

Theory of Urban Fabrics

a Product of New Models and Practices

SYKE, Helsinki, 24 October 2013



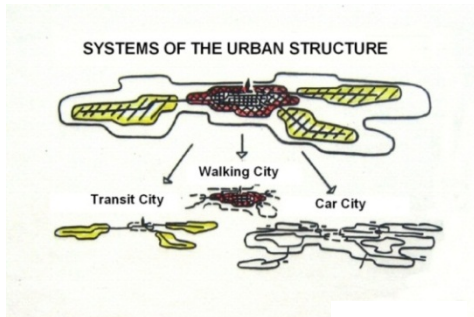
Finnish Environment Institute

Leo Kosonen
Architect, Senior Researcher

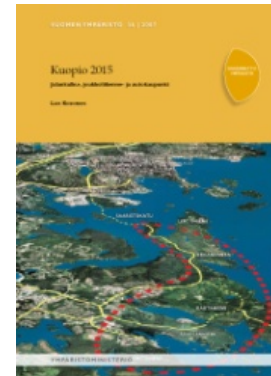
Way of thinking



City models



Theory



Kosonen

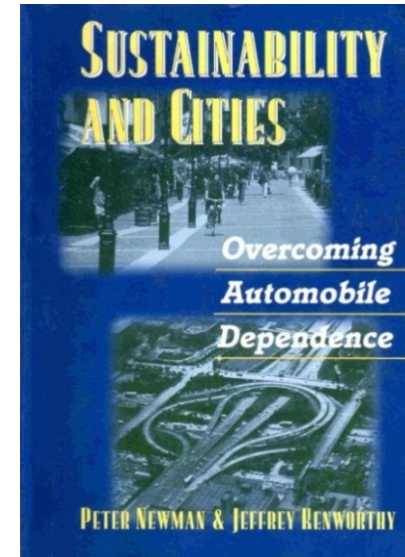
Newman



Way of thinking



City models



Theory

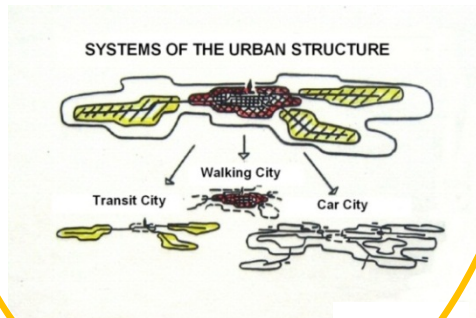
Newman



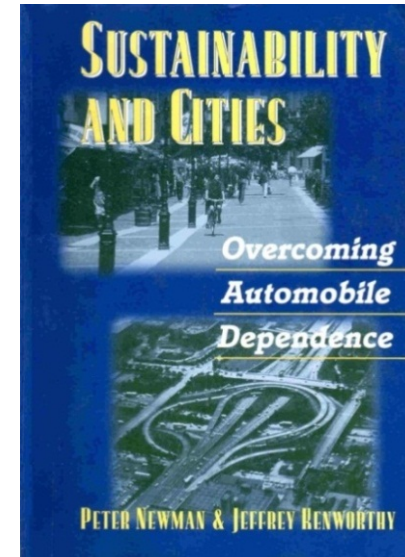
Way of thinking



City models



Kosonen



Theory



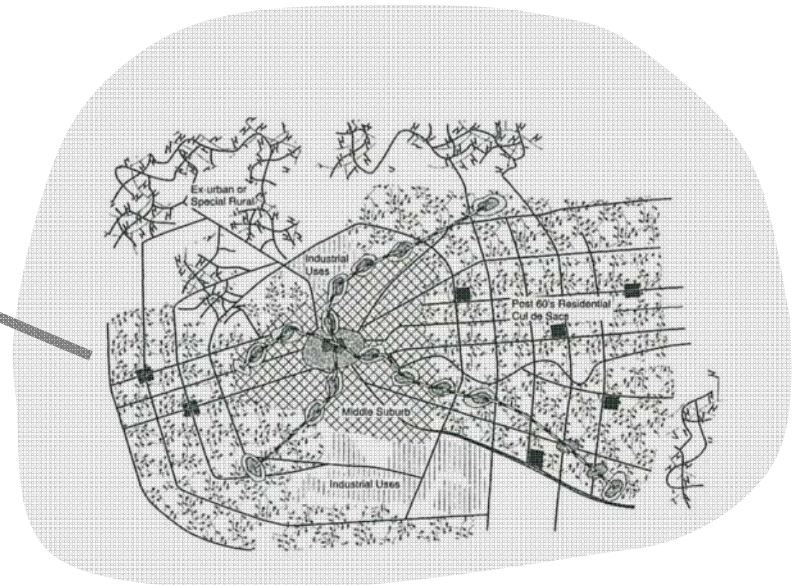
Need of new thinking

CIAM 1933
Modern City

OLD WAY OF THINKING
A New City

Traffic

Housing
Employment
Recreation
the Centre



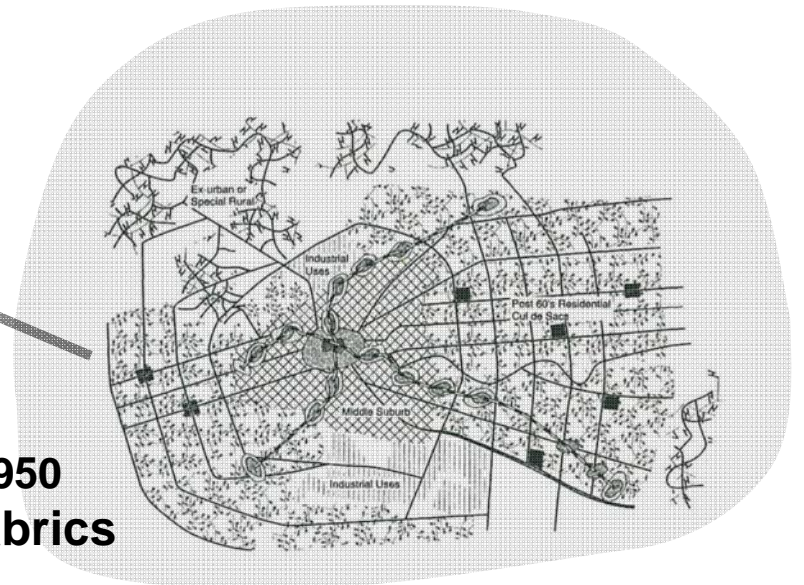
CIAM 1933
Modern City

OLD WAY OF THINKING
2 main systems

Traffic **Land Use**

*Traffic and network
models
and theories*

*Land use models
and theories*



Cities since 1950
Three Urban Fabrics

3 systems

Walking City, Transit City and Car City

CIAM 1933
Modern City

WAY OF THINKING

2 main systems

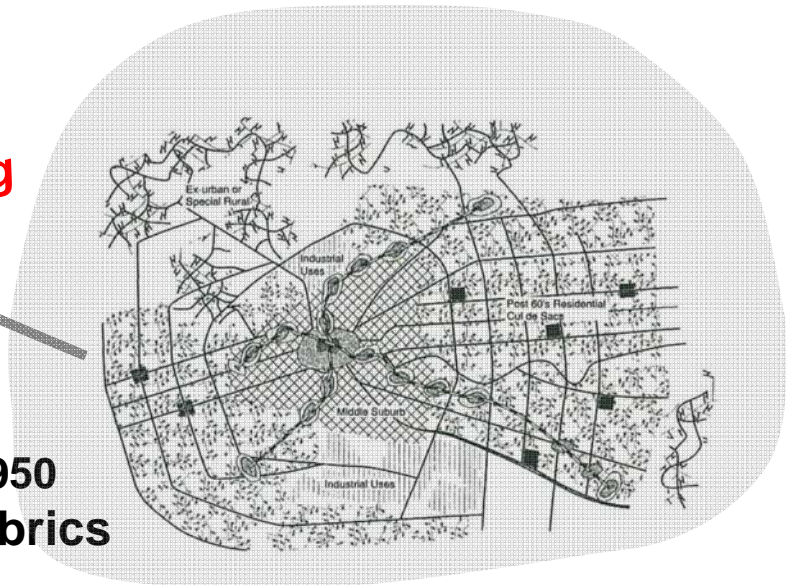
Traffic

Land Use

*Traffic and network
models
and theories*

*Land use models
and theories*

Land use and traffic models
orientate towards new type of a
city, **not respecting the existing
fabrics** of the cities



Cities since 1950
Three Urban Fabrics
(3 systems)

Walking City, Transit City and **Car City**

**CIAM 1933
Modern City**

WAY OF THINKING

2 main systems

Traffic

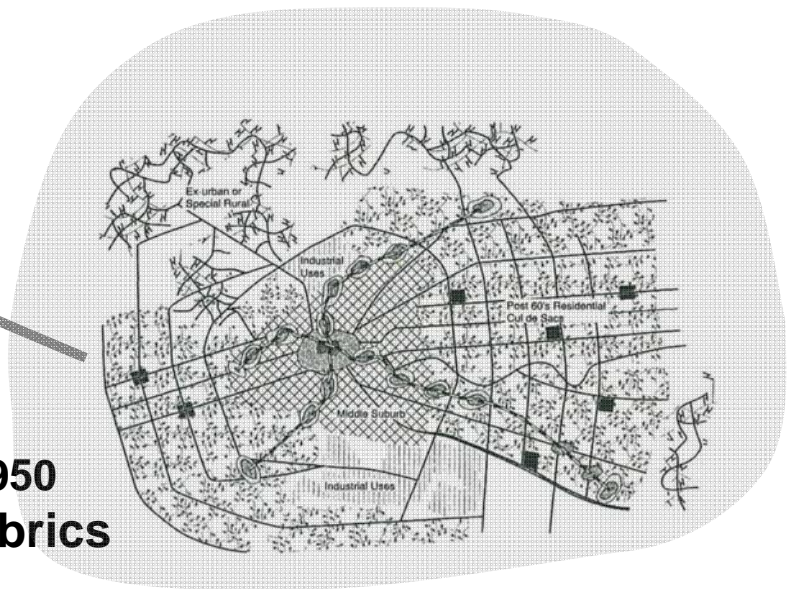
*Traffic and network
models
and theories*

Land Use

*Land use models
and theories*

No comprehensive theory

**Land use and traffic models
orientate towards new type of a
city, not respecting the three
existing fabrics of the cities**



