



Luca Bertolini
Integrating transport and
urban planning

Why necessary? Why complex?
How to cope?
Amsterdam, for example

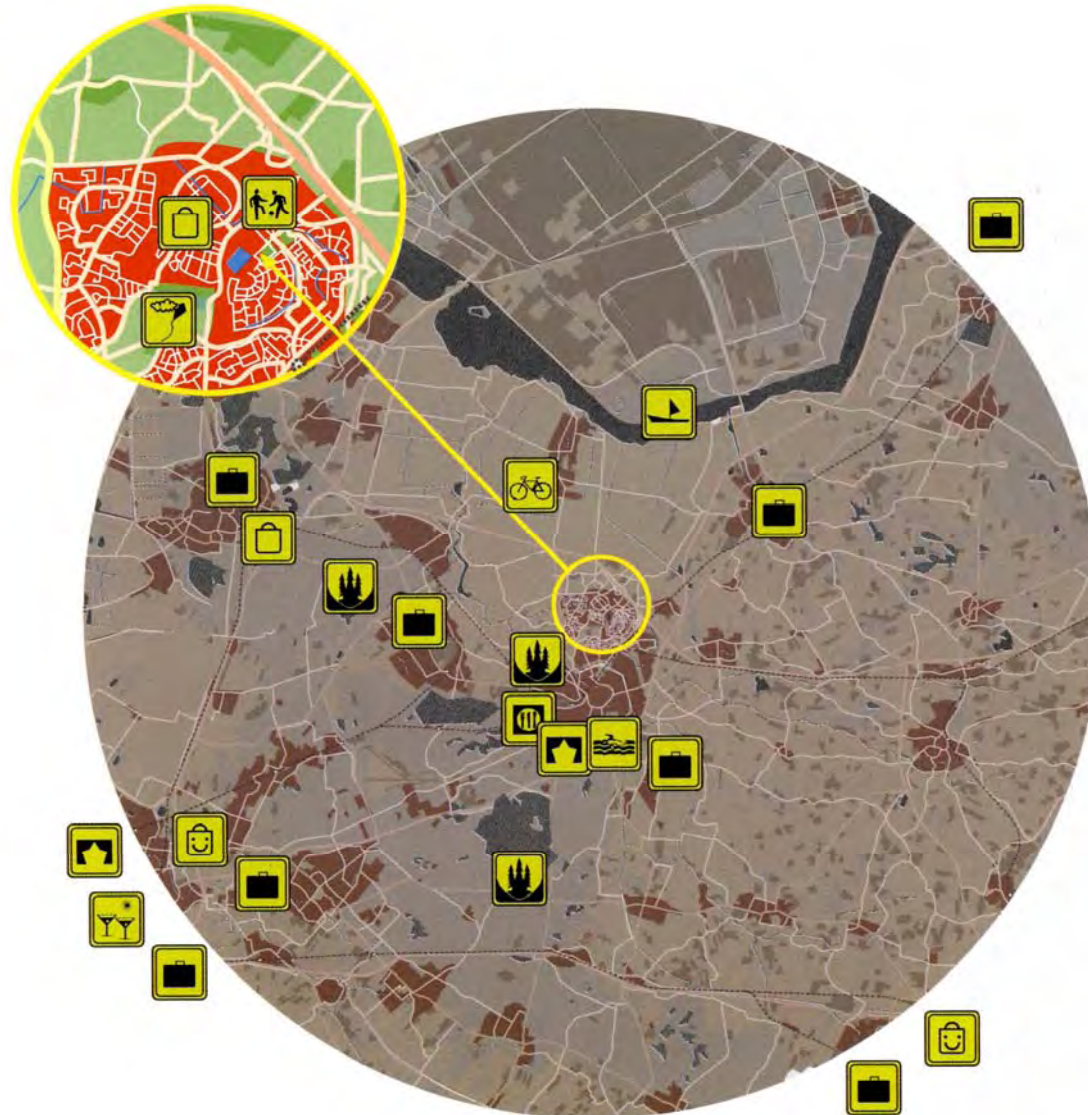
University of Amsterdam



Why necessary?

A mobile society, borderless cities

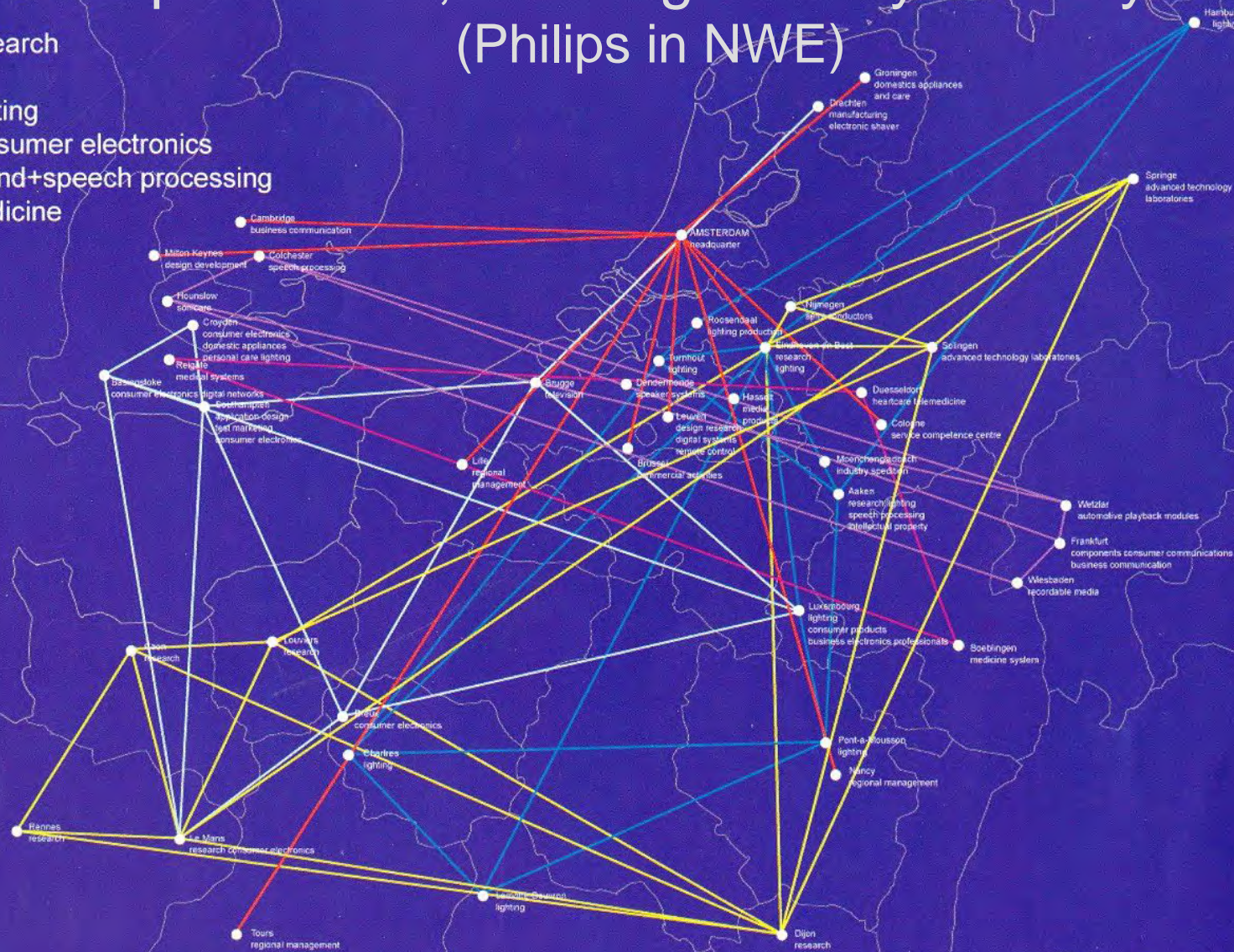
A mobile society: dispersed activity places,
held together by mobility (Kattenbroek, NL)



(Reijndorp et al.)

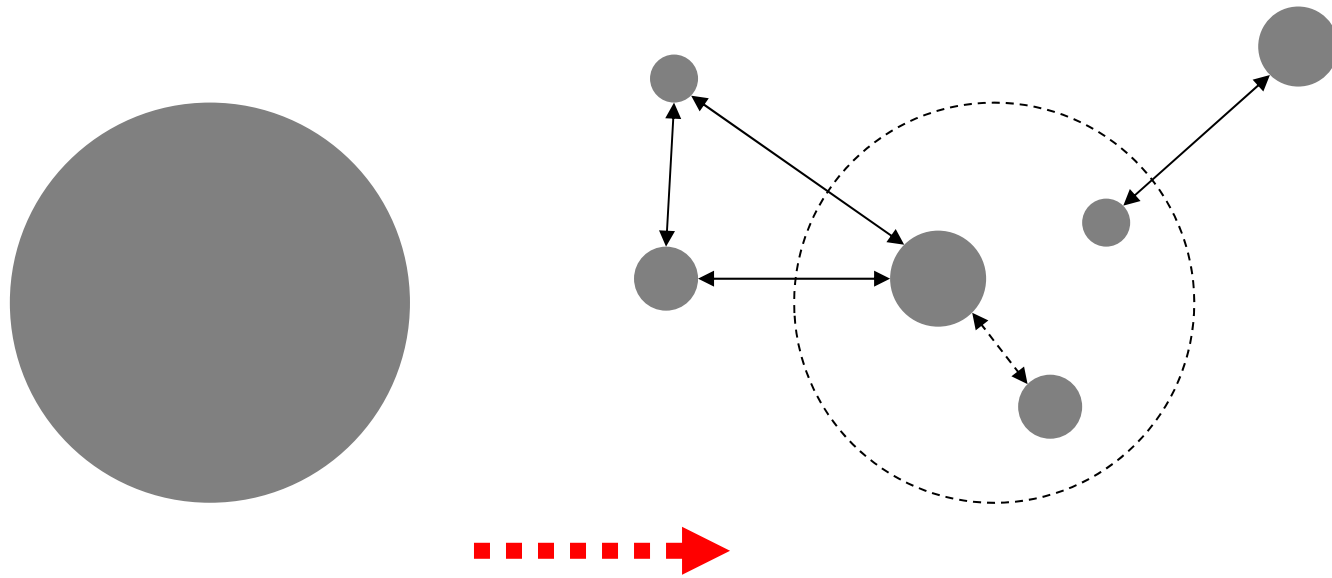
A mobile society: multi-sited production processes, held together by mobility (Philips in NWE)

- management
- research
- lighting
- consumer electronics
- sound+speech processing
- medicine



(Boelens)

Cities: from self-contained and compact to borderless and networked



Then: self-contained, compact cities (Amsterdam, 1538)



(Cornelis Anthonisz)

Now: borderless, networked cities (Amsterdam, 2012)



Image © 2012 TerraMetrics
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
© 2012 Cnes/Spot Image
Image © 2012 Aerodata International Surveys

© 2009 Google

Datums van beeldmateriaal: 5 Mrt, 2005 8 Mei, 2008

52°21'53.53" N 4°52'49.33" O verh. 0 m

Ooghoogte 4.96 km

Why complex?
A core dilemma

We depend on mobility ...



