A1. CREATE: Long-term strategies to reduce car dependency (Part 1)

Decoupling car use from economic growth - An overview and recommendations from CREATE

Peter Jones
Overview of presentation

• Background

• Changing urban transport policy perspectives
  • From ‘car-based’ to ‘place-based’ cities
  • Triggers and drivers
  • Implications for levels of car use

• Analytical implications
  • Measures of ‘success’
  • Modelling
  • Appraisal

• Implications for SUMPs
Background

• Cities in Europe face many challenges associated with car use: congestion, pollution, CO$_2$ emissions, traffic dominance, etc.

• These problems first emerged in Western European cities 50-60 years ago, but are now common throughout Europe – and beyond

• CREATE draws on experiences from five Western European capital cities, to see what lessons this might provide for cities in Central and Eastern Europe, which are now grappling with similar problems

• Presentation gives overview of policy/practice findings in Project Summary for Cities - backed up by extensive quantitative and qualitative analysis
The CREATE partner cities

- BERLIN
- COPENHAGEN
- LONDON
- PARIS-ISLE-DE-FRANCE
- VIENNA
- ADANA
- AMMAN
- BUCHAREST
- SKOPJE
- TALLIN
CHANGING POLICY PERSPECTIVES
Different Transport Policy Perspectives

- Car-oriented city
- Sustainable mobility city
- City of places
Policy Perspectives Shape Cities

- **Car-oriented city**
  - Road building
  - Car parking
  - Lower density
  - Decentralisation

- **Sustainable mobility city**
  - Public transport
  - Cycle networks
  - Roadspace reallocation

- **City of places**
  - Public realm
  - Street activities
  - Traffic restraint
  - ToD/mixed use developments
Cites as Places: application to London

• Under a ‘Place-based’ emphasis, urban roads/streets are seen as having two distinct sets of functions:
  ➢ Movement (of people/goods – not vehicles)
  ➢ Place = non-movement street and frontage activities

• London has used a ‘3 x 3’ matrix (see above)
• Sydney, Melbourne, Auckland have adopted a modified version of this classification
Contrast in policy measures: C → P

The pictures show how this area of London has been transformed from a large traffic roundabout into a vibrant public space at the heart of the community, due to a shift in policy perspectives and corresponding priorities.

London, Aldgate Square:

**C**
Put in gyratory to increase road capacity (1960s)

**P**
Remove, to enhance place and provide new community heartland (2018)
Typical Evolutionary Trajectory – in theory

Policy emphasis on meeting the needs of motor vehicles

Time - Development Cycle
Typical Evolutionary Trajectory – in practice
...with varying emphasis, spatially too
At Which Stage is Your city???
For the city you know best – what ‘stage’ would you say their SUMP has reached?

Stage 1: vehicles 28
Stage 2: person movement 5
Stage 3: city life

Dubrovnik SUMP conference
30/03/17
TRIGGERS FOR CHANGE
‘Internal’ triggers: Recognised limitations

**TRIGGER**

IT1: Rapid growth in car household ownership

IT2: Congestion grows – cannot provide enough road capacity for all to drive

IT3: Movement-dominated and ugly cities

**RESPONSE**

- **C** = Provide for private vehicle movement
- **M** = Provide for more efficient person movement, promoting sustainable mobility
- **P** = Recognise ‘Place’ component of transport infrastructure
### ‘External’ triggers: Contextual factors

<table>
<thead>
<tr>
<th>TRIGGER</th>
<th>RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ET1</strong>: ‘Oil crisis’ in the 1970s</td>
<td>• Strengthened case to move away from car dependency ( \rightarrow M )</td>
</tr>
<tr>
<td><strong>ET2</strong>: Growing concerns in 1990s about cutting CO(_2) emissions</td>
<td>• Further promotion of non-car, sustainable modes ( \rightarrow M )</td>
</tr>
<tr>
<td><strong>ET3</strong>: Growing concerns about public health: poor air quality and obesity</td>
<td>• Encourage walking, cycling and neighbourhood planning ( \rightarrow M/P )</td>
</tr>
<tr>
<td><strong>ET4</strong>: International competitiveness, based on high quality city environments</td>
<td>• Strong focus on high quality city places and amenities ( \rightarrow P )</td>
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</table>
A Typical Sequence of Triggers of Change

‘Internal’

IT1: Rapid growth in car household ownership
IT2: Congestion grows – cannot provide enough road capacity for all to drive
IT3: Movement-dominated, unsafe and ugly cities

‘External’