**Cities since 1950
Three Urban Fabrics
(3 systems)**

Walking City, Transit City and Car City

Three Urban Fabrics
A New Way of Thinking

The fabrics can be recognized

Urban Fabrics

The stages are based on Waves of Innovation

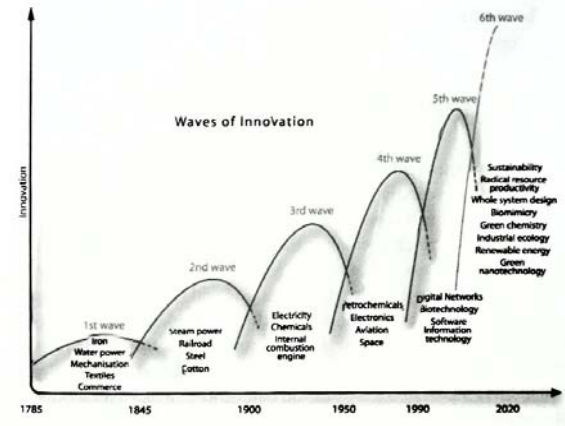
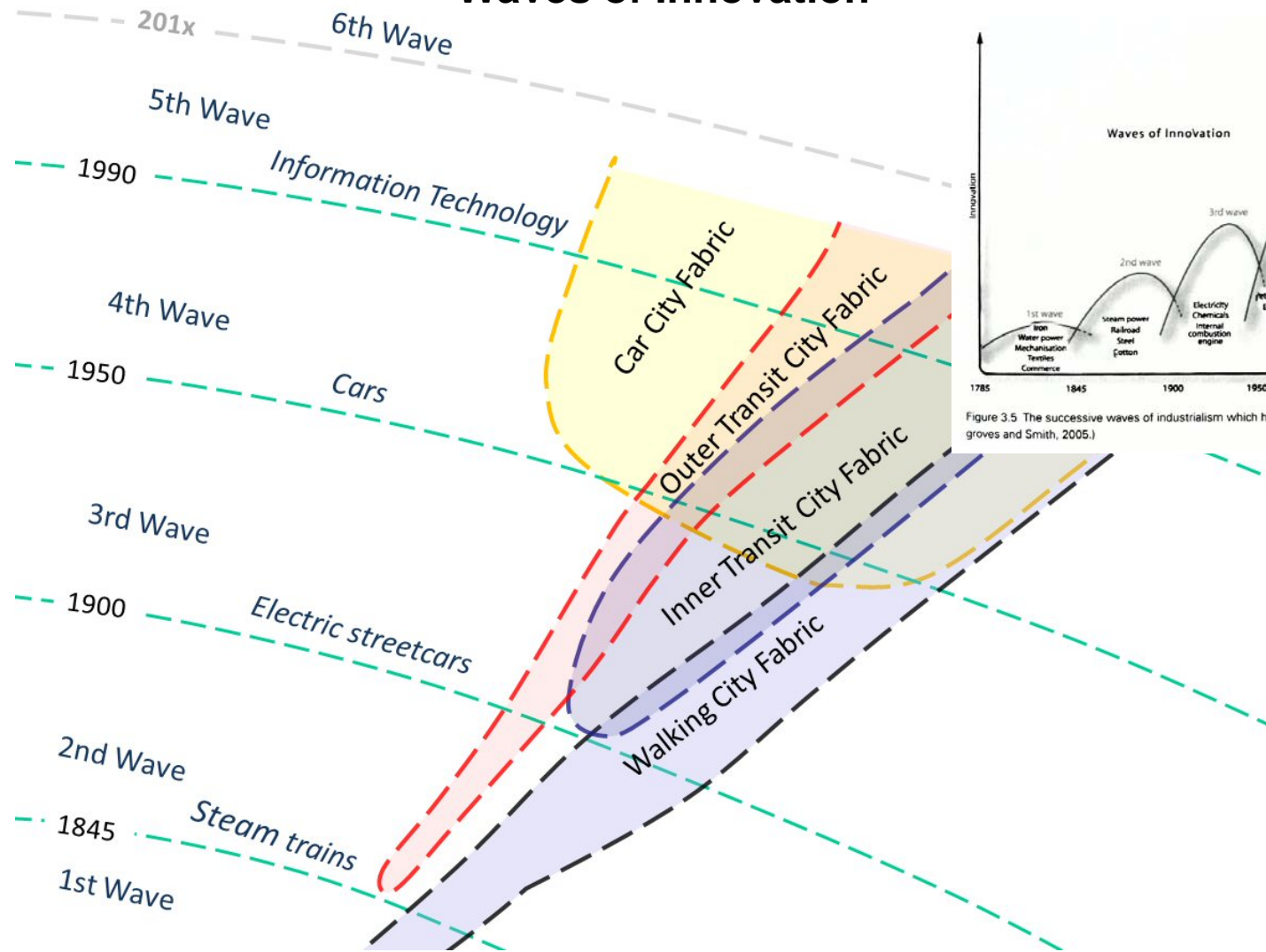
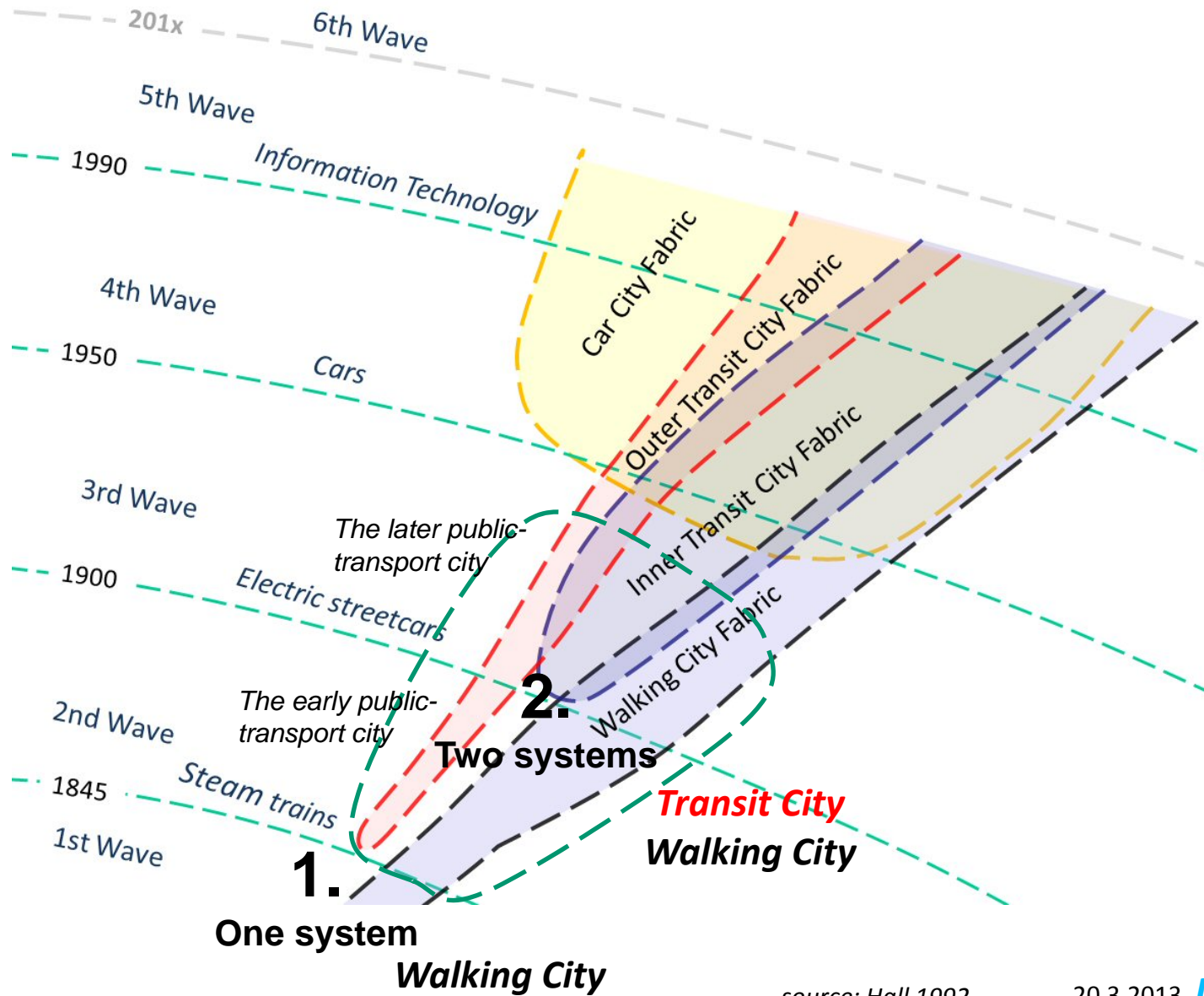


Figure 3.5 The successive waves of industrialism which have shaped cities. (Credit: Hargroves and Smith, 2005.)