... but mobility is not sustainable

Measures to be increased

Access to means of personal mobility		+
Equity in access		-
Appropriate mobility infrastructure		-
Inexpensive freight transportation		+

Measures to be reduced

Congestion		-
"Conventional" emissions		+
Greenhouse gas emissions		-
Transportation noise		+
Other environmental impacts		-
Disruption of communities		-
Transportation-related accidents		+
Transportations' demand for nonrenewable energy		=
Transportation-related solid waste		+

Key:

the particular measure is at an unacceptable and/or dangerous level

the level is of concern and needs improvement

the level is acceptable or shows signs of becoming so

+

indicates that the situation appears to be moving in the desired direction

-

suggests that the situation appears to be deteriorating

=

no clear direction is apparent

?

available information is not enough to make a judgment

(WBCSD)

- Dilemma: dependency vs. sustainability
 - No more ‘predict and provide’
 - No more ‘predict and prevent’

How to cope?
Finding a balance

Balance

- “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” (WBCSD)

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Accessibility

- In the large majority of cases people travel in order to get access to something or somebody, not just for the sake of it
 - Accessibility is the goal, mobility is a means
- What matters is:
 - What can be accessed (which jobs, shops, friends, etc.) = places of activity
 - How it can be accessed (how fast, cheap, etc.) = travel conditions

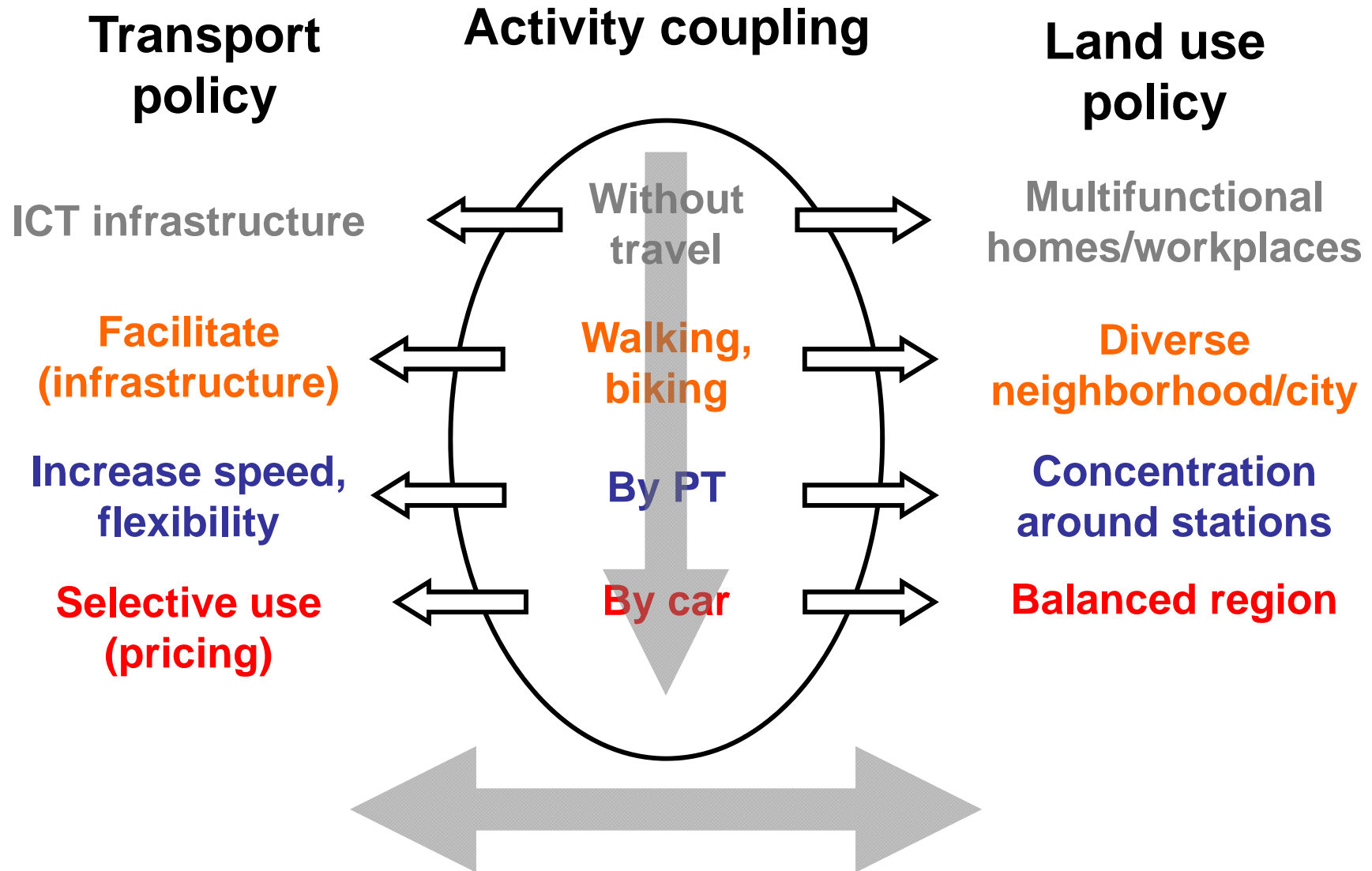
“improve accessibility”

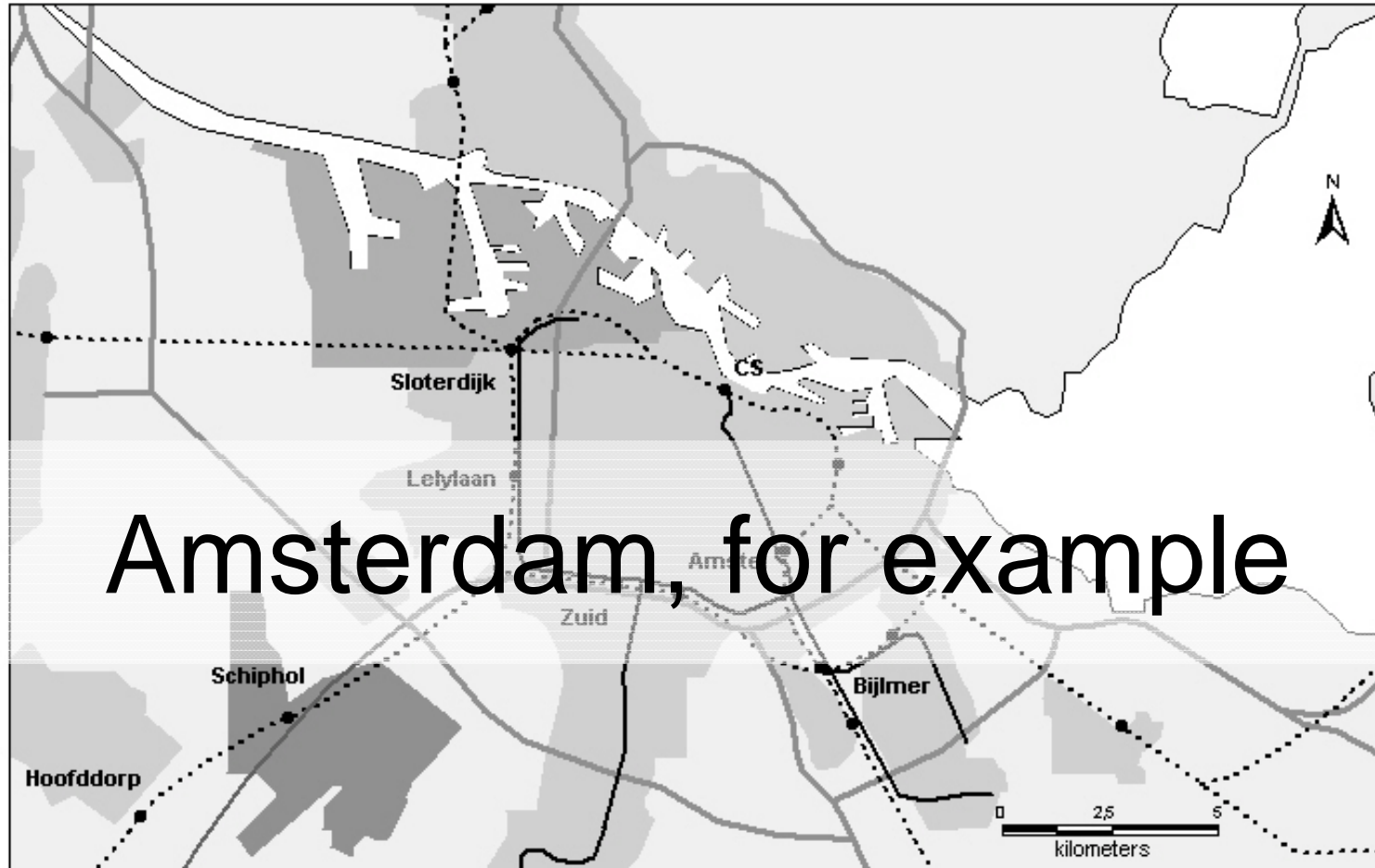
- Increase the amount and diversity of places of activity (e.g. workplaces) within an acceptable travel time/cost/etc. ...
 - ← Land use density and functional mix (proximity)
 - ← Transport speed and network form (mobility and connectivity)

“avoid disruptions”








- ... with no more use of resources (e.g. energy) than what is sustainable
 - ← Share of resource-efficient transportation means
 - ← Average distance traveled

