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
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- Bad condition of parking space / use
Rise in Bangkok motorisation
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 km² per year

\[ \times 200 \]
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PARK(ing) Day NYC 2007
Economic and social benefit from a car-free street
Parking add cost to building

- 10% per parking space – San Francisco (Jia and Wachs, 1996).
- 12.5% for the first parking provided and 25% for the provision (Litman, 1995)
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

![Bar graph showing time spent on different activities: Driving 20 mph, Bicycling 10 mph, and Walking 3 mph.]

Internal energy

![Bar graph showing internal energy consumption for different activities: Driving 20 mph, Bicycling 10 mph, and Walking 3 mph.]

External energy

![Column graph showing primary energy consumption in MJ/trip for different modes of transportation: Walking, Cycling, Bus, Tramway, Motorbike, and Car. The energy consumption is as follows: Walking 0.0, Cycling 0.7, Bus 5.6, Tramway 6.3, Motorbike 8.5, Car 21.8.]

Structure and behaviour

mode share pedestrians (%)

walking distance (m)

attractive environment

unattractive environment

+70%

Car share depending on parking place distance

Existing parking organisation

Today’s parking regulation

Difference in acceptance

Home

Resistence

Garage

On street parking

PT

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
Public Transport Accessibility Level (PTAL), London

Access to public transport

Source: Transport for London
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www.london.gov.uk/thelondonplan

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Where is the solution?

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Thank you very much for your attention!

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