Urban Fabrics

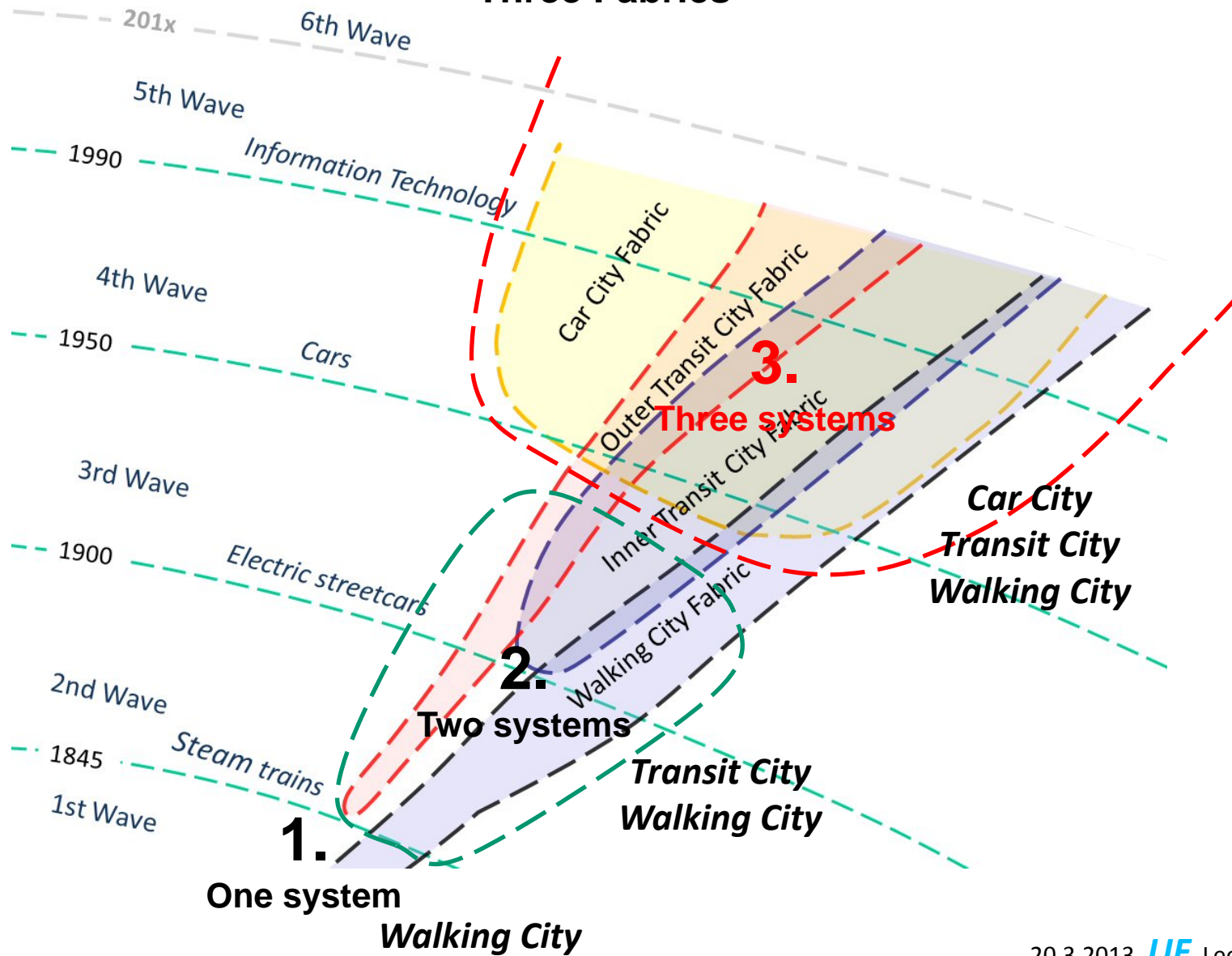
First two stages – two fabrics



source: Hall 1992

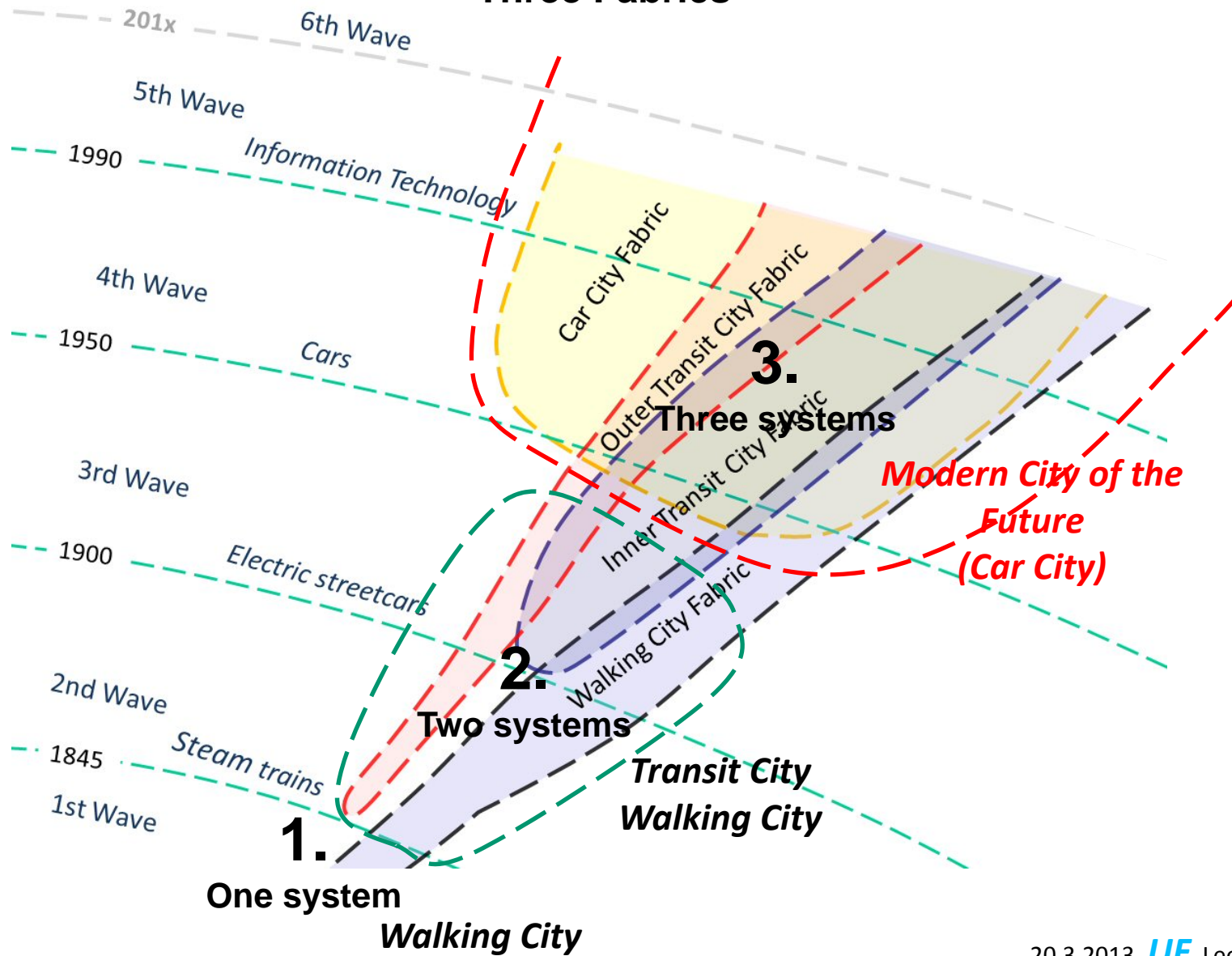
Urban Fabrics

The Present Stage of Three Fabrics



Urban Fabrics

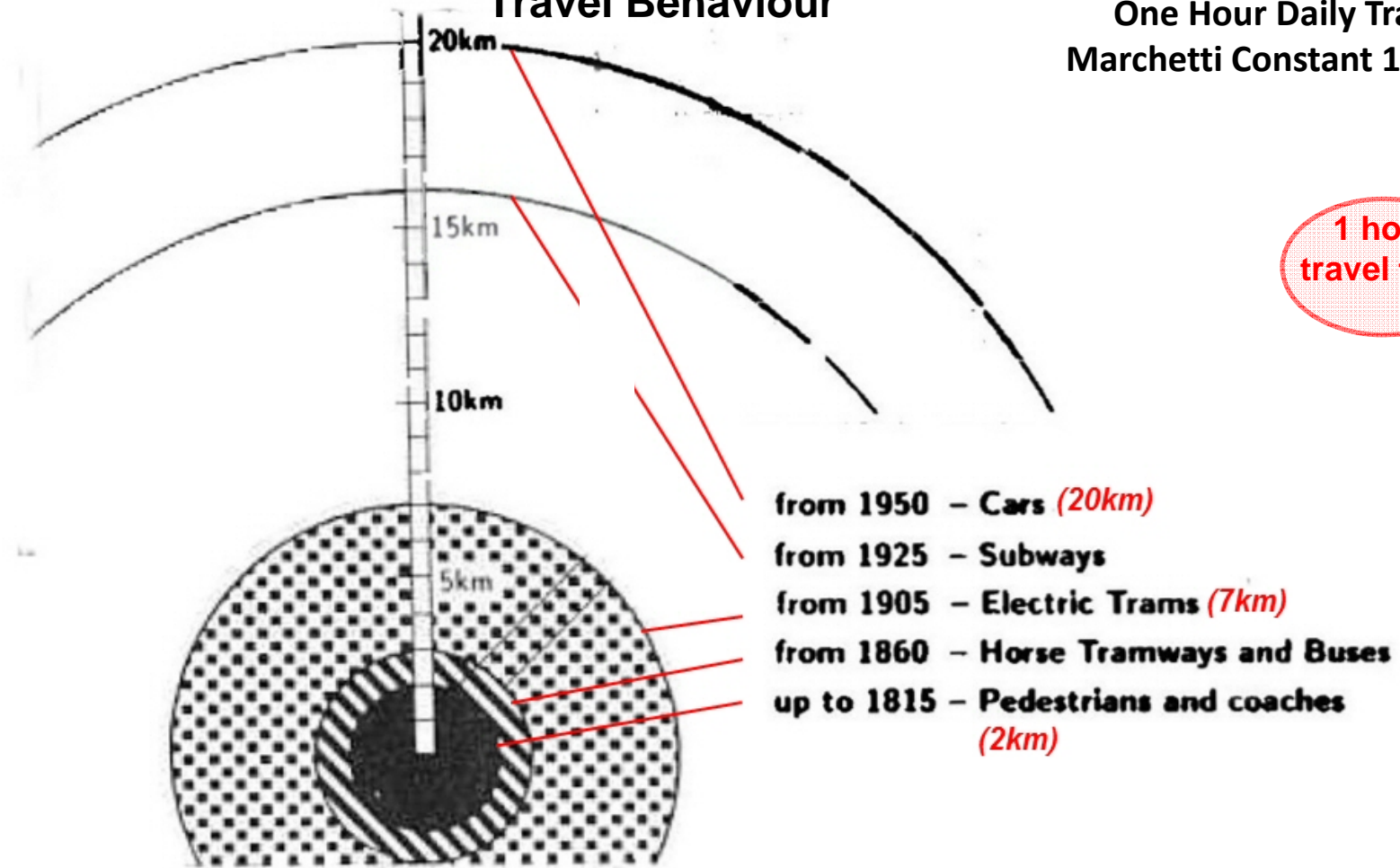
The Present Stage of Three Fabrics



Urban Fabrics A Product of Travel Behaviour

"Daily Radius"

One Hour Daily Travel
Marchetti Constant 1994

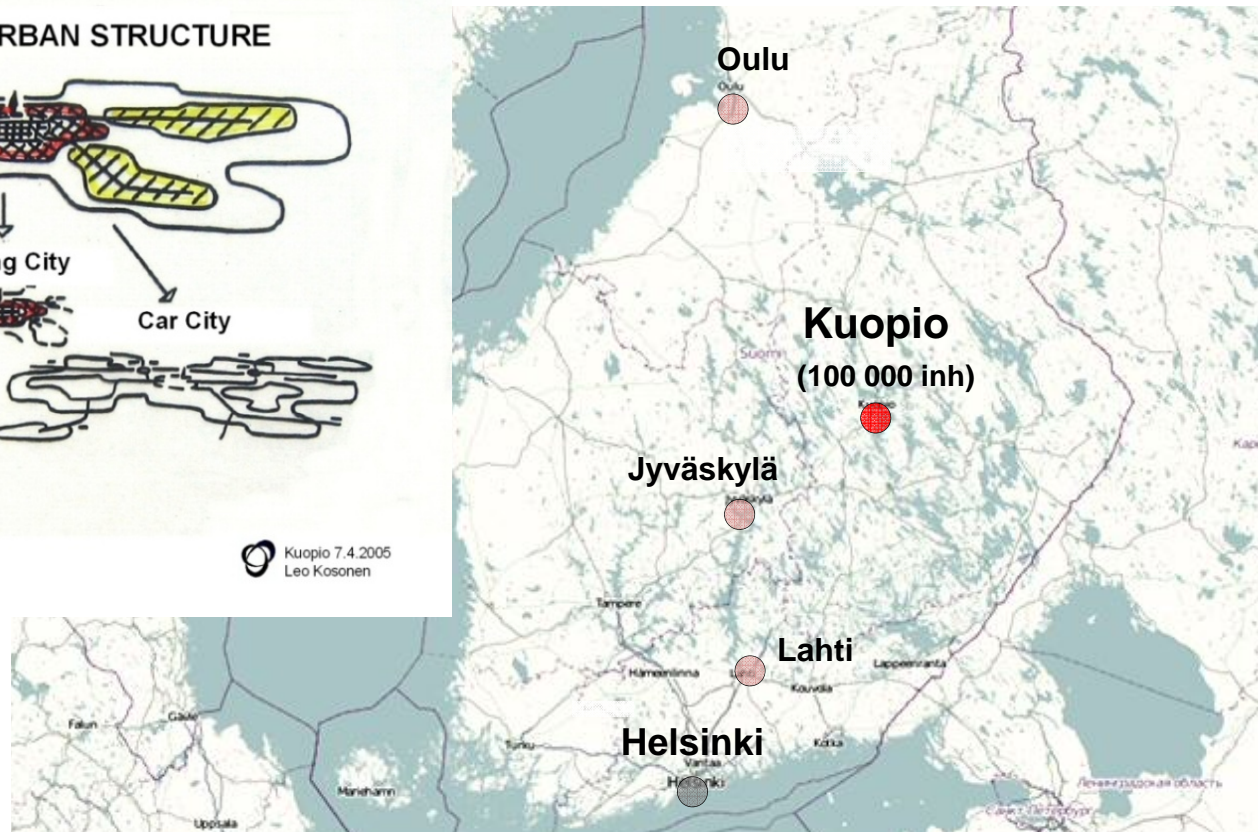
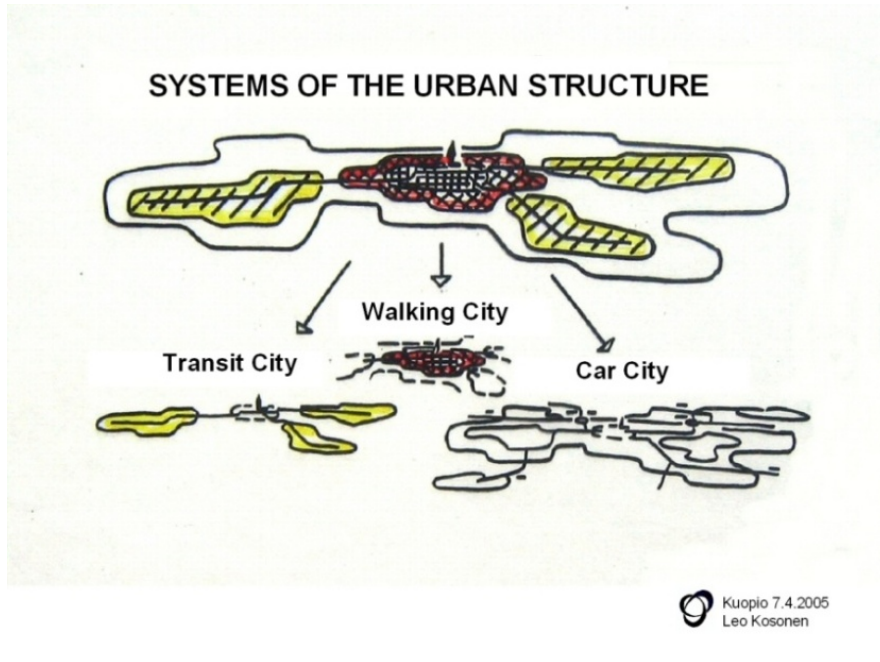


1 hour
travel time

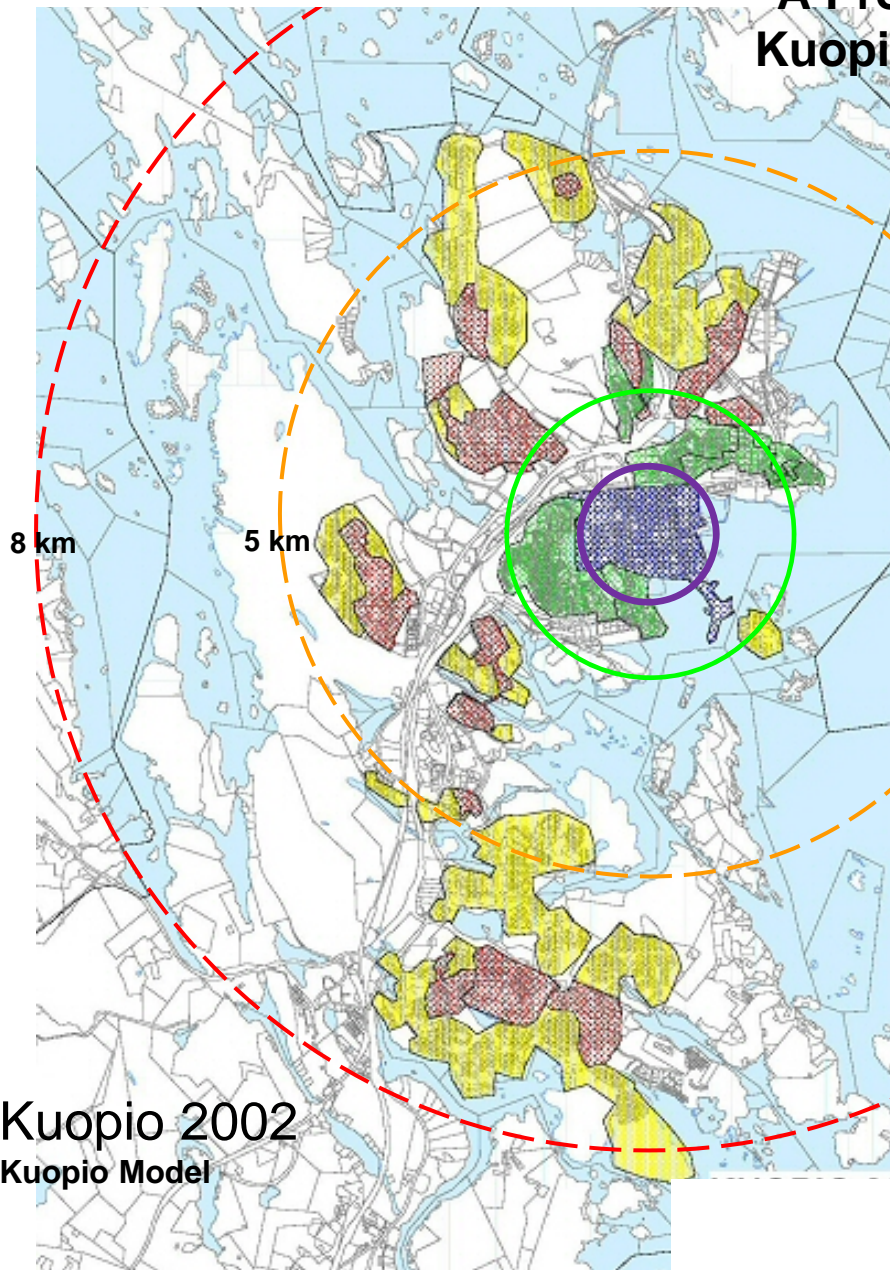
ANTHROPOLOGICAL INVARIANTS IN TRAVEL BEHAVIOR

Source: C. Marchetti Anthropological Invariants in Travel Behaviour
Technological Forecasting and Social Change 47, 75-88 (1994)