Solution space ('mobility environments')





Amsterdam, for example

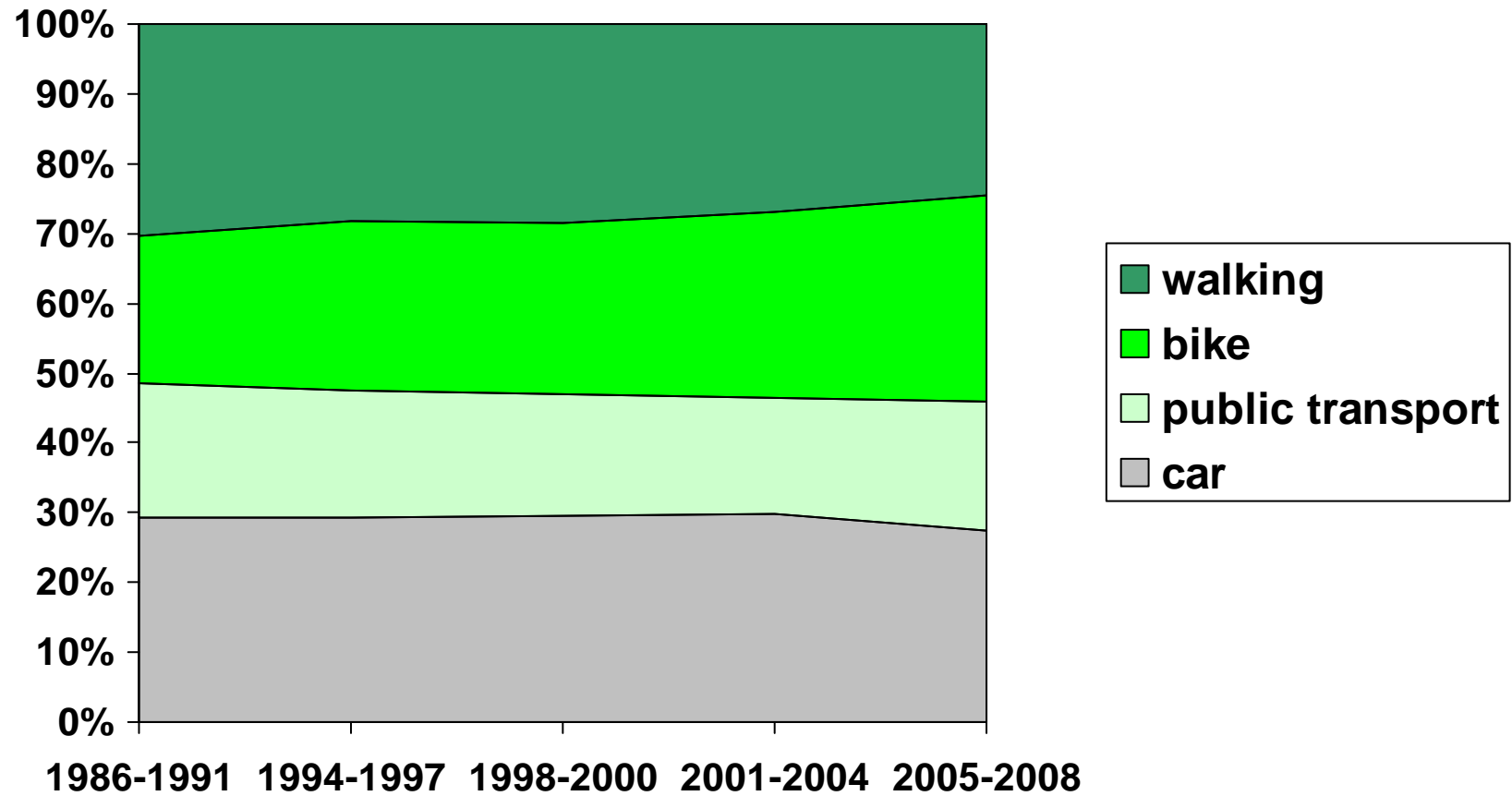
- | | | | | | |
|---|---------------|---|----------|---|----------------|
|  | Built-up area |  | Railway |  | Railwaystation |
|  | Seaport |  | Metro | | |
|  | Airport |  | Motorway | | |

World cities: modal split, emissions, income (1995)

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

(Kenworthy & Laube)

Amsterdam: modal split 1986-2008



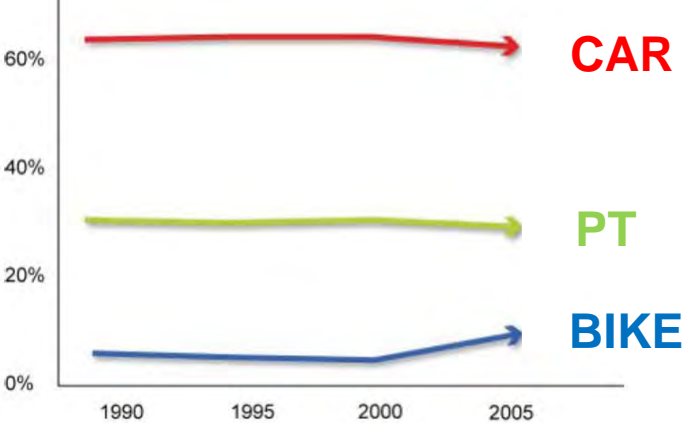
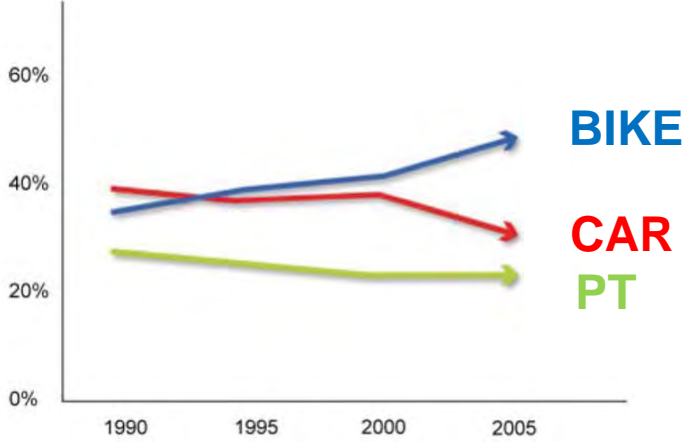
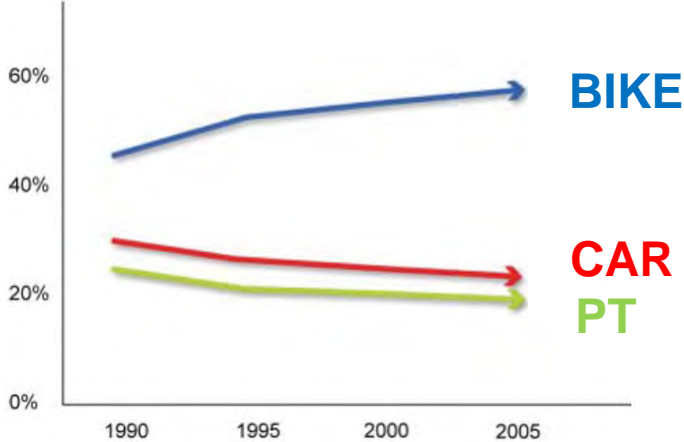
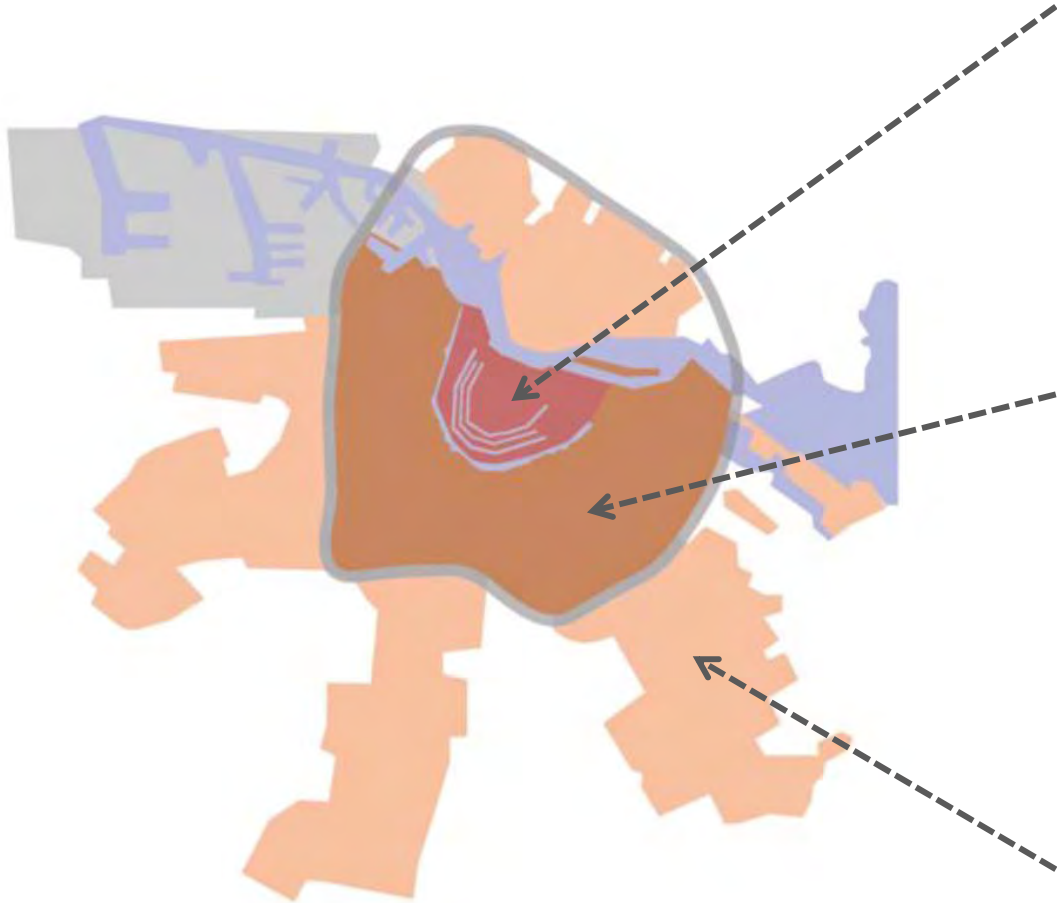
(O+S Amsterdam)

