temple Smith: London
- Lovelock, James (1997), Sustainable Cities in Gumuchdjan, in Philip (ed) (1997) *Cities For A Small Planet-Richard Rogers*, Faber and Faber: London P.25-64
- Marshall, S. and Bannister, D. (2000), Travel Reduction Strategies: Intentions and Outcome, *Transportation Research Part A: Policy and Practice*, Vol. 34A, No. 5 June 2000, Pergamon Press: Britain.

- Mehmet, Ozay (1978), *Economic Planning and Social Justice in Developing Countries*, Croom Helm: London
- Meier, A (1985), Becaks, Bemos, Lambros and Productive Pandemonium in Bromley, Ray (ed), *Planning for Small Enterprise in Third World Cities*, Pergamon Press: UK p.27-35
- Mishan, E.J. (1969), *Growth: The Price We Pay*, Penguin: Harmondworth:
- Moseley, M.J.' Harman R.G..' Cole, O.B. and Spencer, M.B. (1977), *Rural Transport and accessibility*, University of EastAnglia, UK
- Mumford, Lewis (1958), The Highway and the City in Anderson, Walt (ed.) (1970), *Politics and Environment*, Goodyear Publishing Co. Inc.: Pacific Palesades, California p.169-168
- Newman, P.W.G. and Kenworthy J. (1989), *Cities and Car Dependence: An International Sourcebook*, Gower: Aldershot
- Pendakur, V. Setty (1984), *Urban Transport in ASEAN*, ASEAN Economic Research Unit, Research Notes and Discussion Paper No. 43, Institute of Southeast Asian Studies: Singapore
- Preston, Barbara (1997), Safety of Walking and Cycling in Different Countries in Trolley, Rodney (ed.), *The Greening of Urban Transport (2n Edition)*, John Wiley & Sons: London & New York p38-51
- Sheller, Mimi and Urry, John (2000), The Car and the City, *International Journal of Urban and Regional Research*, Vol. 24, 4 Dec. 2000, Blackwell Publisher: Malden, Ma & Oxford p737 – 757
- Starkie, David (1982), *The Motorway Age: Road and Traffic: Policies in Post War Britain*, Pergamon London::
- Thomson, J.M (1977), *Great Cities and their Traffic*, Penguin Book: Hammond -worth:
- Vasconcellos, Eduardo A. (2001), *Urban Transport: Environment and Equity (The Case for Developing Countries)*, London: Earthscan Publication
- Vigar, Geoff (1997), Implementing a 'New Realism Transport Planning', *Town and Country Planning*, June 1997 p182-184