Parking organisation and sustainability

Peraphan Jittrapirom

Vienna University of Technology
Institute of Transportation
Research Center of Transport Planning and Traffic Engineering

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Current situation in Bangkok

Source: http://drivedd.blogspot.com
Figure 1. The push-and-pull approach towards less car traffic in urban areas

Measures with push-effects
Area-wide parking management, parking space restrictions in zoning ordinances, car limited zones, permanent or time-of-day car bans, congestion management, speed reductions, road pricing...

Measures with pull-effects
Priority for buses and trams, high service frequency, passenger friendly stops and surroundings, more comfort, park-and-ride, bike-and-ride..., area-wide cycle-networks, attractive pedestrian connections...

Measures with push- and pull-effects
Redistribution of carriageway space to provide cycle lanes, broader sidewalks, planting strips, bus lanes..., redistribution of time-cycles at traffic lights in favour of public transport and non-motorized modes, public-awareness-concepts, citizens' participation and marketing, enforcement and penalizing...

Source: Müller et al. (1992)
Effect of parking scheme

- Munich 1982: Reduce car solo driver from 44% to 32%
- Salzburg 1989: Car traffic reduce by 5.5%
- Kaiserslautern 1992: Reduce car solo driver from 62% to 58%
- Windsor 2002: shifting long term parking away from city centre
- Bangkok ?
Car parks, as a space, offer very little poetry

Source: http://a-glaswegian.blogspot.com
• Bad condition of parking space / use
Rise in Bangkok motorisation

The graph shows the rise in passenger vehicle ownership per 1000 population in Bangkok from 1992 to 2009. The blue line represents cars, and the red line represents M/C (motorcycles or scooters). Throughout the years, there has been a significant increase in the ownership of both cars and M/C, with M/C showing a more volatile trend compared to cars.
Comparison space consumptions

Area consumption [m²/person]

- Walking: 1.0
- Cycling: 7.7
- Bus (20%): 17.6
- Tramway (20%): 12.0
- Motorbike (1.2 pers): 32.1
- Car (1.4 pers): 60.0

Urban space lost

- Average growth of private vehicle in Bangkok 1999-2009:
  - Motorcycle – 73,000 per year
  - Car – 112,000 per year

- Equivalent to loss of urban space for parking 1.5 km$^2$ per year

X 200
PARK(ing) Day NYC 2007
Economic and social benefit from a car-free street
Causal Loop Diagramming shows Overall system relationships between provision of parking space, motorisation and sustainability of a city.
Minimum parking space requirement

- Ensure sufficient parking for private vehicle usage
- Estimated value based on the past
  - Type of building
  - Activity
  - Peak demand
- Free or low cost parking

Bangkok’s regulation is 1974 with 1994 addendum
Effect of minimum parking space requirement: Hong Kong

- The 2nd Parking Demand study report (2002)
  - 82,000 night time parking spaces surplus.
  - 98,200 day-time parking space surplus

- Recommendations:
  - Abolished zoning base parking space requirement
  - Global zoning base rate, using Demand and Accessibility Adjustments

But still Minimum parking space requirement!
Effect of minimum parking space requirement: Bangkok

- Desktop Analysis based on data of 21 offices located within Bangkok CBD
- Minimum parking space requirement 1 space : 60 sq m

**Key Finding:**
- Average of 58 spaces exceeded per building
- 17% above minimum requirement
Equi-distance parking concept

• Energy consumption
• Structure influence behaviour
• Existing parking organisation
• Equi-distance parking
Energy Consumption

Time

Internal energy

External energy

Structure and behaviour

+70%

attractive environment

unattractive environment

mode share pedestrians (%)

walking distance (m)

Existing parking organisation

Source: (Knoflacher 1980)
Equi-distance parking organisation

The basic solution

Home + parts of working, shopping etc.

Road as space for communication

Garage

Source: (Knoflacher 1980)
**Conclusion**

- Parking organisation is an effective ‘push’ measures
- Increase in motorisation leads to increase in space use for parking in city
- Provision of parking space influence motorisation and sustainability
- Minimum requirement parking space policy leads to provision of surplus parking space

**Recommendation**

- Abolish minimum parking space policy for maximum allowable that take in account of Public transport accessibility level
- Provide structural change that will influence desirable behaviour change
Where is the solution?

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peeratop@hotmail.com
www.ivv.tuwien.ac.at