Biking and walking environments? Historic city: 'within the motorway ring'

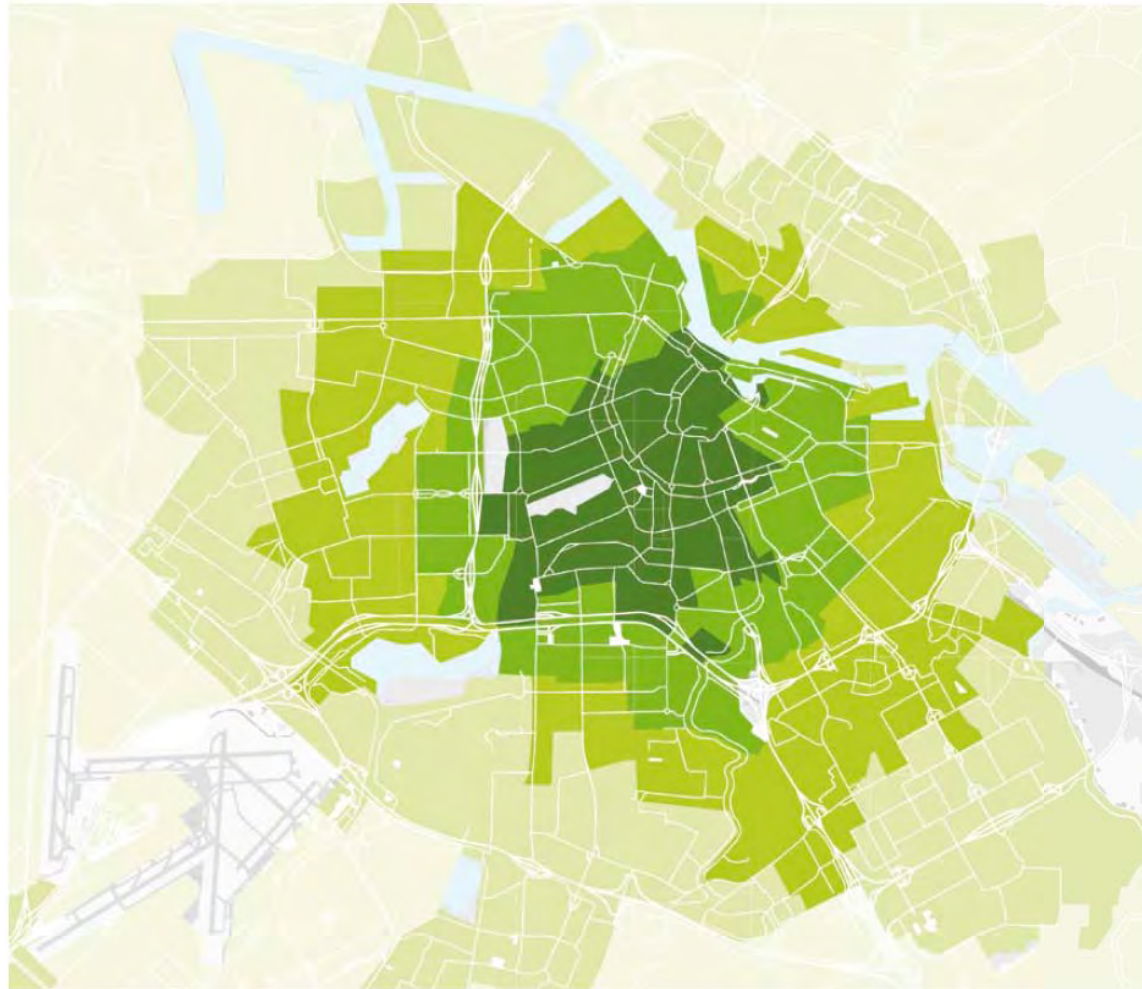


Modal split by area

(dRO Amsterdam, MON)

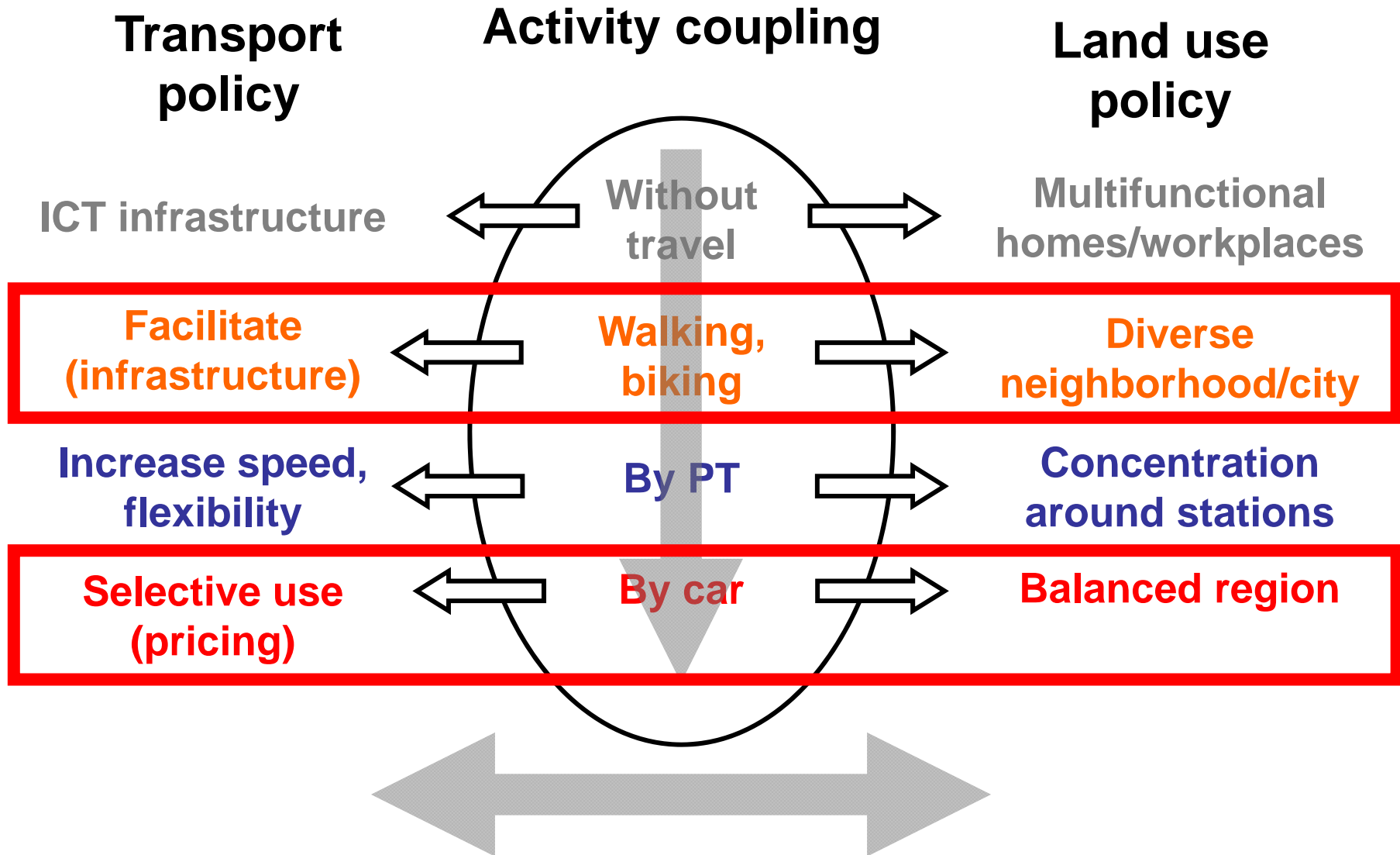


Accessibility by bike (people and jobs within 30 minute travel)



(dIVV Amsterdam)

Solution space ('mobility environments')



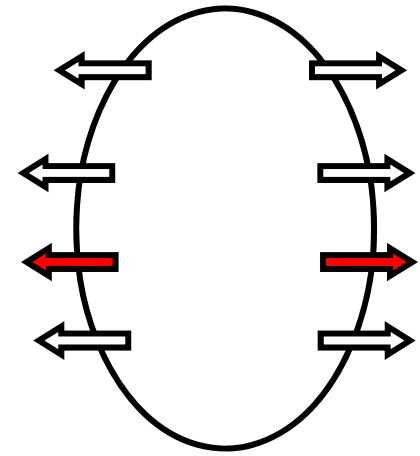
Policy change: from facilitating the car and pursuing functional separation (up to the '70s) ...