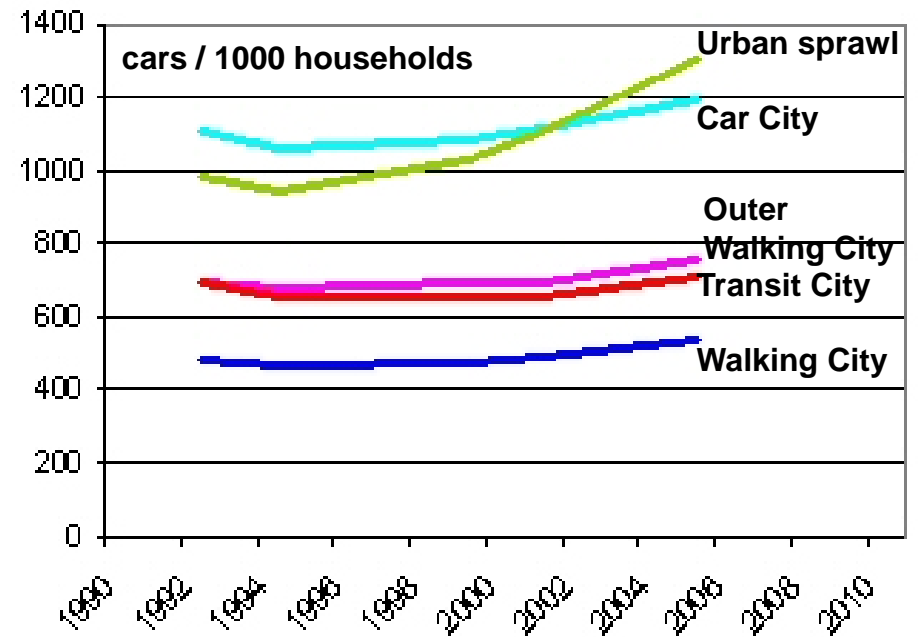
Urban Fabrics Kuopio Model A Prototype



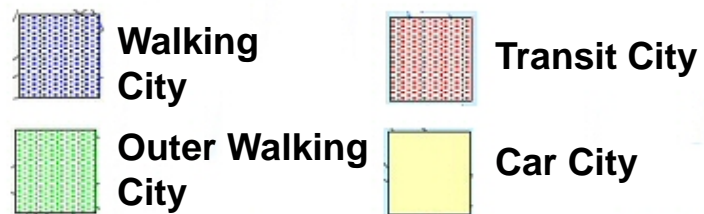
Urban Fabrics A Prototype Kuopio Model



Motorization 1990-2006 by Areas of the Fabrics



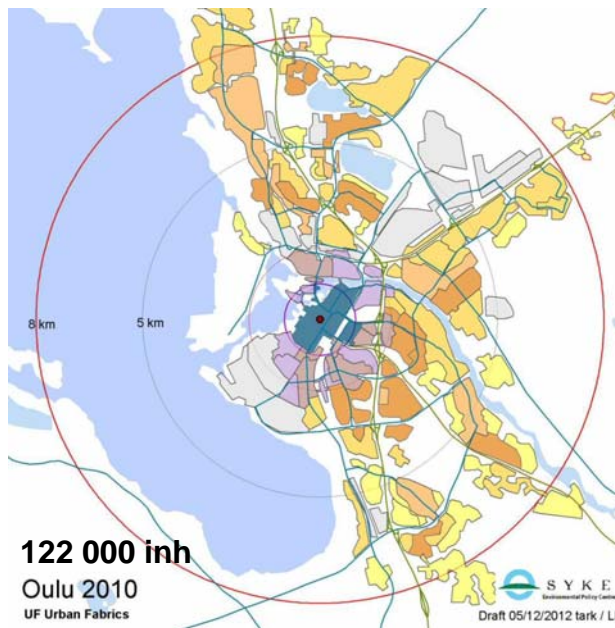
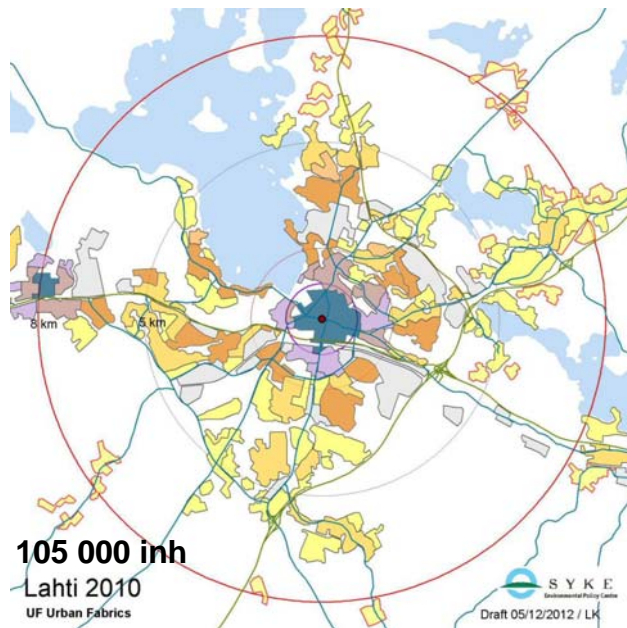
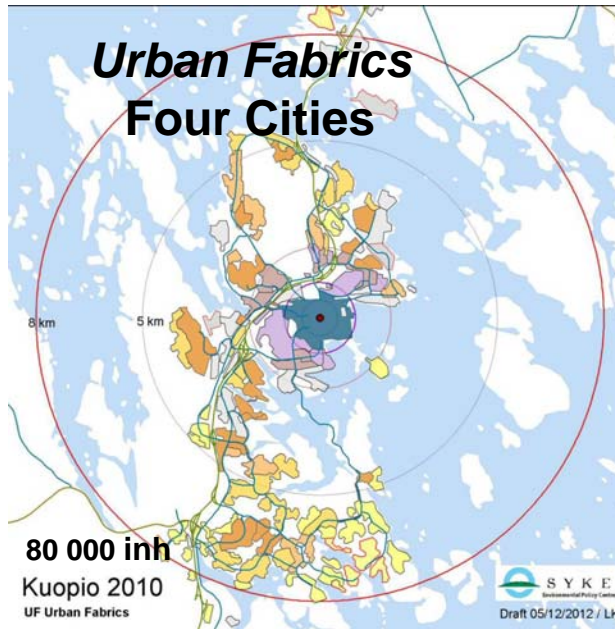
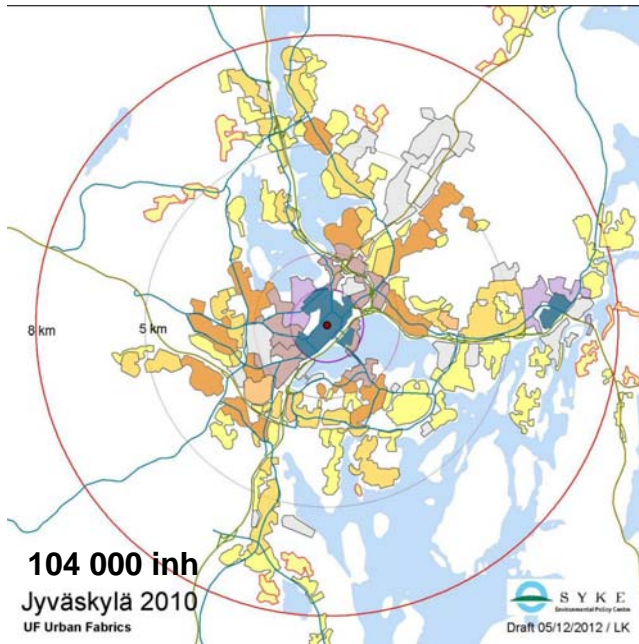
Housing 2001 by Areas of the Fabrics



UF project

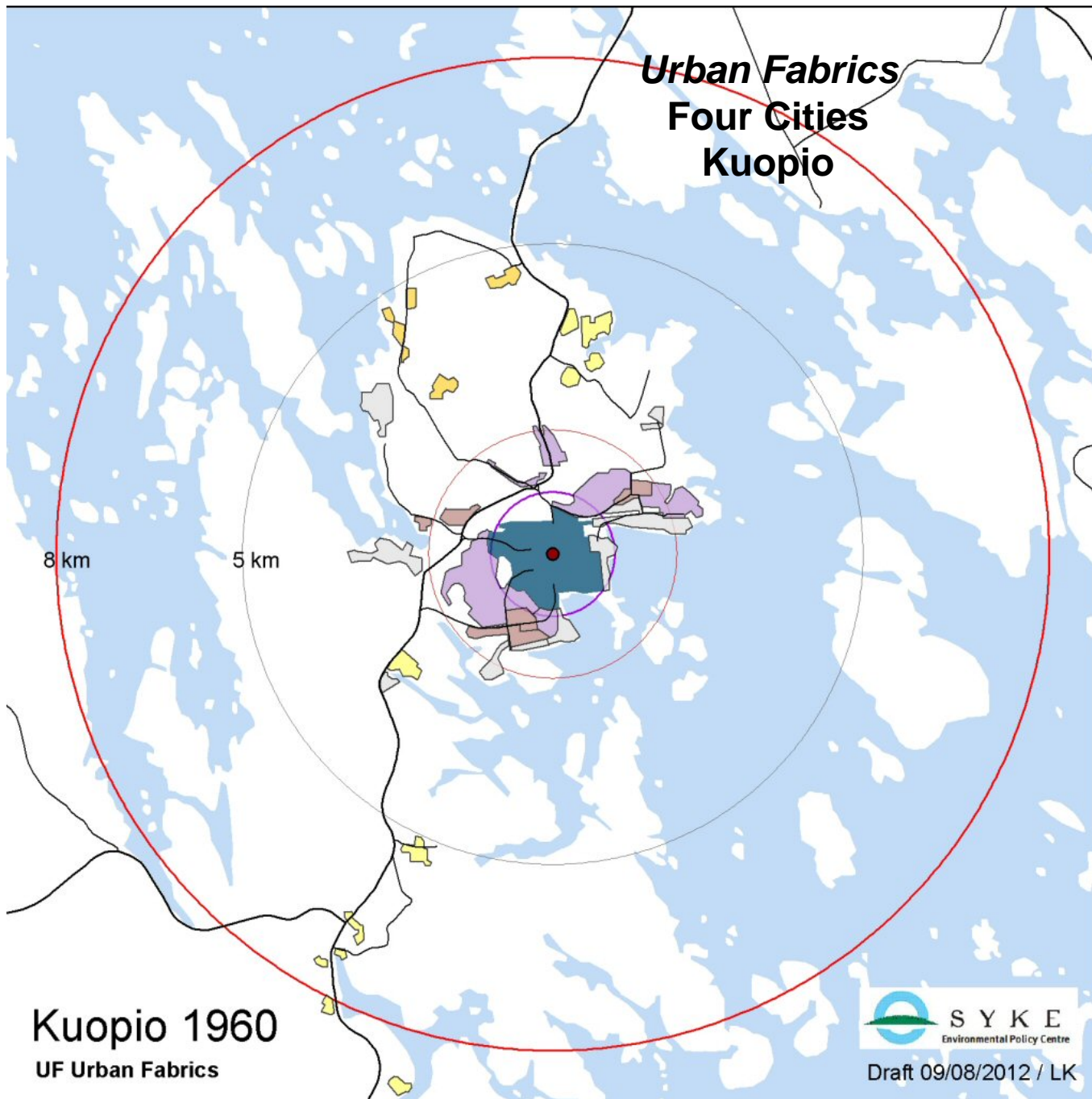
Four Cities 2010 Finland

Areas of Car- Transit- and Walking City Fabrics



- W (Walking City)
- WE
- WEB
- B (Bus City)
- BC
- CB
- C (Car City)