1960s

ET1: ‘Oil crisis’ in the 1970s
ET2: Growing concerns in 1990s about CO2
ET3: Growing concerns about public health: obesity; air & noise pollution
ET4: International competitiveness
IMPACTS ON CAR USE
A U-shaped Trajectory of Car Use Intensity

Stage 1: Growing car use
Stage 2: Levelling off in car use
Stage 3: Declining car use

Policy emphasis on meeting the needs of motor vehicles
Evidence: Car Driver Trip Rates, over Time

- Berlin
- Copenhagen
- Paris
- Vienna
- London

Urban Area

Late 1970s - Late 2010s

Number of car trips per tripmaker per day
...But this is not inevitable:
Core conditions for Stage C -> M/P ‘evolution’?

• A minimum land use density and activity concentration: to support attractive PT

• An ‘equilibrium’ between average door-to-door speeds by car and PT or walk/cycle

• Strict limits on car use

....adapting cities during the C-Stage to accommodate more cars makes any transition to M/P more difficult!!!
<table>
<thead>
<tr>
<th>Year</th>
<th>National Rail Overground</th>
<th>LU/DLR</th>
<th>Bus/tram</th>
<th>Taxi</th>
<th>Car driver</th>
<th>Car passenger</th>
<th>Cycle</th>
<th>Walk</th>
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<td>2005/06</td>
<td>13.1</td>
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<td>6.4</td>
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<td>8.2</td>
<td>4.2</td>
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<td>12.4</td>
<td>9.4</td>
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<td>2008/09</td>
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<td>11.0</td>
<td>6.0</td>
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<td>6.0</td>
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<td>12.7</td>
<td>8.3</td>
<td>3.1</td>
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<td>2012/13</td>
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<td>6.0</td>
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<td>12.8</td>
<td>9.1</td>
<td>3.2</td>
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<td>2013/14</td>
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<td>13.1</td>
<td>12.9</td>
<td>9.1</td>
<td>3.1</td>
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<td>9.0</td>
<td>3.7</td>
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These are very similar
Building in Heritage Structures in Older Cities

C: Car-oriented city
M: Sustainable mobility city
P: City of places
T: Transit city
W: Walking city
Success factors contributing to post-C policies

7 Ms:

• Mood - public, political and professional acceptability
• Motivation - triggers for change (e.g. deterioration)
• Momentum - building on successes: pilots and policy ‘windows’
• Mechanisms - engagement, enforcement, administration, delivery; co-operation and co-ordination
• Measures - PT investment, reallocate road-space
• Methods - better forecasting and appraisal methods
• Money - funding mechanisms
ANALYTICAL ISSUES
Measures of ‘Success’ Associated with Each Perspective

<table>
<thead>
<tr>
<th>C: car-based</th>
<th>M: SUM-based</th>
<th>P: place-based</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average network speeds</td>
<td>PT frequency and reliability</td>
<td>Time use in transport modes</td>
</tr>
<tr>
<td>Day-to-day variability</td>
<td>Access to bus stops and stations</td>
<td>Intensity of street activities</td>
</tr>
<tr>
<td>Vehicle congestion</td>
<td>Safety and security</td>
<td>Time spent in local area</td>
</tr>
<tr>
<td>Car parking availability</td>
<td>Seamless travel</td>
<td>Value of high quality public space</td>
</tr>
<tr>
<td>Road traffic accidents</td>
<td>PT modal split</td>
<td>Health of the population</td>
</tr>
<tr>
<td>Noise</td>
<td>Walking/cycling modal shares</td>
<td>Social interaction</td>
</tr>
<tr>
<td>Air pollution</td>
<td>Door-to-door travel times by mode</td>
<td>Social equity and inclusion</td>
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<tr>
<td></td>
<td></td>
<td>Community severance</td>
</tr>
</tbody>
</table>

KEY: There are not yet well established means for measuring and valuing these benefits
Is Congestion in Cities that Important?