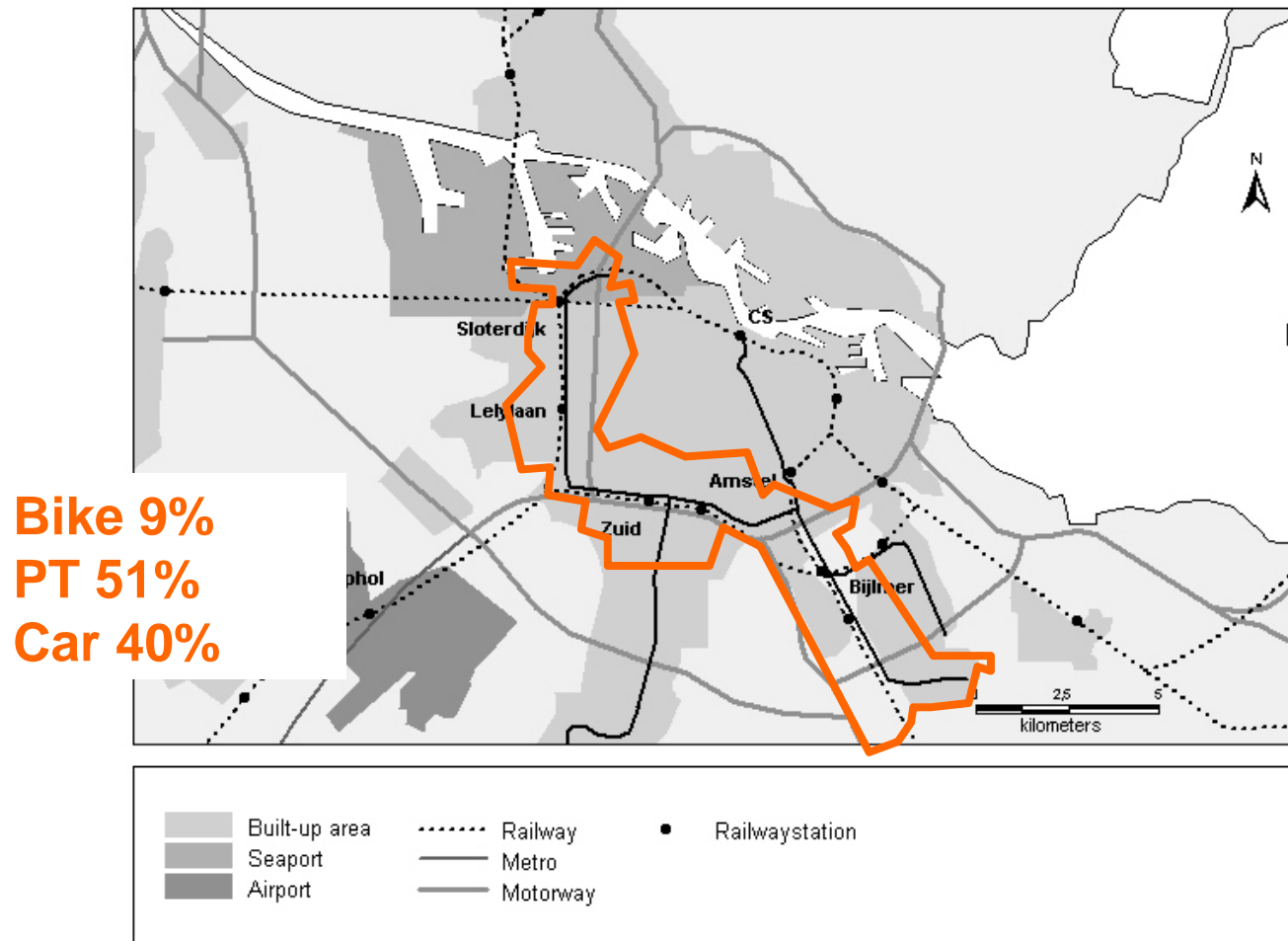
... to constraining car use, facilitating alternative modes, and preserving the functional mix (since the '70s)



Public transport environments? Railway station areas along the ring line

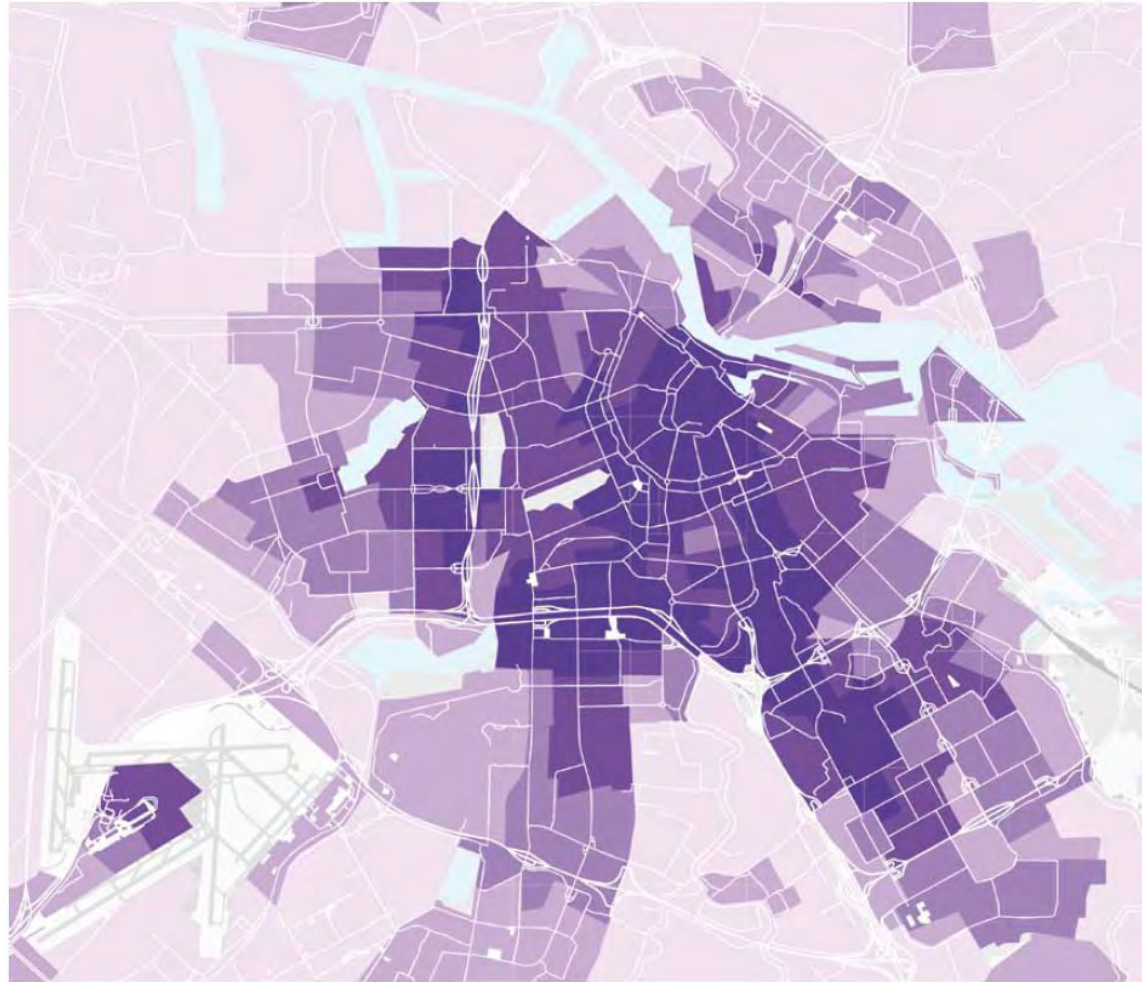


Modal split workers ring line corridor (home to work trips)



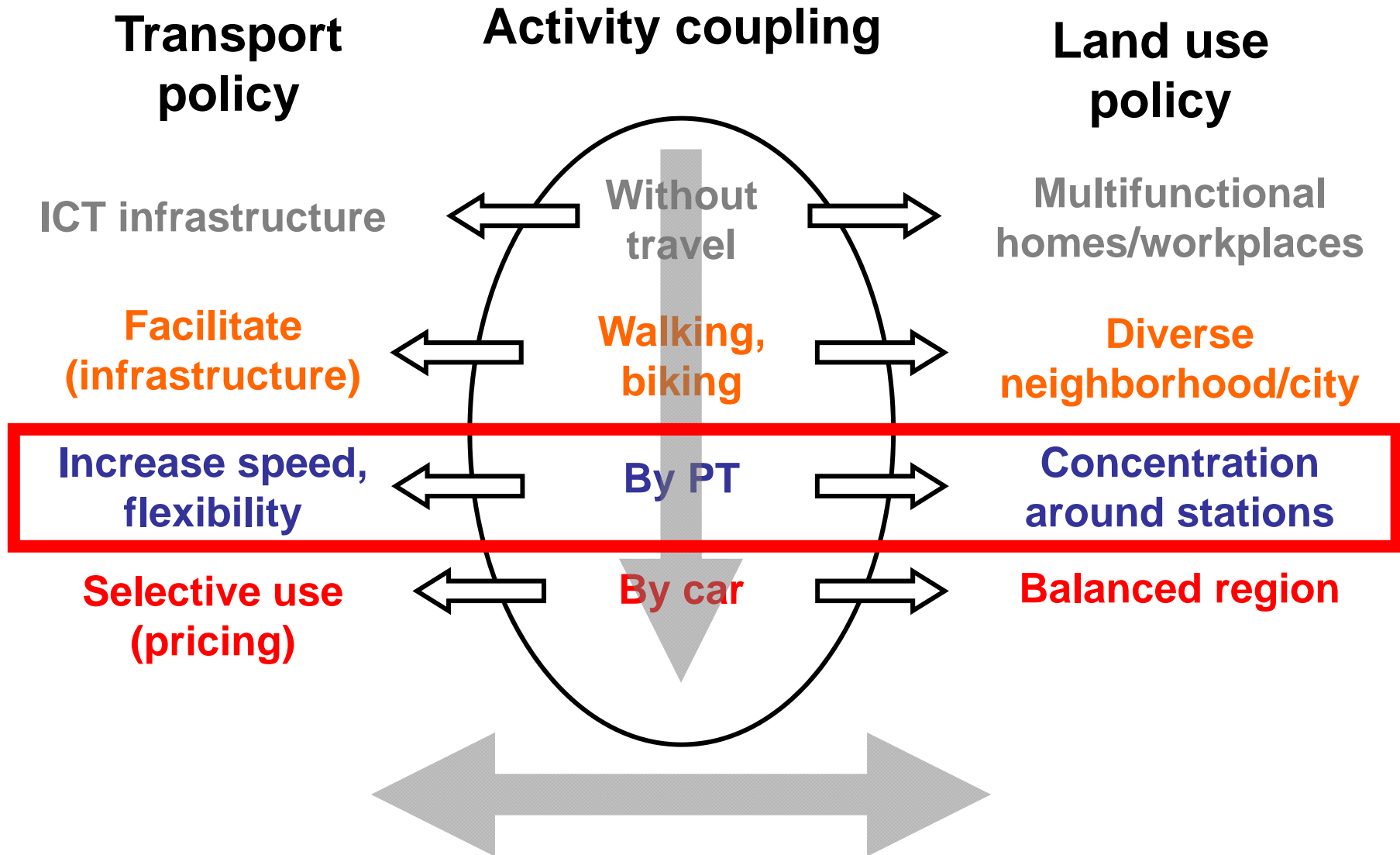
(dIVV Amsterdam)

Accessibility by public transport (people and jobs within 30 minute travel)