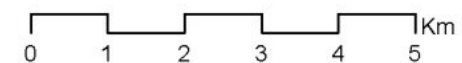
Urban Fabrics Four Cities Kuopio

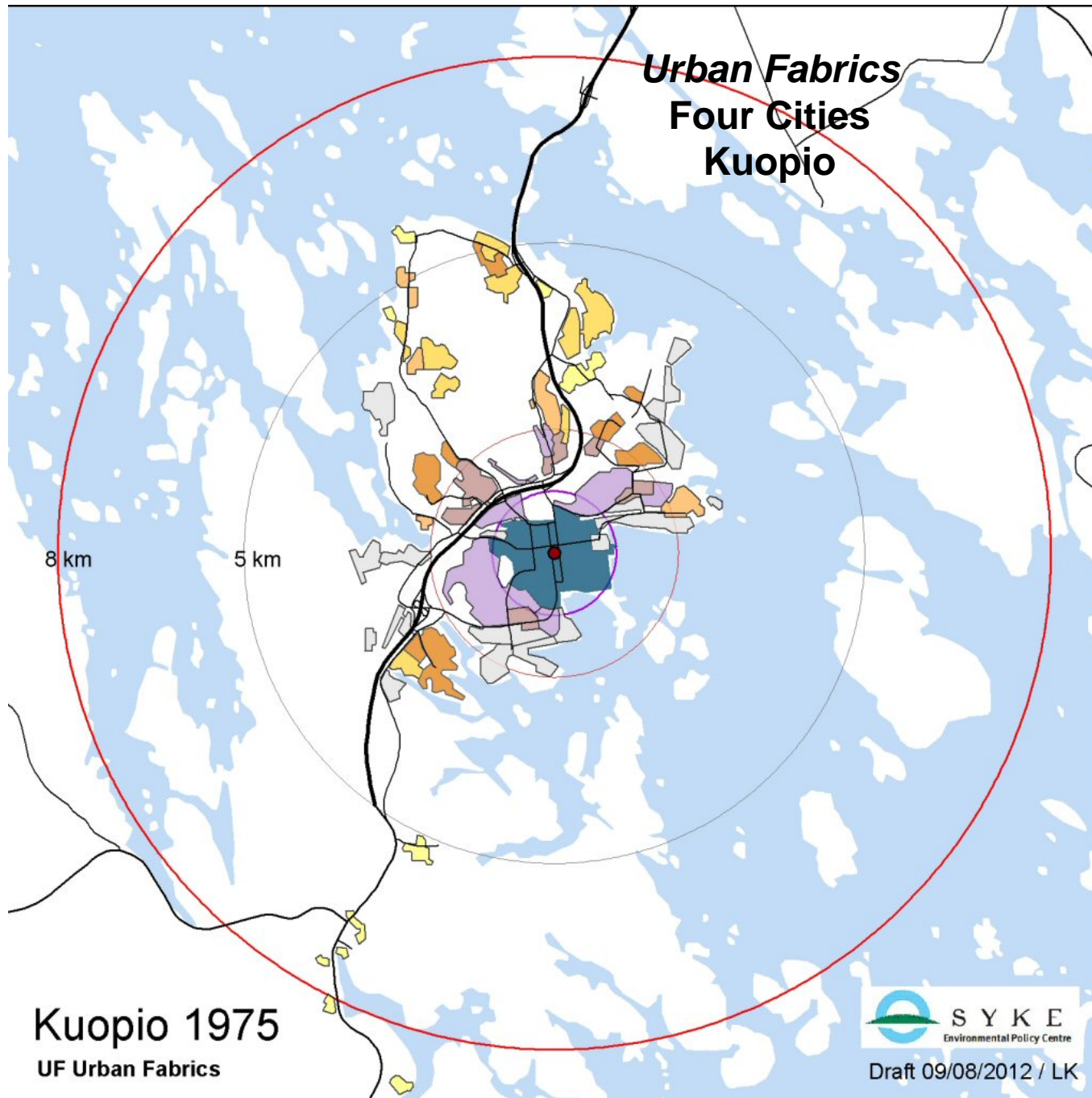


Areas_1960

SubFabric

- W (Walking City)
- WE
- WEB
- B (Bus City)
- BC
- CB
- C (Car City)
- CD
- WS (Sub Center)
- WSB
- CW
- P (Production)

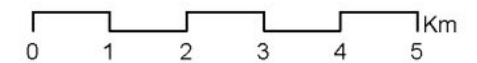




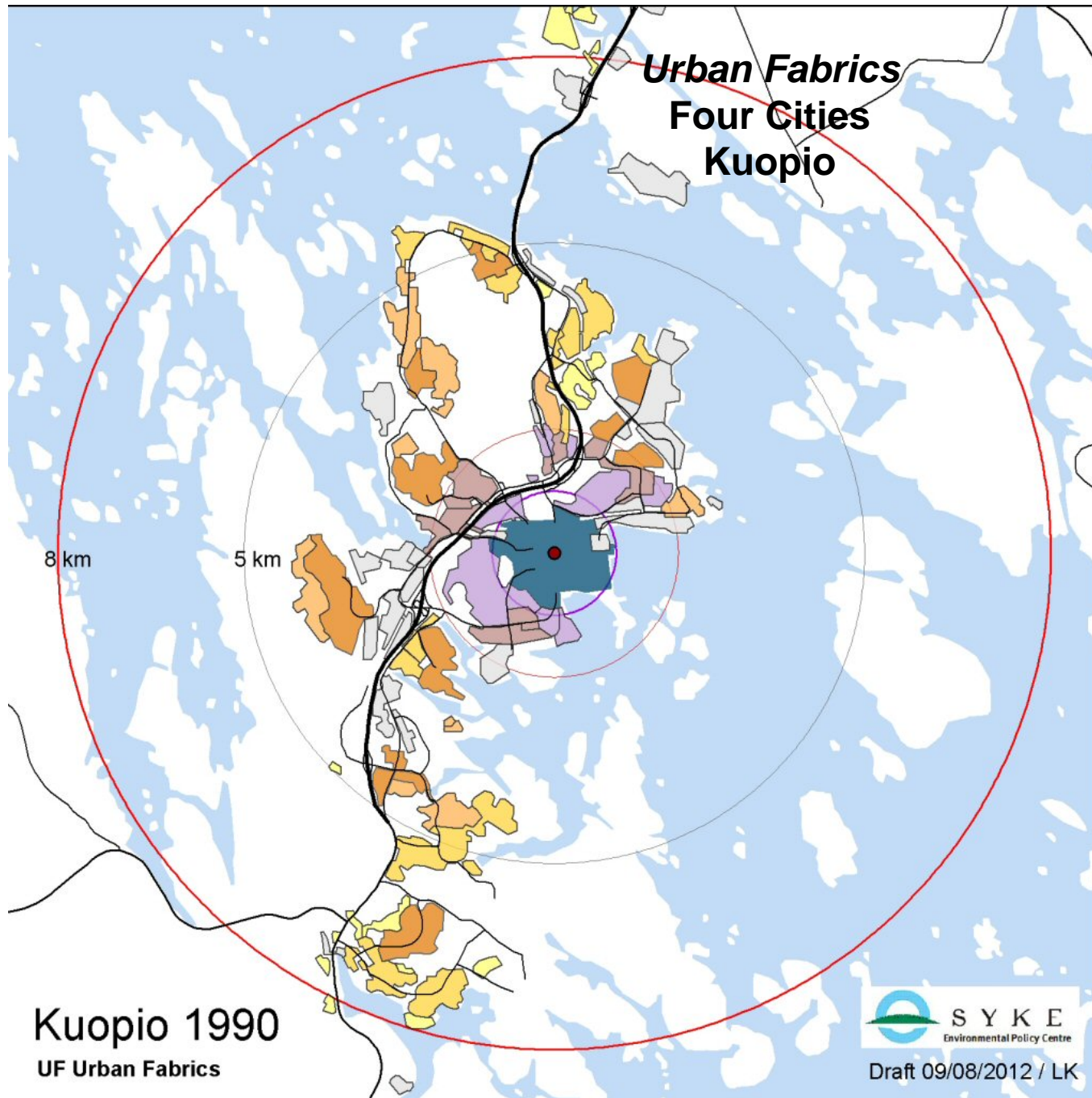
Areas_1975

SubFabric

- W (Walking City)
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- P (Production)



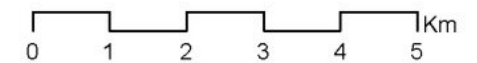
13.8.2012 **UF** Leo Kosonen



Areas_1990

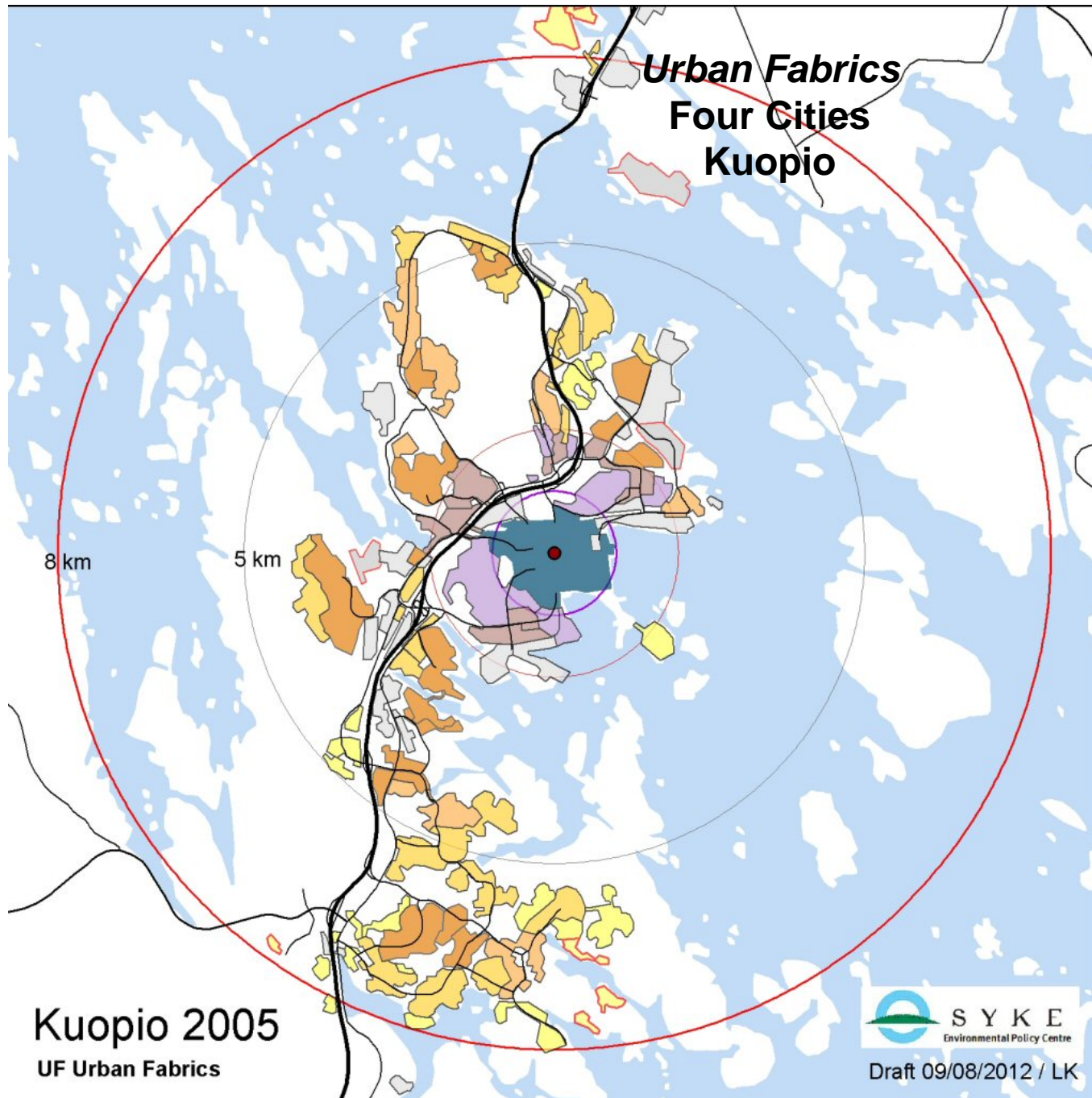
SubFabric

- W (Walking City)
- WE
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- CB
- C (Car City)
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- WS (Sub Centre)
- WSB
- CW
- P (Production)



Kuopio 1990
UF Urban Fabrics

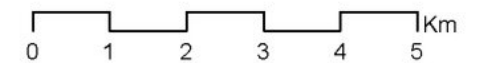
SYKE
Environmental Policy Centre
Draft 09/08/2012 / LK



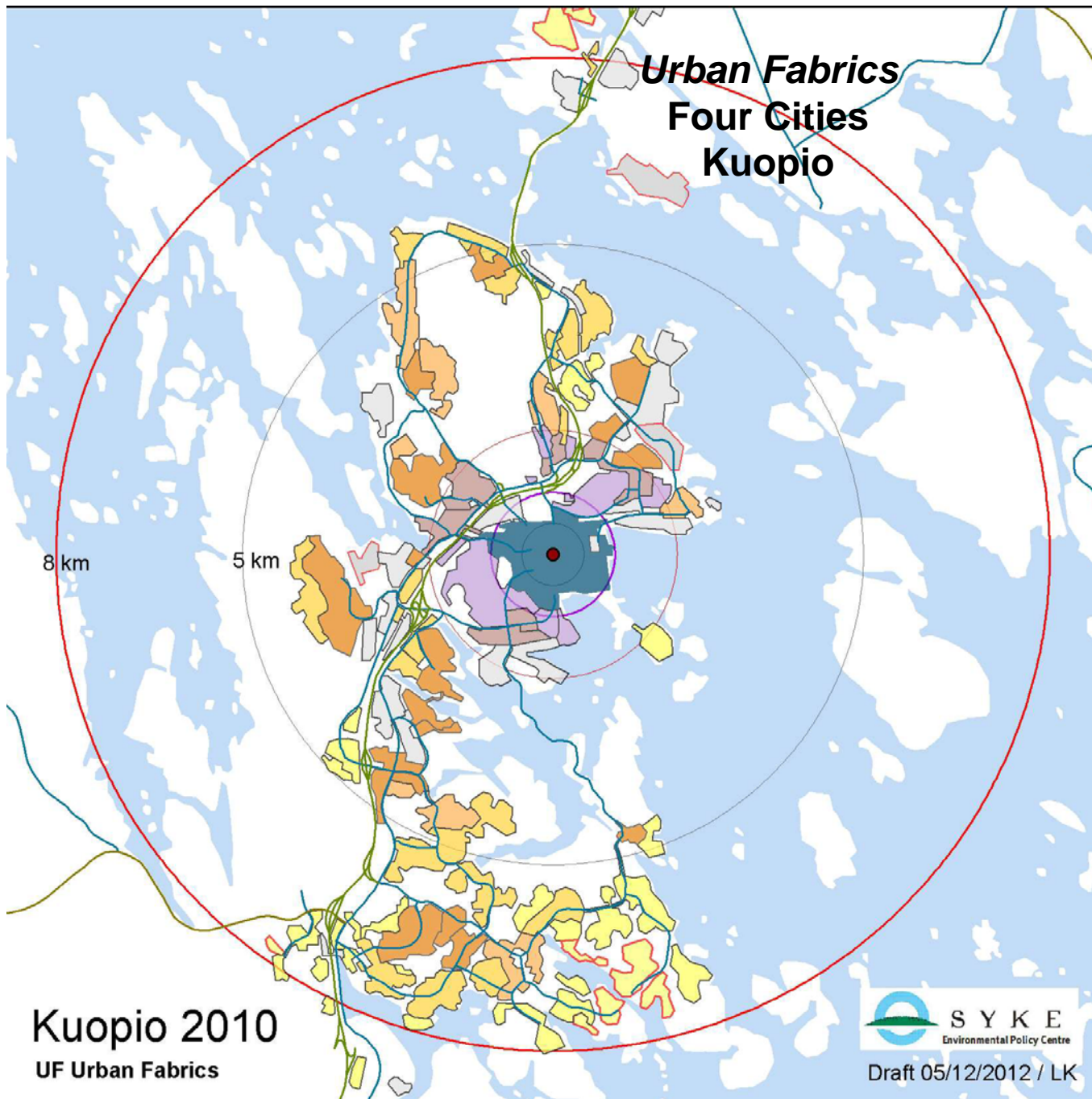
Areas_2005

SubFabric

- W (Walking City)
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- B (Bus City)
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- CB
- C (Car City)
- CD
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- WSB
- CW
- P (Production)
- PD



