

Tackling the urban mobility challenge

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The motor car has transformed lives around the globe by providing affordable and rapid personal transport to the masses. But its success has come at a cost in terms of congestion, pollution and impact on the planet. City planners must now focus their efforts on more sustainable transport solutions to create environmentally-friendly, liveable, and attractive places for our growing and increasingly urbanised populations to live and work in.

Our love affair with the motor car began more than a century ago with its invention in the late 19th Century. With continuous technological advances, there has been a global revolution in personal mobility, allowing for door-to-door trips to be made with increasing speed, reliability, comfort, and safety.

Fast forward to the 21st Century, with rising global population that is becoming more affluent and urbanised, the aspiration of car and motorcycle ownership is now within reach of the masses. It is increasingly clear that such ownership, with its sophistication, convenience and practicality has become a victim of its own success with congestions, delays and pollution in most cities.

City planners and engineers have wrestled with the problem over the decades to meet the insatiable demands for personal motorised transport.

But, overwhelmed by the sheer volume of vehicular traffic, we now realise that the once life-

transforming motor car is simply no longer a sustainable solution for the world's cities. As renowned urban designer Lewis Mumford once put it: "Cities are built for the care and culture of men, not for the constant passage of motor vehicles."

So what went wrong? _

First, it was the belief that we could always build our way out of congestion with massive road projects. We now understand that this is not the case. No city has ever succeeded in doing so and there is a wealth of research that demonstrates how road construction and improvement actually generates more traffic that further adds to congestion.

Second, it was the laissez-faire attitude of allowing market forces and public preference dictate our design and policy decisions. Instead of pushing for investment in mass transport as the preferred mode of transport, the private car has been allowed to

dominate public infrastructure investment decisions, leaving public transport playing second fiddle in most cities.

A consequence of this road dominant investment strategy has been the significant impact on the economy of congested cities. Road congestion costs time, thus reducing productivity. As well as affecting private vehicles and buses, it also impacts freight vehicles (which account for some 20% to 30% of traffic on the roads) thereby increasing costs and reducing efficiency.

Furthermore, the uncontrolled use of fossil-fuelled private vehicles producing about 20% of the greenhouse gases contributes to global warming. Road accident fatalities account for about 1.2 million in the world. The cost of congestion arising from unchecked growth in car population in terms of lost man-hours, accidents and pollution amount to a staggering figure.

Is there a way out of this predicament? _

There are a number of possible solutions to the road problems plaguing cities around the world - many of which Singapore had adopted over the past four decades.

At the heart of these solutions is a realisation that the urban traveller is really only interested in three things:

- to travel safely;
- in the shortest travel time and;
- at the lowest travel cost.

Although each on its own is a very simple concept, yet as we have found in Singapore, they are not easily achieved without appropriate investment in planning, design and operations.

That means embracing the urban mobility challenge as a fundamental part of the holistic town planning process. It means understanding and accepting that every decision on the land use made by a town planner has an impact on the city's transport system - an impact that must be addressed to enable people to move from one place to another to carry on their activities in safety, in time and at an affordable cost.

Public transport to maximize the efficiency of space_

Clearly investment in better, modern public transport is the obvious place to start when it comes to tackling a city's congestion problem and maximising the use of precious surface space. While a car with four passengers is an efficient vehicle, in most cities the average car carries only around 1.5 people, resulting in a wasteful use of the road space.

Compare this to a bus, which carries typically between 60 and 120 passengers. It clearly makes sense from a road space perspective to prioritise and invest in providing buses on the road network.

The next logical step obviously is to invest in urban rail systems. With each train cabin capable of carrying around 250 passengers, there are huge gains on offer from the perspective of maximising the efficiency of the available road space.

Encouraging personal transport_

However, there are cheaper alternatives when it comes to maximising the use of road space such as walking and cycling, both of which can easily be overlooked when it comes to planning urban mobility strategies.

The bicycle is a popular, healthy and non-polluting mode of transport that is now making a comeback as a reliable and cheap means to navigate the city, having been eclipsed by motorised vehicles for decades.

Addressing safety concerns of cyclists having to mingle with larger motor vehicles is the critical factor, and has prompted city authorities around the world to invest in segregated infrastructure for cyclists, and so encourage their greater usage.

The idea of establishing a network of well signposted, safe, and prioritised routes for cyclists can also be applied to encourage more pedestrians in cities. Making people feel safe and comfortable to walk short journeys rather than use taxis or buses, it

reduces congestion and frees capacity on the public transport system.

Demand Management_

Another part of the road congestion reduction equation is to manage demand for travel by rationing or prioritising road space during the rush hour.

For example, allowing only high occupancy vehicles, such as cars and buses to use the city roads during the rush hour has demonstrated that behaviour can be changed, with people incentivised to either form car pools or take the bus to work.

Other ideas to regulate flow include permits that allow only specific vehicles – perhaps chosen by vehicle registration number - to use the city roads on any day or the use of bans on freight deliveries outside certain hours.

More controversial is the use of congestion charges or high car city centre parking charges. Both have been very effective in terms of regulating car use and also in generating revenue to plough back into the public transport systems. However, there are clear political risks from imposing such unpopular policies and this has prevented many local authorities from embracing the idea.

Finally, given that the majority of road traffic congestion in cities is seen during the daily tidal flow to work in the mornings and home again in the evenings, many city authorities are now encouraging the staggering of work hours and the use of flexi-time working. And of course, with the advent of technology in our daily lives, telecommuting could ultimately reduce all need for travel to work.

Technology to transform door-to-door transport_

The private hire market has been transformed by online services such as Uber and Grab which have entered the market to complement the existing public transport services and provide convenient on-demand transport.

The use of apps to enable simple, cost effective booking and use of private hire vehicles have transformed the customer experience of the taxi and

private hire cars. The logical next step in this service is the introduction of autonomous driverless vehicles capable of safely and efficiently transporting passengers from door-to-door on demand.

Conclusion_

The answer to the urban mobility challenge lies in first understanding the needs of the transport user. Only then can we provide efficient service options that provide realistic, convenient, and affordable alternatives to the private car.

It is clear that no single solution holds the key to the congestion problems faced by cities. Instead, we must tackle the issues on multiple fronts, ensuring that the differing needs of travellers are addressed so as to create a genuinely sustainable transport future for modern cities.

Ultimately, by investing in public transport and non-motorised transport, and demand management measures to control the inefficient and widespread use of the private vehicle, cities will be able to reduce congestion, boost productivity and free the space currently devoted to road transport. As a result, we will be able to focus our urban design efforts away from the demands of the motor car, and towards the needs of people to create an environmentally friendly, liveable, and attractive place for everyone to live and work.