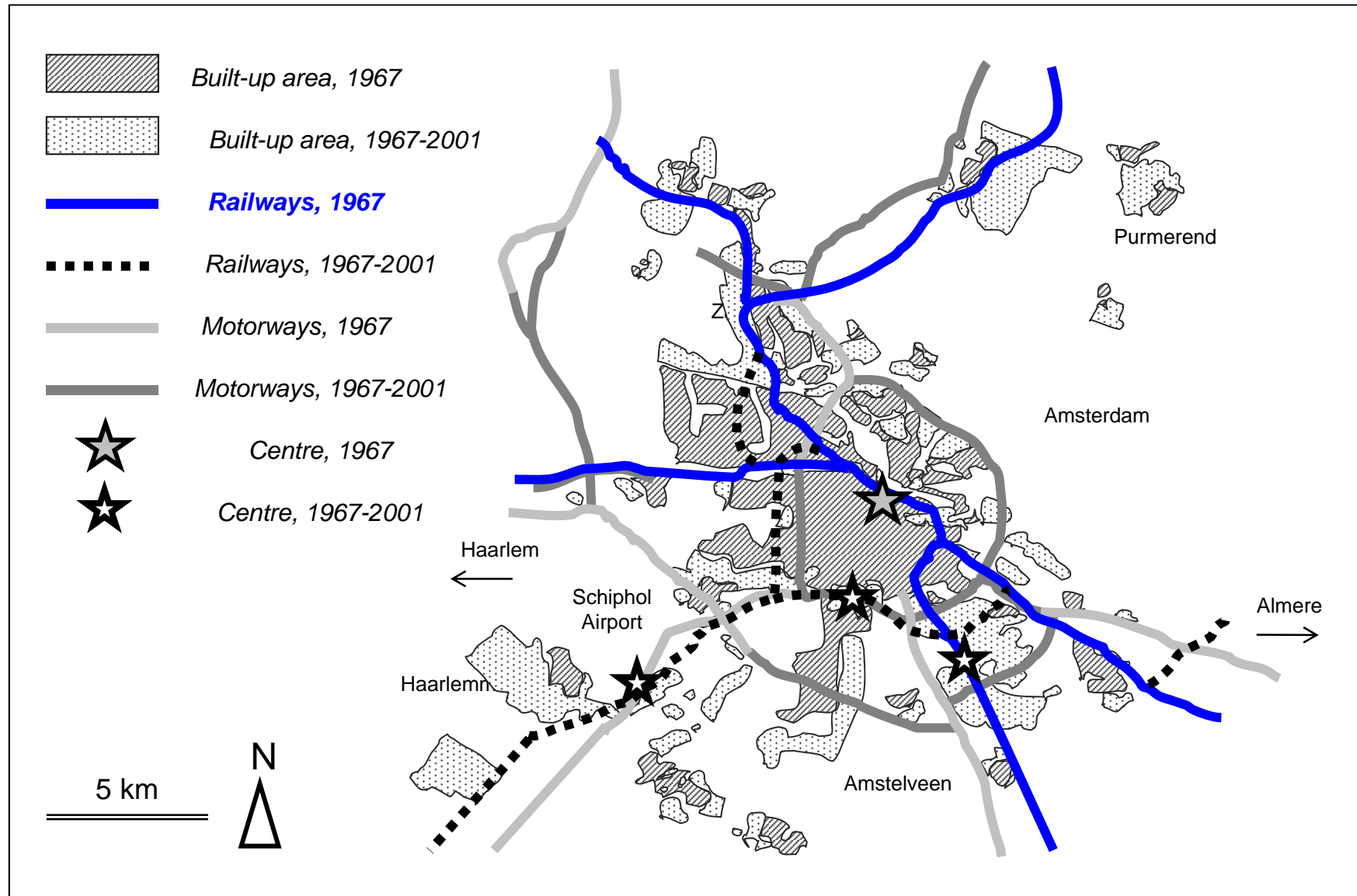


(dIVV Amsterdam)

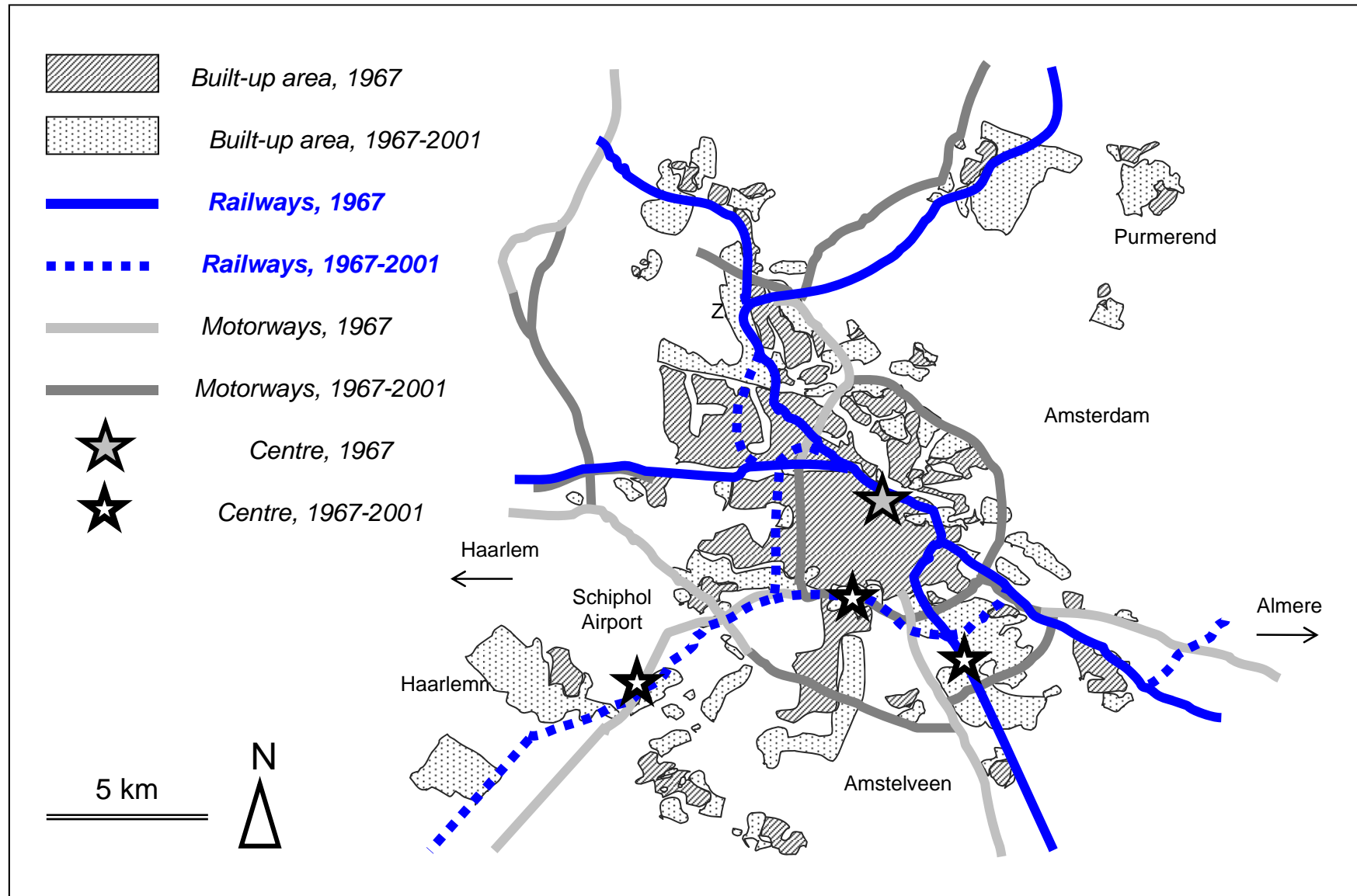
Solution space ('mobility environments')