Urban Fabrics Four Cities Kuopio



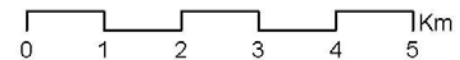
Areas_2010

SubFabric

- W (Walking City)
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- PD

Kuopio 2010
UF Urban Fabrics

SYKE
Environmental Policy Centre
Draft 05/12/2012 / LK



Urban Zone project

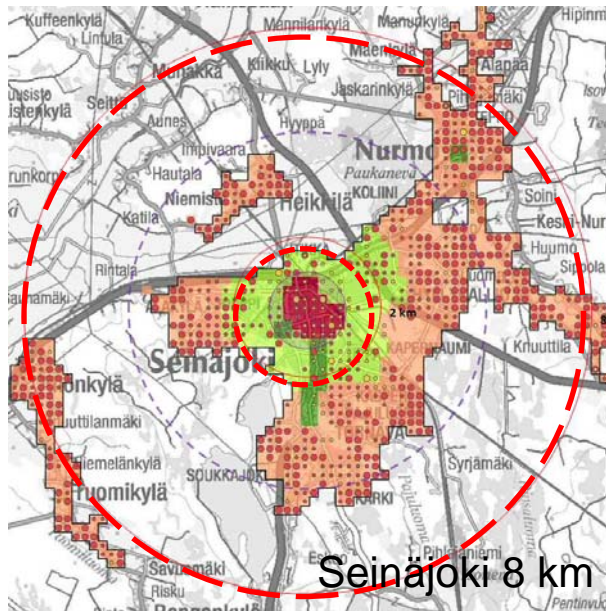
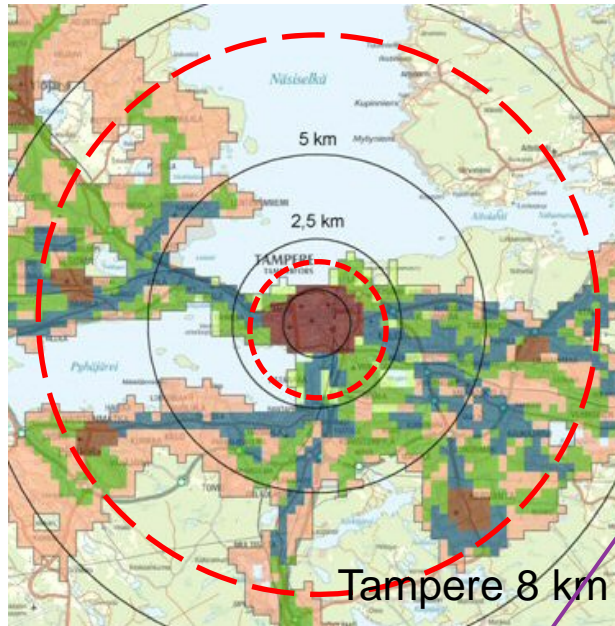
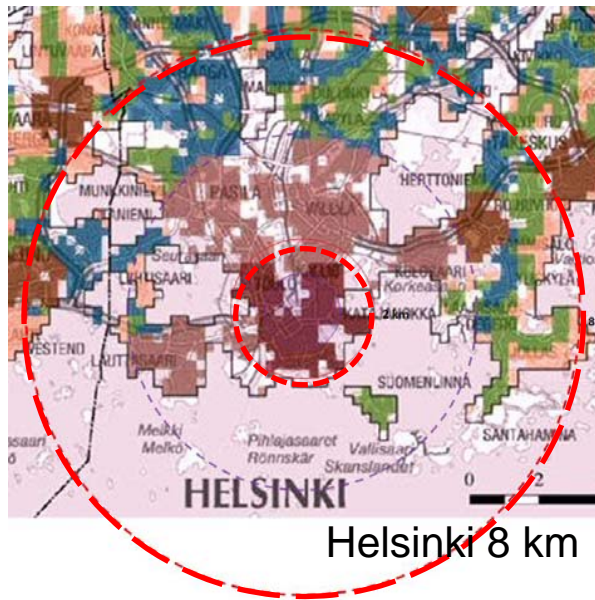
Scales of the Urban Fabrics

the City Area:

2 km Walking City

8 km Inner Transit City

1 hour travel time



source: UZ Syke

10.6.2013 UF Leo Kosonen

Urban Zone Project Finland

Scales of the Urban Fabrics

the City Area:

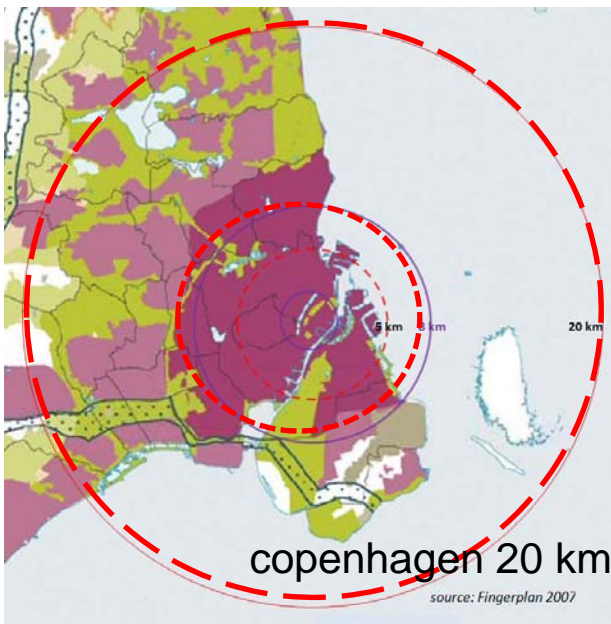
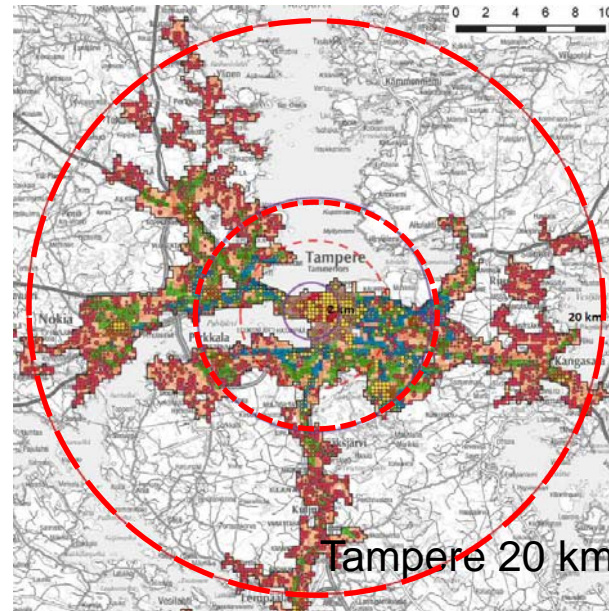
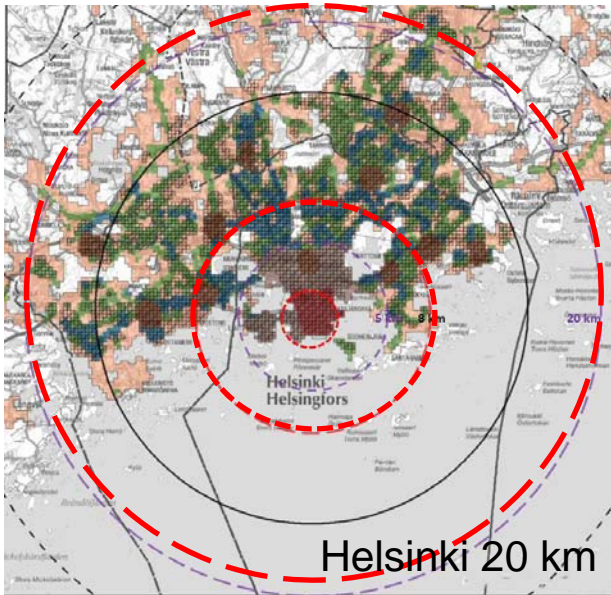
2 km Walking City

8 km Inner Transit City

20 km Outer Transit City

Car City

1 hour
travel time



Sources: UZ Syke, Fingerplan 2007, Katumetro 2012

10.6.2013 **UF** Leo Kosonen

Global Cities
1990

Scales of the Urban Fabrics

the City Area:

2 km Walking City

8 km Inner Transit City

20 km Outer Transit City

Car City

The Region:

1 hour travel time

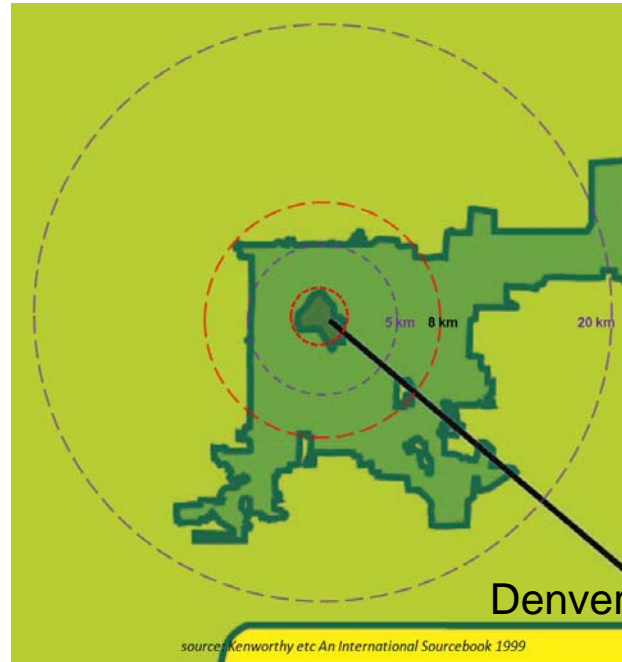
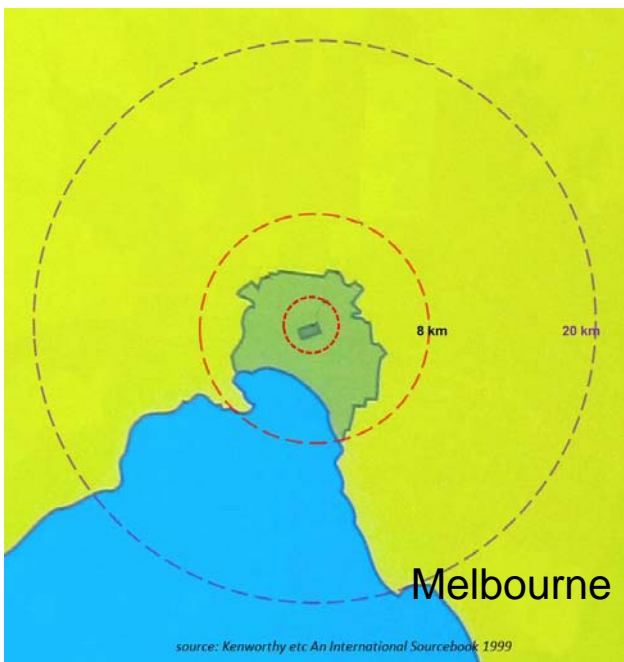
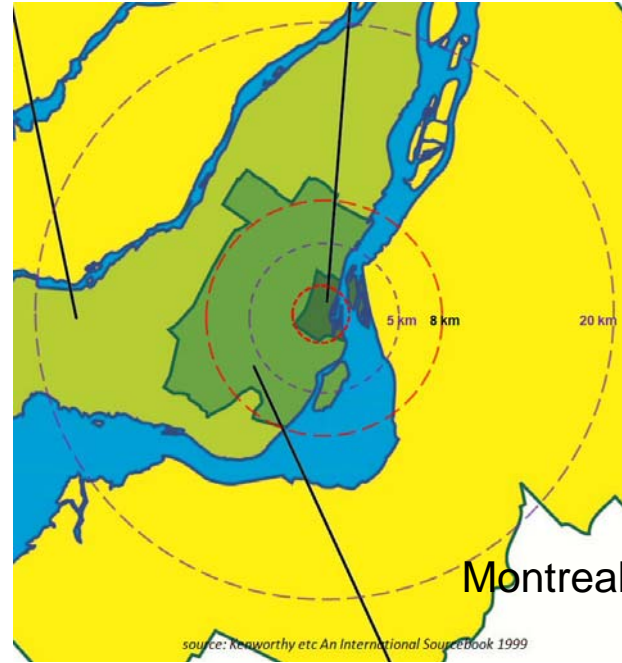
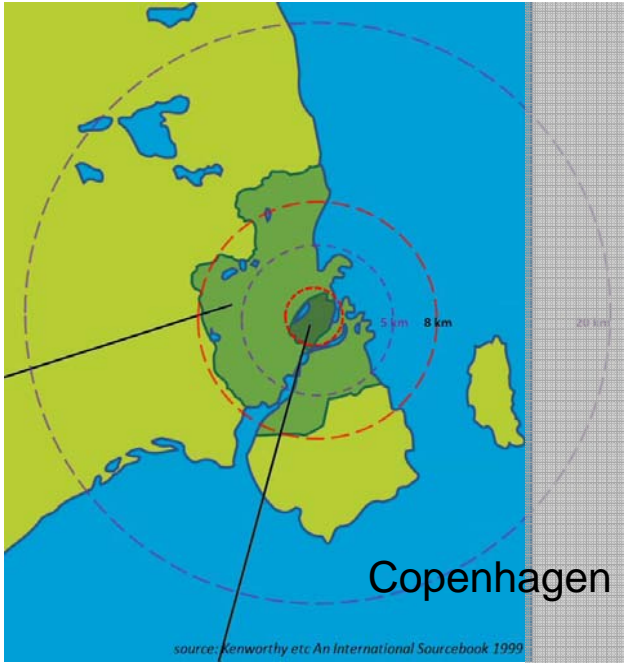
20 -50 km

