Shared Space Design for Urban Mobility

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In conventional road designs, vehicles are given priority to ensure fast movement on the road. To achieve this, we have a clear demarcation between the space for vehicles and the space for pedestrians so that roads will be free of "obstacles", allowing vehicles to move at the fastest speed possible.

While this may be the case for highways and expressways where the intention is fast mobility, it may not be so for roads in commercial or residential areas where the objective is accessibility. In these areas, there is a larger percentage of vulnerable road users, such as pedestrians and cyclists, to whom greater priority should be given.

In recent years, such awareness has been increasing with more attention being paid to the new-yet-old concept of "shared space" or "shared zone". This is an urban design concept where traditional traffic management systems (traffic lights, road signs, road markings and other conventional traffic elements) are removed, forcing vehicles and pedestrians to share the same road space (Hamilton-Baillie, B., 2008). The concept was first introduced in the 1970s by a Dutch traffic engineer, Mr. Hans Monderman (1945-2008), in the Netherlands (Project for Public Spaces, 2009). He thought that accident risks would be higher if there were more traffic management counter-measure strategies. However, by implementing shared space, individuals were empowered to take responsibility for their own behaviour and this would eventually reduce the number of accidents.

This happens when the awareness of risk to oneself or others means road users would be more alert and behave better when using the road space. Figure 1 shows an example of shared space street in United Kingdom.

Figure 1: Shared Road Space in New Road, Brighton, UK (Source: University of Greenwich, London, 2017)

DESIGN PRINCIPLES

Today, many countries around the world, such as Germany, the United Kingdom, United States, New Zealand and Australia, have proper guidelines and rules on the implementation of shared space. The objectives are to provide a reference on how to implement shared space in an urban design with the aim to create a high performance space that improves the interaction between vulnerable road users and vehicular traffic. A review of the guidelines in various countries shows that the following elements must be addressed in shared space design (Department for Transport, UK, 2011):

1. ***Vehicle Speed:*** High vehicle speed poses increased accident risk to road users. Thus, the recommended speed for vehicles in the shared space zone is 30 km per hour or lower. This is important as it not only ensures the safety of road users but also encourages pedestrians to walk on the road.
2. ***Size of Carriageway:*** Wider roads or multiple-lanes will encourage drivers to move at higher speeds and this endangers other road users. The carriageway width is recommended at 5 metres for two-way roads and 3 metres for one-way roads. The narrow roads will also force drivers to slow down when another car is approaching. If the narrow road is designed with pedestrian infrastructure, drivers will become more aware and so drive at safe speeds since pedestrians are likely to be present.
3. ***Paving:*** The pavement used in the shared space zone should

Figure 2: Courtesy crossing (Source: Department for Transport, UK, 2011)

be physically different from conventional roads. Interlocking concrete pavement, blocks or tactile pavement are preferred to remind drivers to slow down in the shared space zone.

4. ***Crossing:*** Traffic lights are usually employed to stop vehicles when pedestrians need to cross a road. In shared space, courtesy crossing is used. Courtesy crossing is designed with road pavement that's at a level slightly higher than the road surface. The pavement surface is also of a different texture (not only asphalt concrete), such as rubber rock or brick. Figure 2 shows an example of courtesy crossing in Chester, England. Courtesy crossings can also be provided in different forms, such as crosswalk with tonal contrast (different colour from driveway), crossing with bollards or by narrowing the road.
5. ***Urban Street Trees:*** The urban street tree was designed to be a part of shared space to provide a safer and more comfortable environment for street users. In shared space design, street trees are deployed to reduce vehicle speed by narrowing the road. The trees along the edge of the road also create a vertical wall, frame roads and act as a barrier to protect pedestrians. Street trees also filter sunlight, lower temperatures and provide fresh air, creating a comfortable environment for all. Figure 3 shows the urban street tree in a shared space zone.
6. ***Demarcation of Shared Space Zone:*** Shared zones should be different from a regular road environment and require a self-enforcing road environment. All shared zones must display regulatory signages and pavement markers should be provided at the entry and exit areas. The entry sign should be provided on both sides of the road to remind drivers that they are entering a shared space zone where pedestrians and bicyclists are given priority. Figure 4 shows some of these warning signs.

Figure 3: Urban Street Tree (Source: Brauer, 2014)

Figure 4: Entry and exit signages for shared space zones

7. ***Removal of Conventional Traffic Management System:*** The shared space zone should be free of traffic signals. Instead, road users must take responsibility for themselves and become more aware of their surroundings. As a result, all vehicles and bicycles are forced to move at slower speeds and road users have to enhance their safety awareness, resulting in actual reductions in the number of accidents (Hamilton-Baillie, 2008). Road curves should be removed but traffic calming devices such as road humps can either be removed or retained to help slow down vehicles.

THE BENEFITS

With the implementation of shared space, it is anticipated that conventional traffic issues such as congestion, emission and pollution will be reduced. A study found that by removing traffic lights at junctions (and replacing them with roundabouts), vehicle carbon dioxide emission was reduced (*Meneguzzer et al., 2017*). The Australian study also found that there were no fatal crashes with speed limits of 30 km per hour and only 31 injury crashes reported on these roads in 2007 (Roads and Maritime Service, 2007).

Shared space zones can promote a healthy, liveable city as they encourage more street activities

that will increase interactions between road users or residents in a neighbourhood. There will be increased flexibility in the use of the street environment for a diverse range of street activities such as dining and events. It can also create a more vibrant area to better support local businesses and attract investments. As such, it will contribute to the economic growth of the area or town.

THE CHALLENGES

However, shared space zones may result in some difficulties and discomfort for disabled people, especially the blind or partially sighted who usually depend on road kerbs for guidance. If these are removed, they may encounter problems in finding their way around.

Traffic lights with sound signals emitted are crucial traffic devices that guide the blind to cross the road safely. As such, there needs to be a path to guide them.

Others who may face challenges in shared space zones are the elderly or young children. Old folks with impaired vision, are weak of hearing and slow in responding may find difficulty when judging the distance of an approaching car or in estimating vehicle speed. As for younger children, they may not have had much experience in a road environment or they may ignore their safety when they play or run on the road.

Driver behaviour is a major factor that contributes to the success of shared space zones. Drivers with a good attitude, who are vigilant and who pay attention to the road environment will be able to ensure the safety of all road users.

RELEVANCE TO MALAYSIA

New townships are mushrooming in Malaysia, especially in the Klang Valley. The authorities and developers are now focusing on developing sustainable or liveable cities with emphasis on street activities within the residential area. Shared space designs can be adopted as the reference when designing the traffic network system in new townships.

The concept of shared space design can also be applied to busy parts of the city too. Bukit Bintang in Kuala Lumpur is a crowded commercial area bustling with retail shops, restaurants and shopping malls. There is high pedestrian traffic and sometimes there are street activities happening. Proper guidelines as mentioned earlier, can be used as a reference should the authorities decide to apply the concept to such areas or in future town or city designs.

CONCLUSION

Shared space design is one of the more important concepts in structuring sustainable or liveable towns and cities. The concept differs from the conventional road and traffic system design as it stresses on removing the separation of road users from vehicular traffic. Thus, it encourages greater interaction among road users. Driver behaviour is a key factor that determines whether shared space can be implemented successfully. As the shared space zone is free from any form of traffic control, drivers need to be more vigilant to reduce the risk of accidents. This is crucial and can only be achieved if drivers are well trained and informed about the concept. ■

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