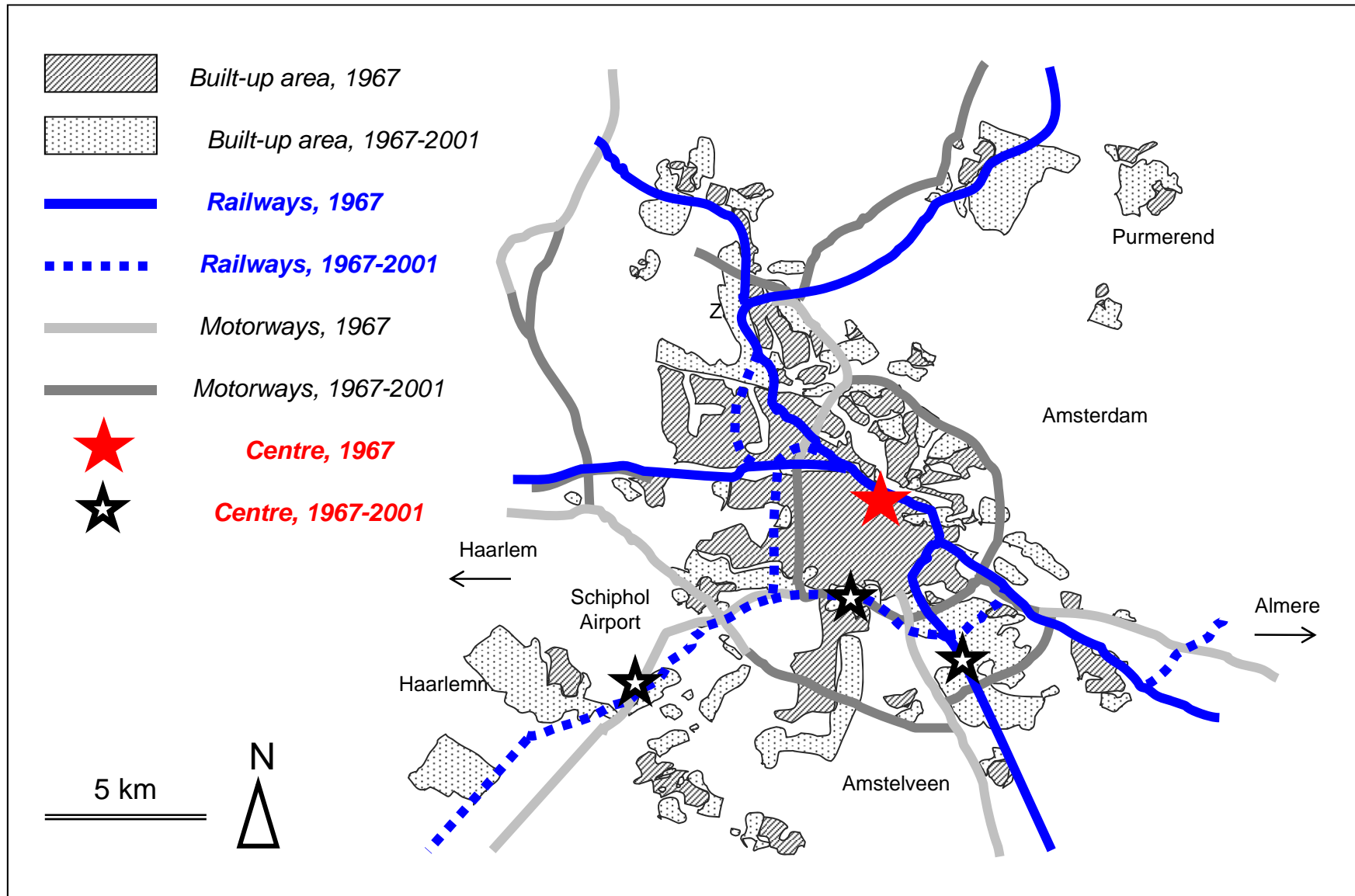
Developments in the railway network



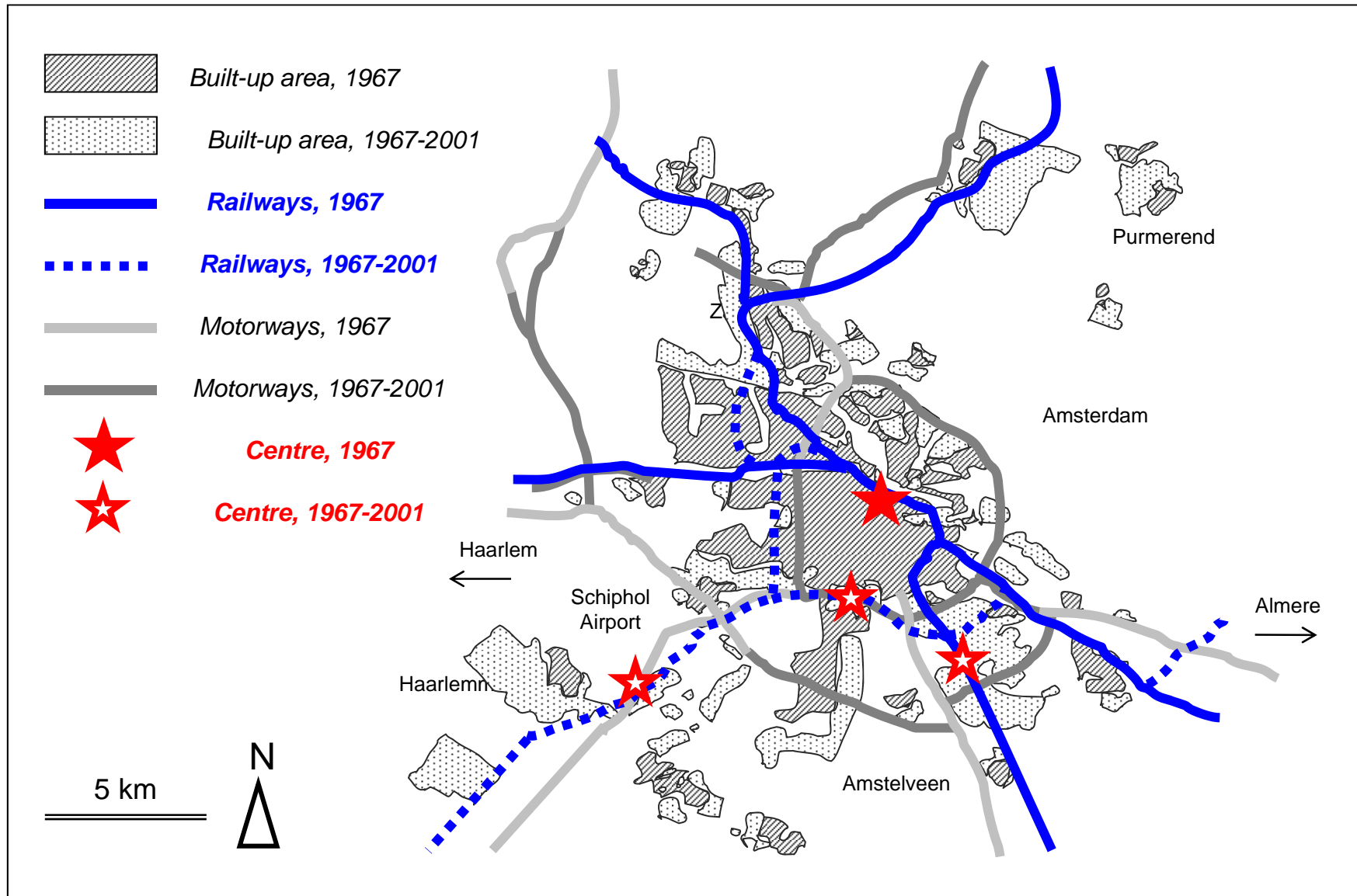
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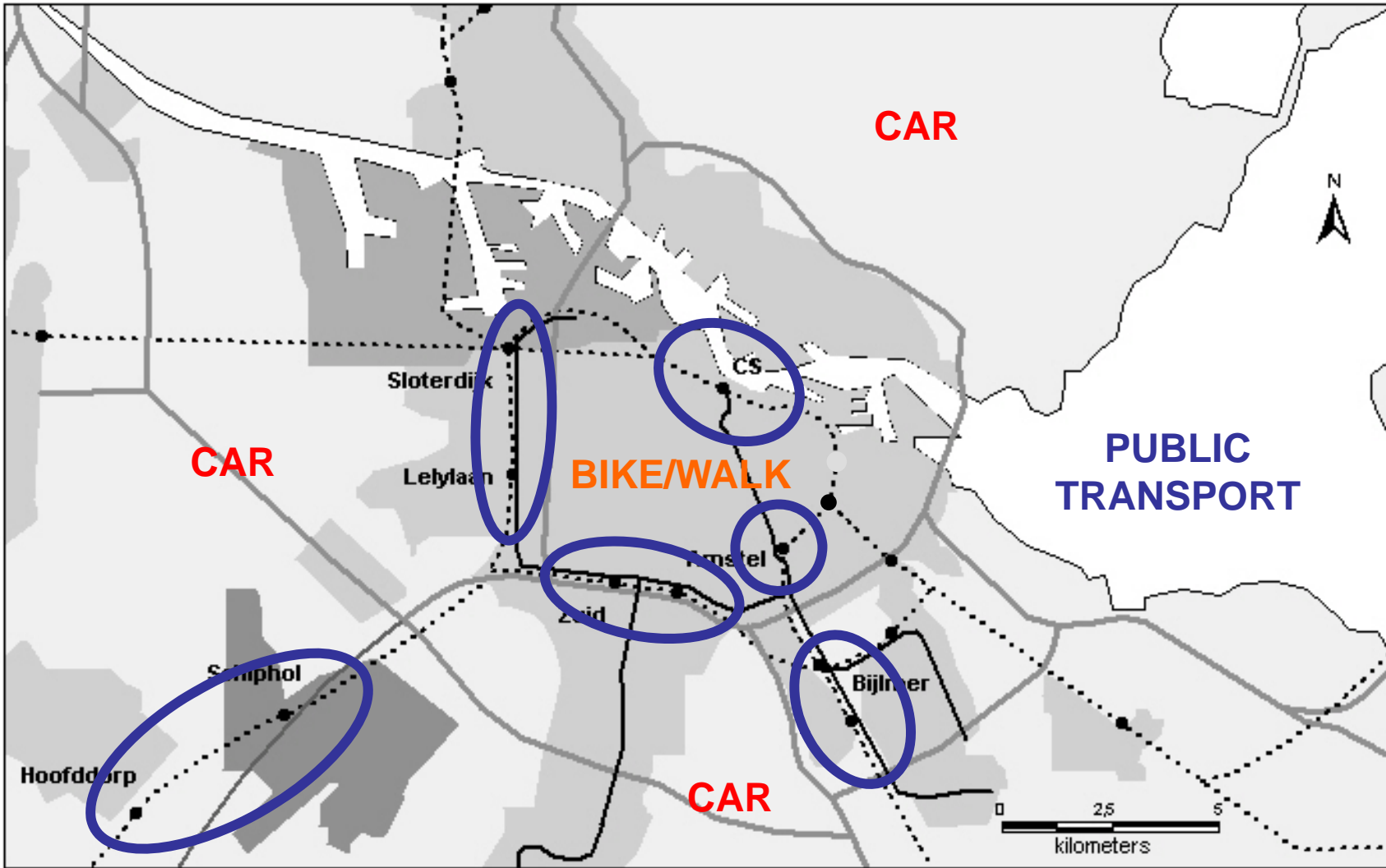