Rail based towns and villages

Car based periurban areas, villages and towns

Sourcebook 1999:

- Central Business District
- Inner City
- Metropolitan Area



source: Kenworthy et al An International Sourcebook 1999

Global Cities
1990

**Scales of the Urban
Fabrics**

the City Area:

2 km Walking City

8 km Inner Transit City

20 km Outer Transit City

Car City

The Region:

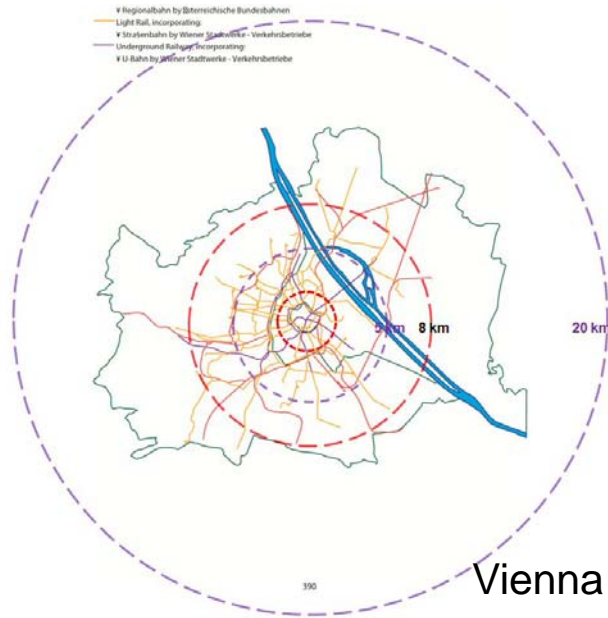
**1 hour
travel time**

20 -50 km

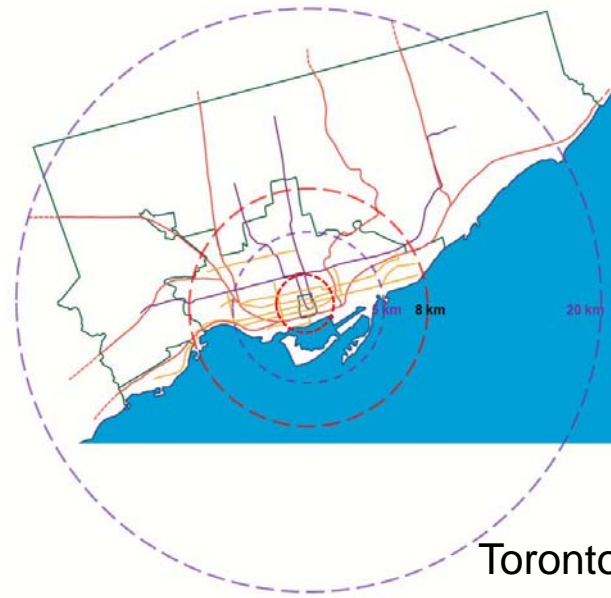
Rail based towns and
villages

Car based periurban areas,
villages and towns

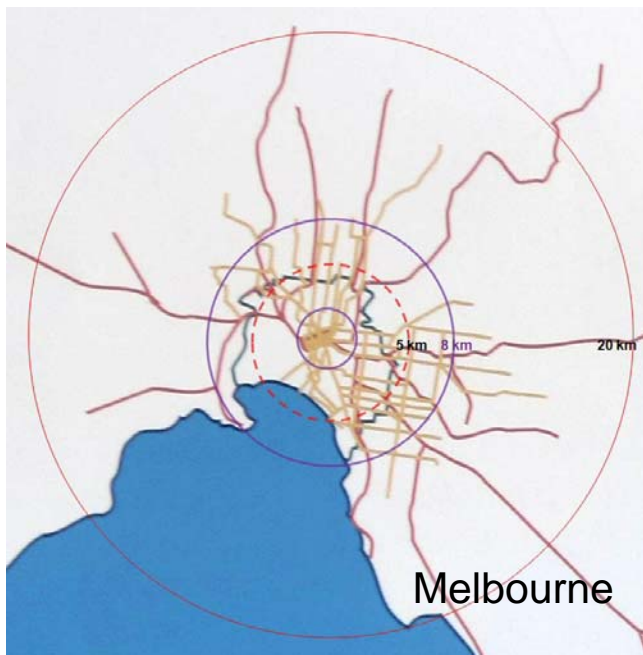
Sourcebook 1999:



Vienna



Toronto



Melbourne

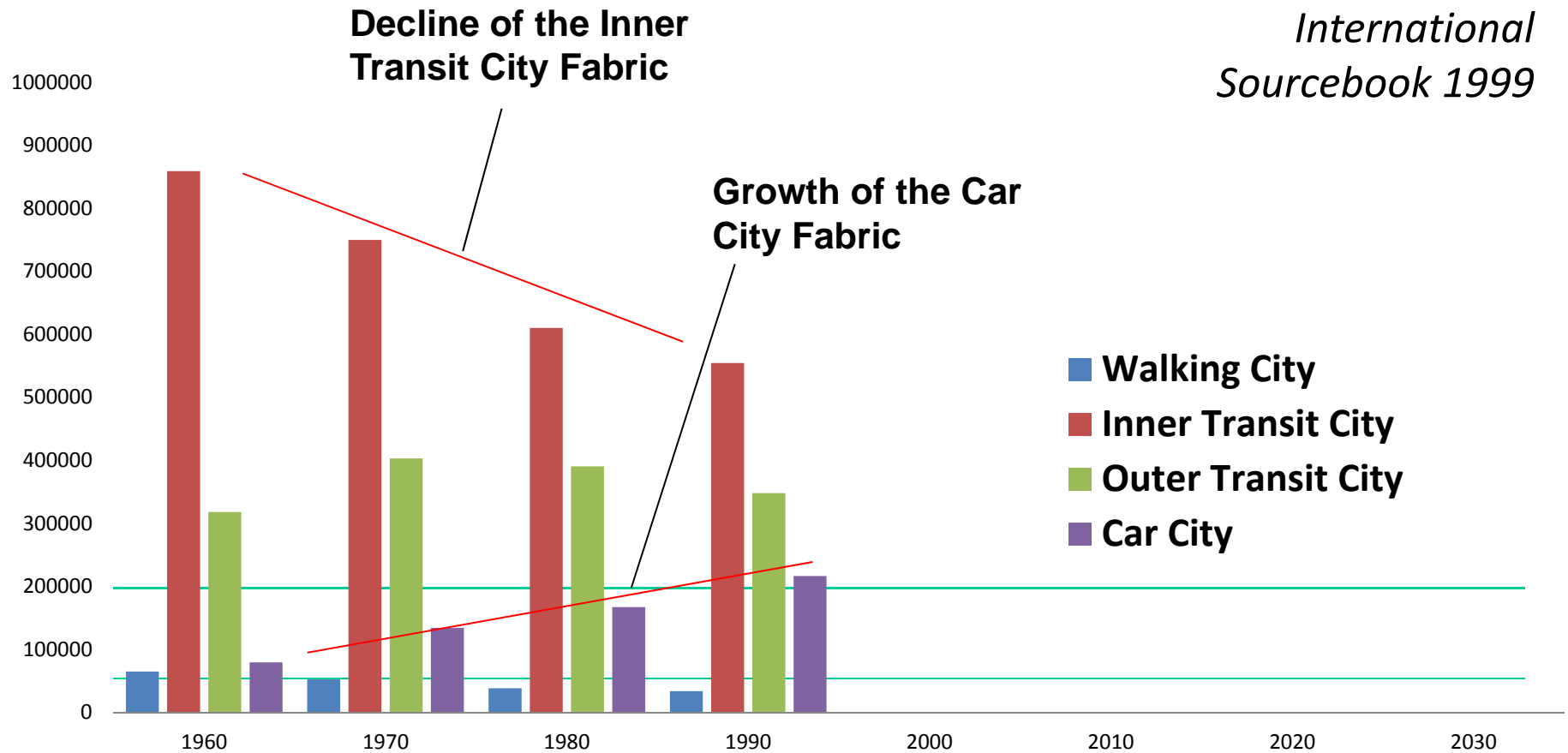


Stockholm

source: Kenworthy et al An International Sourcebook 1999

Copenhagen Urban Fabrics Population 1960-90

*International
Sourcebook 1999*



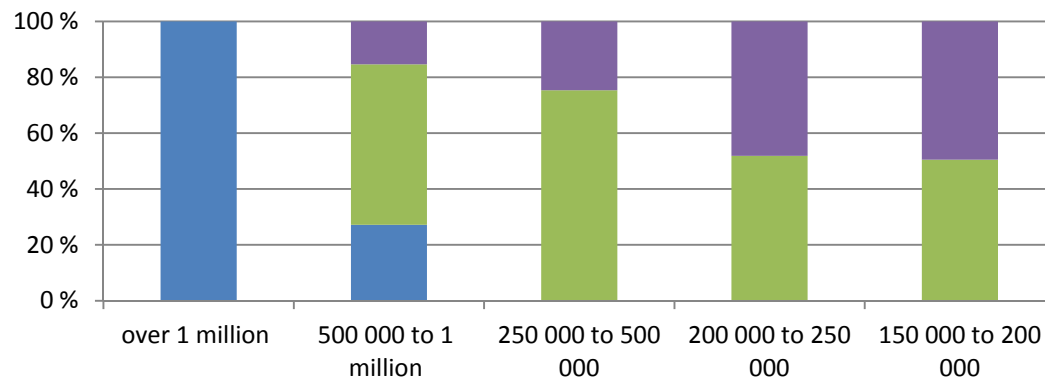
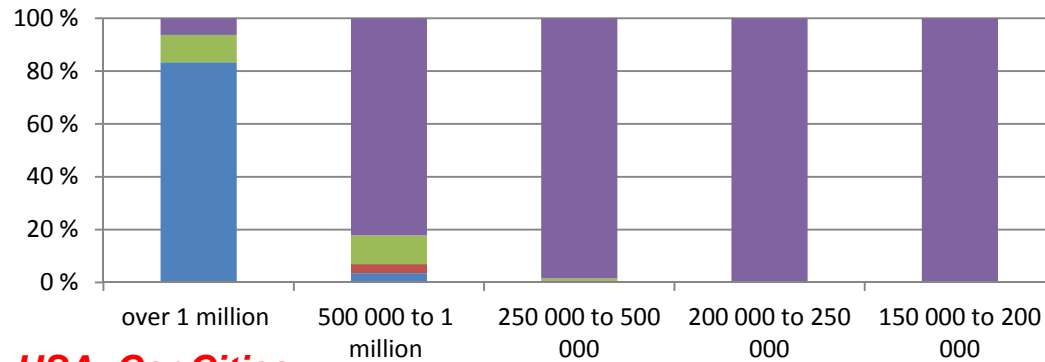
source: Kenworthy et al An International Sourcebook 1999

Cities 2010 over 150 000 inh

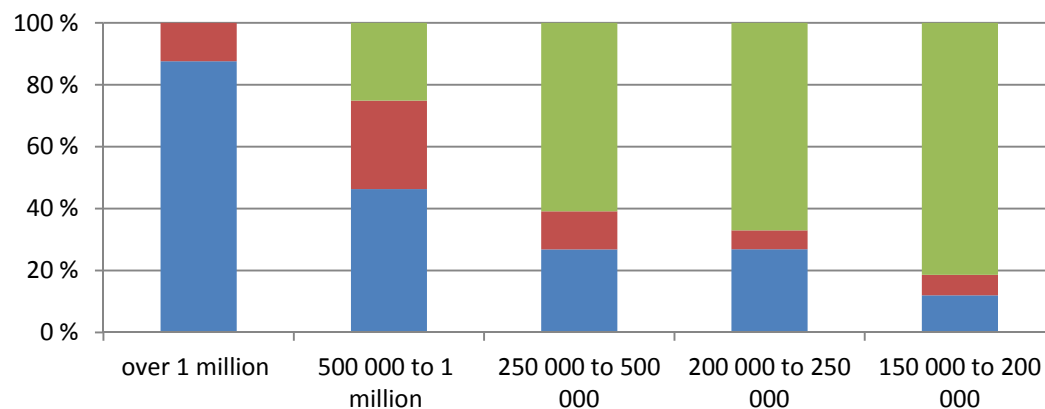
Cities by Type of Public transportation Systems (%)