Not necessarily:

➢ It is only one of several negative traffic impacts
➢ As cities develop, it is seen as relatively less important
➢ It is difficult to measure unambiguously
➢ Reliability is more important than speed for logistics companies
## Congestion only Affects Some Travellers

<table>
<thead>
<tr>
<th>INRIX indicators (2016)</th>
<th>% of all trips made by car (driver or passenger)</th>
<th>Indicators adjusted for mode share of car users</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% of travel time the average driver spent in congestion</td>
<td>Average number of hours car drivers spent in congestion/year</td>
</tr>
<tr>
<td>London</td>
<td>14%</td>
<td>73</td>
</tr>
<tr>
<td>Paris</td>
<td>12%</td>
<td>65</td>
</tr>
<tr>
<td>Berlin</td>
<td>8%</td>
<td>40</td>
</tr>
<tr>
<td>Vienna</td>
<td>7%</td>
<td>39</td>
</tr>
<tr>
<td>Copenhagen</td>
<td>4%</td>
<td>24</td>
</tr>
</tbody>
</table>
P/S3: Modelling for vision-led planning

- C/Stage 1 and M/Stage 2 policies largely based on model forecasts of future travel demand (‘Predict & Provide’):
  - How much road capacity is needed?
  - What level of rail capacity do we need to provide?
  - Here uncertainty is ‘a problem’

- P/Stage 3 starts with a city vision that embraces mobility and the public realm – the role of modelling (‘Vision & Validate’) is to:
  - Identify policy packages that will deliver desired outcomes
  - Use uncertainty to ‘stress test’ packages to make them as robust as possible under different futures

...turning the modelling process ‘on its head’
Changing role of modelling when shifting from C (car-oriented) and M (sustainable mobility) to P (place-based) policies

**C and M: ‘Predict & Provide’**

1. Make Forecasts: generate fan

2. Develop set of schemes which meet some parts of fan of possible demands, plus other objectives

**P: ‘Vision & Validate’**

1. Develop vision for future living

2. Generate ‘fan of possibilities’

3. Stress test to see over what range futures measures to deliver vision are valid, and seek to expand robustness

4. Develop feasible trajectory from ‘then’ to ‘now’ by back-casting

Present → Future
Policy P: Appraisal for vision-led planning

- **C and M** policies use the ‘do-minimum situation’ as the baseline

- **P policies** use the ‘vision’ as the baseline:
  - This is already partly done in some cases (e.g. 20mph zones, LEZs)
  - This may place greater emphasis on cost-effectiveness rather than cost-benefit appraisal

  …turning the appraisal process ‘on its head’
Changing application of appraisal when shifting from C (car-oriented) and M (sustainable mobility) to P (place-based) policies

C and M: Pro-Vehicle design

\[ \text{€ gains must exceed € losses, to justify scheme} \]

P: Balanced design

\[ \text{Start with vision of standard for that street} \]

\[ \text{Improve if can justify through € gains - without negative Place impacts} \]

Relative Priority
Key recommendations for different groups

Recommendations for city politicians

- Broaden the debate about congestion:
  - Ensure it is carefully measured
  - Use wider indicators of urban mobility and city liveability
- Develop a wider city vision, in which sustainable transport plays a key role – this will encourage place-based thinking
- City shaping depends on a full integration of transport and land use planning, at the metropolitan level
- Foster cross-sector, multi-level governance, for more effective policy making and delivery
- For effective policy delivery, invest in institutional capacity: broader skills base, better enforcement, delivery capability, etc.
- Invest in enhanced data collection and data analytics, for a stronger evidence base
- Be bold: today’s radical policy can become tomorrow’s orthodoxy – but only with strong leadership
- Introduce trials and demonstrations – ‘seeing is believing’
- Run awareness raising, marketing and behaviour change campaigns
Technical recommendations

- Ensure that key professional and technical groups are part of the planning and delivery teams
- Integrate transport and land use planning processes – and introduce policies as packages (e.g. reduce parking and road-space as metro line opens)
- Encourage stakeholder and citizen engagement, in policy development and delivery
- Give a higher priority to data collection and regular monitoring of system performance
- Make better use of data, to assess the scale of problems and to demonstrate impacts of schemes
- Measure key place-based indicators to assess the wider success of policies
- Use models to support strategy development which is designed to achieve the city vision
- Ensure that business cases reflect the full benefits of transport investment – not just the transport benefits – and take a balanced approach
IMPLICATIONS FOR SUMPS?

• Put a greater emphasis on ‘Cities as Places’

• Look towards the future – a ‘Stage 4’?
a) Accessible – meet mobility needs
b) Balances diverse demands
c) Integration of different modes
d) Meets sustainability requirements
e) Optimises efficiency and cost-effectiveness
f) Makes better use of urban space & transport infrastructure
g) Enhances attractiveness of urban environment, quality of life and public health = ‘Stage 3’*
h) Improves safety and security
i) Reduces air & noise pollution, energy & CO\textsubscript{2}
j) Contributes to better TEN-T performance

* = Policy P
The Future City?

Some early signs:
- MaaS
- Accessibility planning
- Sharing economy

New analytical methods:
- Socio-technical systems
- Activity-based modelling
Thank you!

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