Developments in urban centres



Developments in urban centres

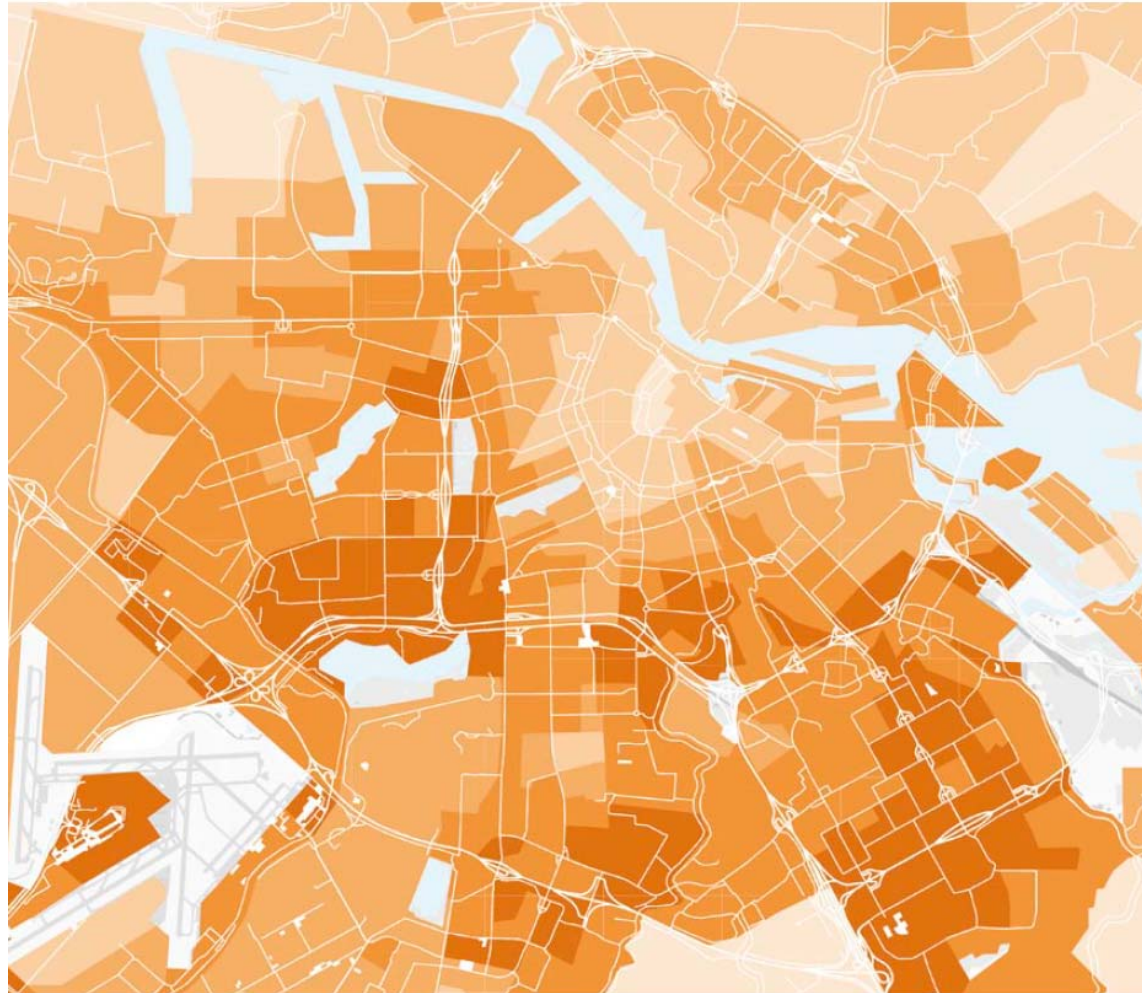




	Built-up area		Railway		Railwaystation
	Seaport		Metro		
	Airport		Motorway		

The corresponding urban form

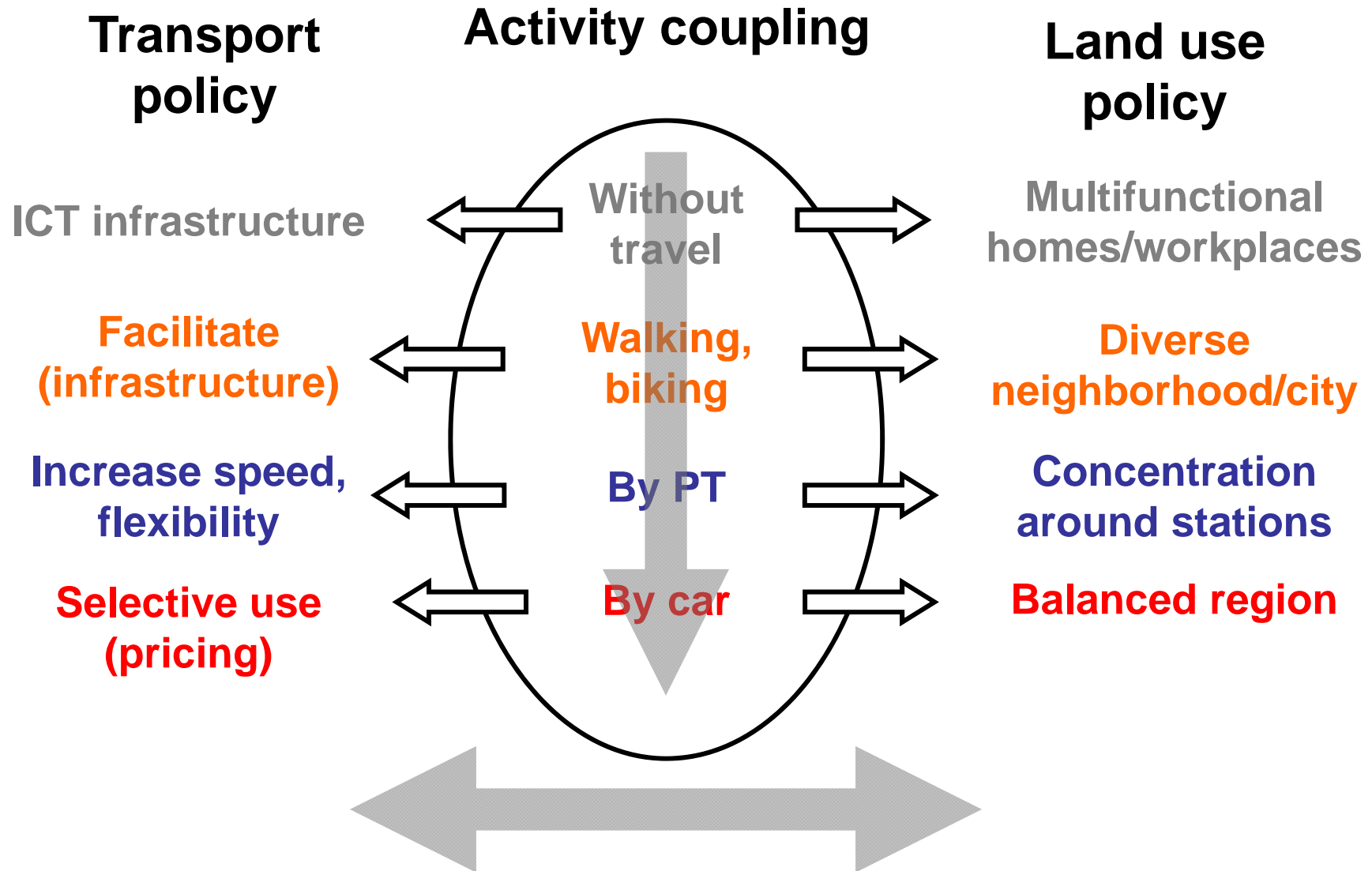
Accessibility by car (people and jobs within 30 minute travel)



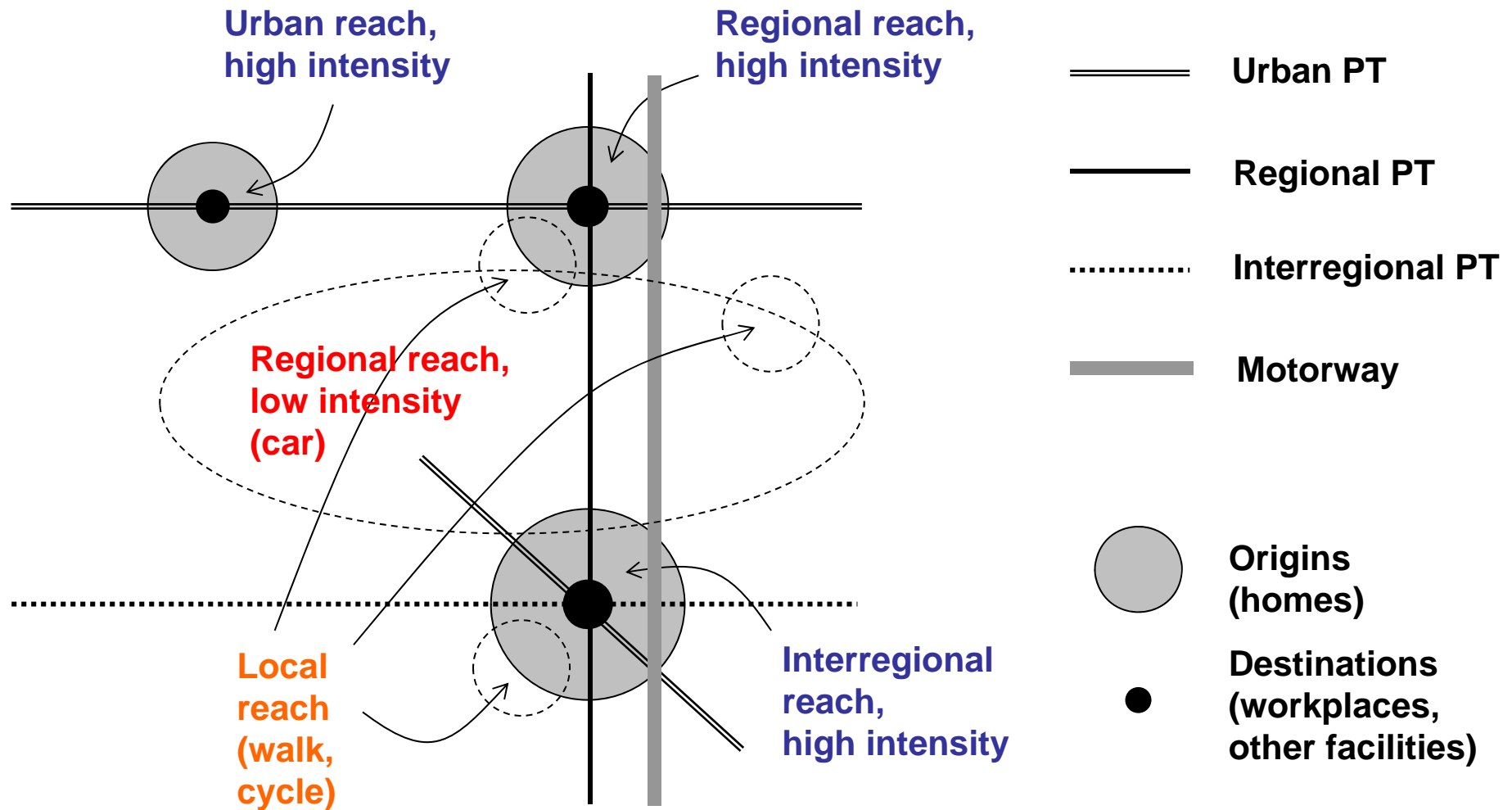
(dIVV Amsterdam)

What about other cities?

Solution space ('mobility environments')



The corresponding urban form



Let's discuss!

