Integrating transport and urban planning

Why necessary? Why complex?
How to cope?

Amsterdam, for example
Synthesis of part I

• Why necessary?
  – A mobile society

• Why complex?
  – Dependency vs. Sustainability

• How to cope?
  – Finding a balance
Balance (WBCSD, 2001)

• “For mobility to be sustainable, it must improve accessibility while avoiding disruptions in societal, environmental, and economic well-being that more than offset the benefits of the accessibility improvements”
“improve accessibility”

• Increase the amount and diversity of places of activity within an acceptable travel time/cost …
  ⇐ Land use density and functional mix (proximity)
  ⇐ Transport speed and network form (mobility and connectivity)
“avoid disruptions”

• With as little use of non renewable resources as possible …
  ← Share of resource-efficient transportation means
  ← Average distance traveled
Solution space (‘mobility environments’)

Transport policy
- ICT infrastructure
- Facilitate (infrastructure)
- Increase speed, flexibility
- Selective use (pricing)

Activity coupling
- Without travel
- Walking, biking
- By transit
- By car

Land use policy
- Multifunctional homes/workplaces
- Diverse neighborhood/city
- Concentration around stations
- Balanced region

(Bertolini & le Clercq)
Amsterdam, for example
### World cities: modal split, emissions, income (1995)

<table>
<thead>
<tr>
<th></th>
<th>Car (% all trips)</th>
<th>Public transport (% all trips)</th>
<th>Biking and walking (% all trips)</th>
<th>Per capita transport emissions (kg/p)</th>
<th>Per capita transport CO₂ emissions (kg/p)</th>
<th>Per capita metropolitan income (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>North American</td>
<td>88,5</td>
<td>3,4</td>
<td>8,1</td>
<td>265</td>
<td>4.405</td>
<td>31.386</td>
</tr>
<tr>
<td>Rich Asian</td>
<td>41,6</td>
<td>29,9</td>
<td>28,5</td>
<td>37</td>
<td>825</td>
<td>31.579</td>
</tr>
<tr>
<td>Western European</td>
<td>49,7</td>
<td>19,0</td>
<td>31,3</td>
<td>98</td>
<td>1.269</td>
<td>32.077</td>
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<tr>
<td><strong>Amsterdam</strong></td>
<td>31,3</td>
<td>17,2</td>
<td>51,4</td>
<td>38</td>
<td>1.035</td>
<td><strong>28.322</strong></td>
</tr>
</tbody>
</table>

(Kenworthy & Laube)
Amsterdam: modal split 1986-2008

(O+S Amsterdam)
Biking and walking environments!

Historic city: ‘within the motorway ring’
Modal split different urban sections

- Bike 53%
- PT 21%
- Car 27%

- Bike 40%
- PT 24%
- Car 36%

- Bike 22%
- PT 25%
- Car 53%
Accessibility by bike (people and jobs within 30 minute travel)
Without travel
Walking, biking
By transit
By car

Activity coupling

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Solution space (‘mobility environments’)
It was not always like this: share of bike in all trips 1920-1995
Policy change: from facilitating the car and pursuing functional separation (up to the ‘70s) …
... to constraining car use, facilitating alternative modes, and preserving the functional mix (since the ‘70s) ...
In between ... (Nieuwmarkt riots, 1975)
Public transport environments?
Railway station areas along the ring line
Modal split workers ring line corridor (home to work trips)

Bike 9%
PT 51%
Car 40%
Accessibility by public transport (people and jobs within 30 minute travel)
Solution space (‘mobility environments’)

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Developments in the railway network

- **Built-up area, 1967**
- **Built-up area, 1967-2001**
- **Railways, 1967**
- **Railways, 1967-2001**
- **Motorways, 1967**
- **Motorways, 1967-2001**

**Centres:**
- Amsterdam
- Haarlem
- Schiphol Airport
- Haarlemmermeer
- Almere
- Purmerend
- Amstelveen

**Scale:** 5 km
Developments in the railway network
Developments in urban centres
Developments in urban centres

- Built-up area, 1967
- Built-up area, 1967-2001
- Railways, 1967
- Railways, 1967-2001
- Motorways, 1967
- Motorways, 1967-2001
- Centre, 1967
- Centre, 1967-2001

- Amsterdam
- Haarlemmermeer
- Zaandam
- Purmerend
- Schiphol Airport
- Haarlemmerliede
- Amstelveen
- Almere

5 km
Zuid WTC as emerging business centre
Bijlmer Arena as emerging leisure centre
The emerging urban form
Accessibility by car (people and jobs within 30 minute travel)
Current challenges

• Treath:
  – Increasing travel distances, car still dominant on longer trips
    • Modal split for trips between Amsterdam and the Region 2005-2008: Car 60%, PT 33%, Bike 7%

• Transport policy challenges:
  – Develop regional public transport network (DUS)
  – Introduce road-pricing
  – Achieve public transport car integration

• Land use policy challenges:
  – Improve regional home-work balance
  – Increase densities in existing city and around transportation nodes, while enhancing liveability

• Unclear challenge:
  – Cater for virtual mobility (ICT)
Regional transport now: **train** + **metro** + **bus or car**

Future: an integrated system?
Now: jobs in the west homes in the east

Future: a better mix?
How to combine density with quality of place?

(Westerdokseiland)
How to combine density with quality of place?

It is also a mobility challenge!
And how to cater for virtual mobility???
Solution space (‘mobility environments’)

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Solution space ('mobility environments')
Thanks!