Continents by Size Groups of Cities

- Cities that have a metro or a light rail system (130)
- Cities that have tram and bus systems (60)
- Cities that have a bus system (300)
- No PT systems (Car City bus service only)



Canada and Australia, Car Cities



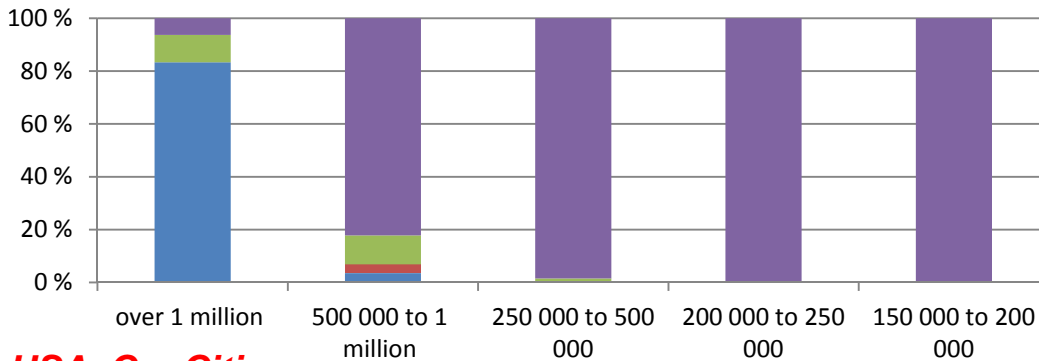
Europe, Transit Cities

source: Combinaton of several sources, Kosonen 2013

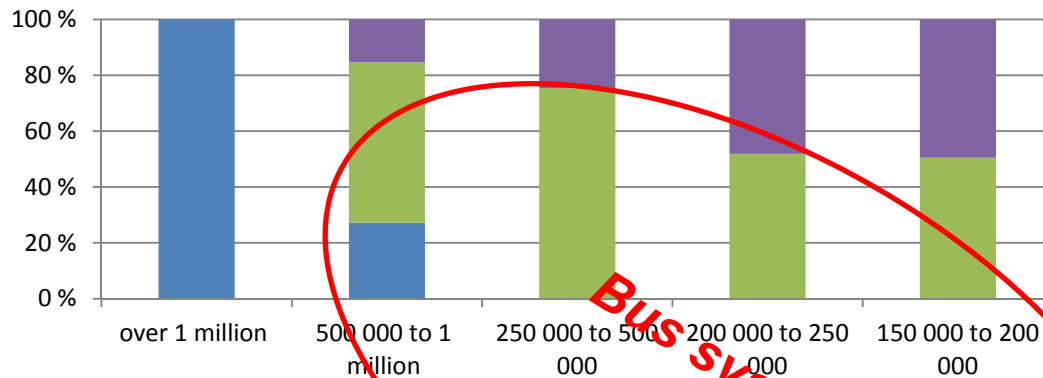
Cities 2010 over 150 000 inh

Cities by Type of Public transportation Systems (%)

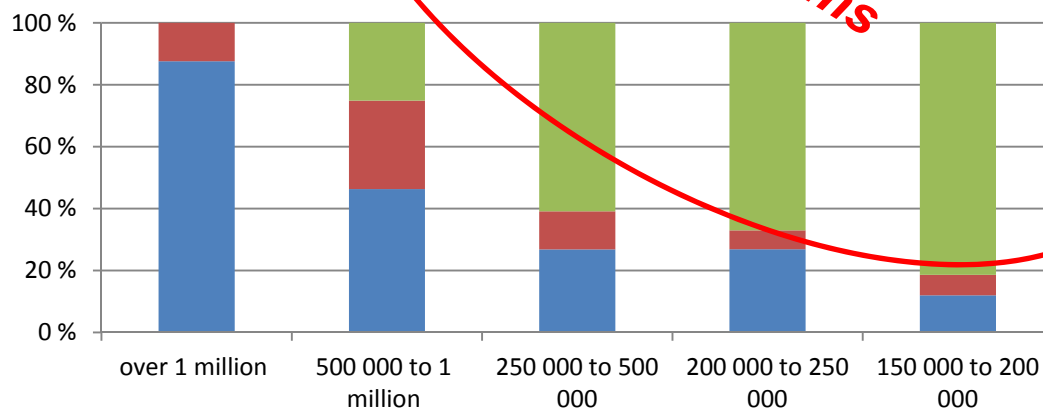
Continents by Size Groups of Cities



USA, Car Cities



Canada and Australia, Car Cities

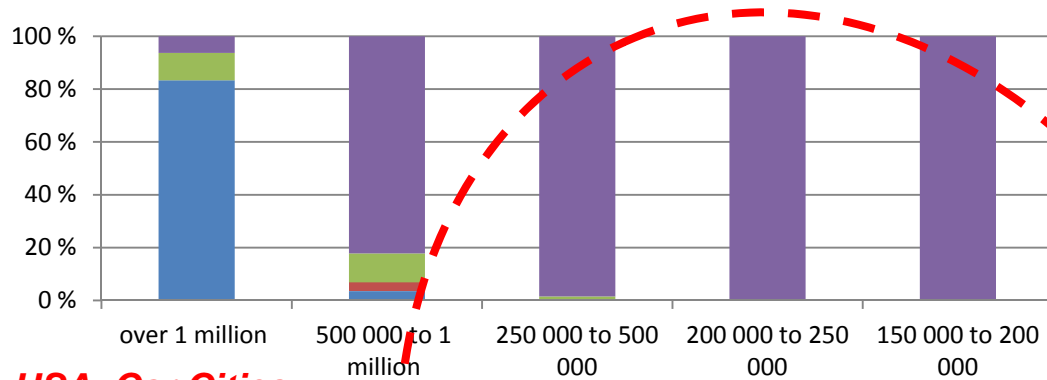


Europe, Transit Cities

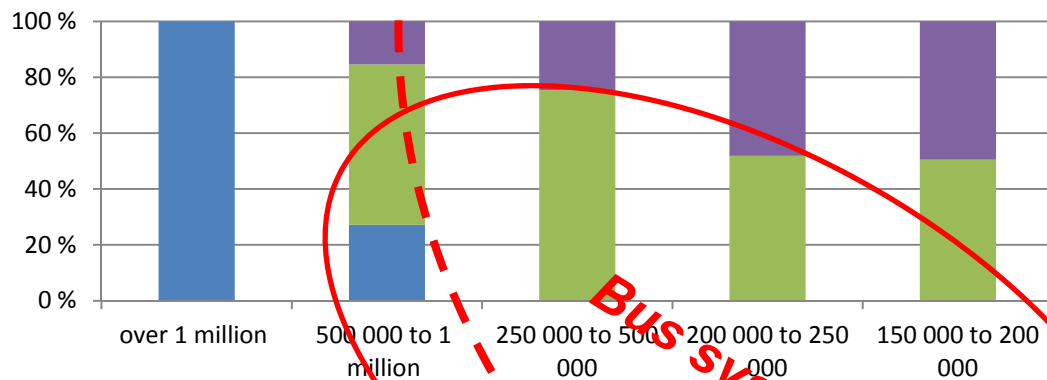
- Cities that have a metro or a light rail system
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source: Combinaton of several sources, Kosonen 2013

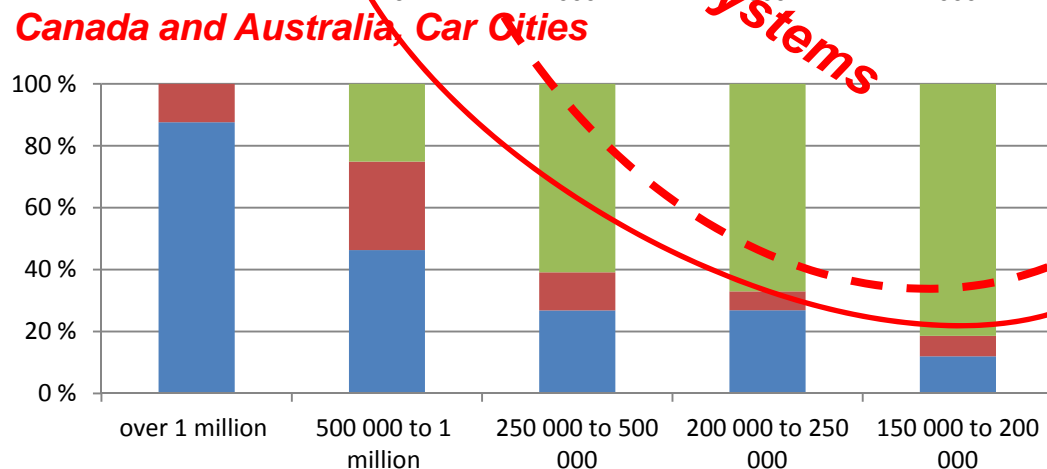
Cities 2010
over 150 000 inh



Cities by Type of Public transportation Systems (%)



Continents by Size Groups of Cities

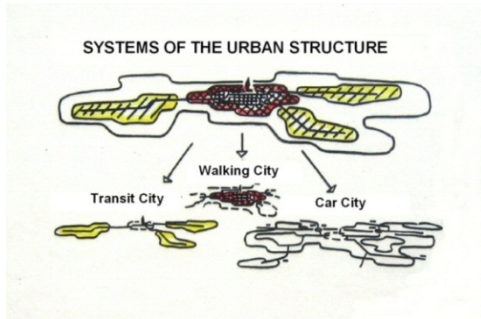


- Cities that have a metro or a light rail system
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source: Combinaton of several sources, Kosonen 2013

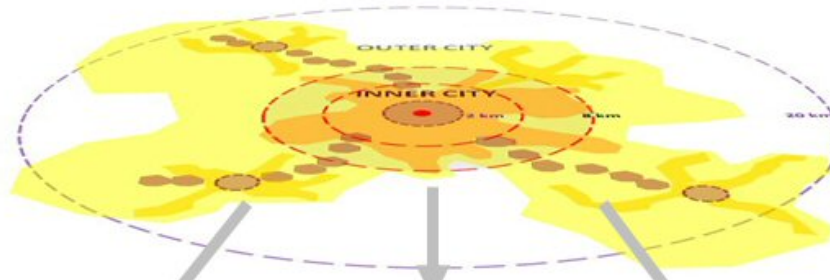
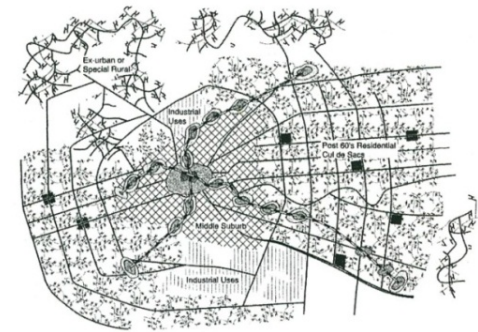
Three Urban Fabrics
A New Model

Areas and Dimensions



Kumpulio 7.4.2005
Leo Kosonen

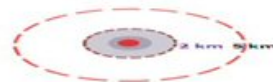
Three urban fabrics



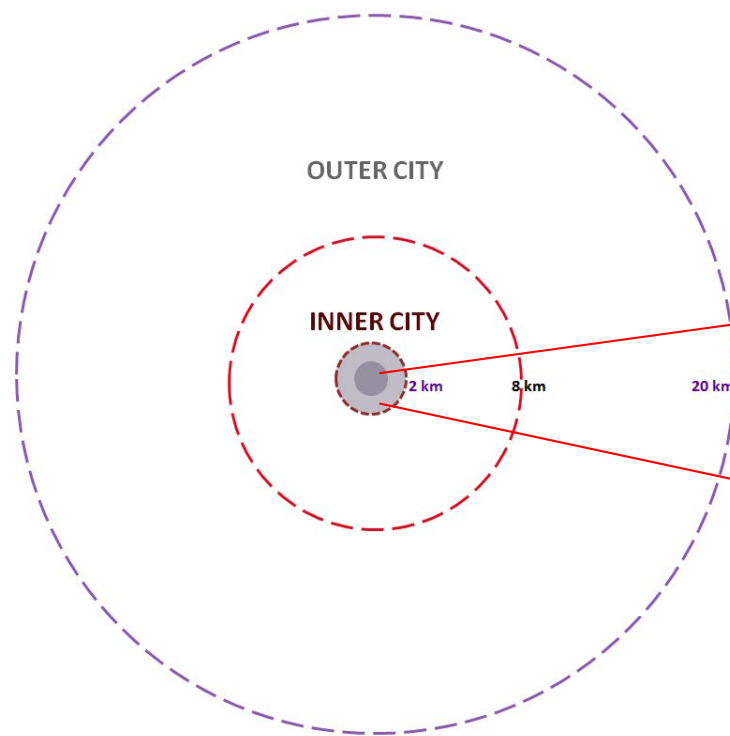
Walking City Fabric

Transit City Fabric

Car City Fabric



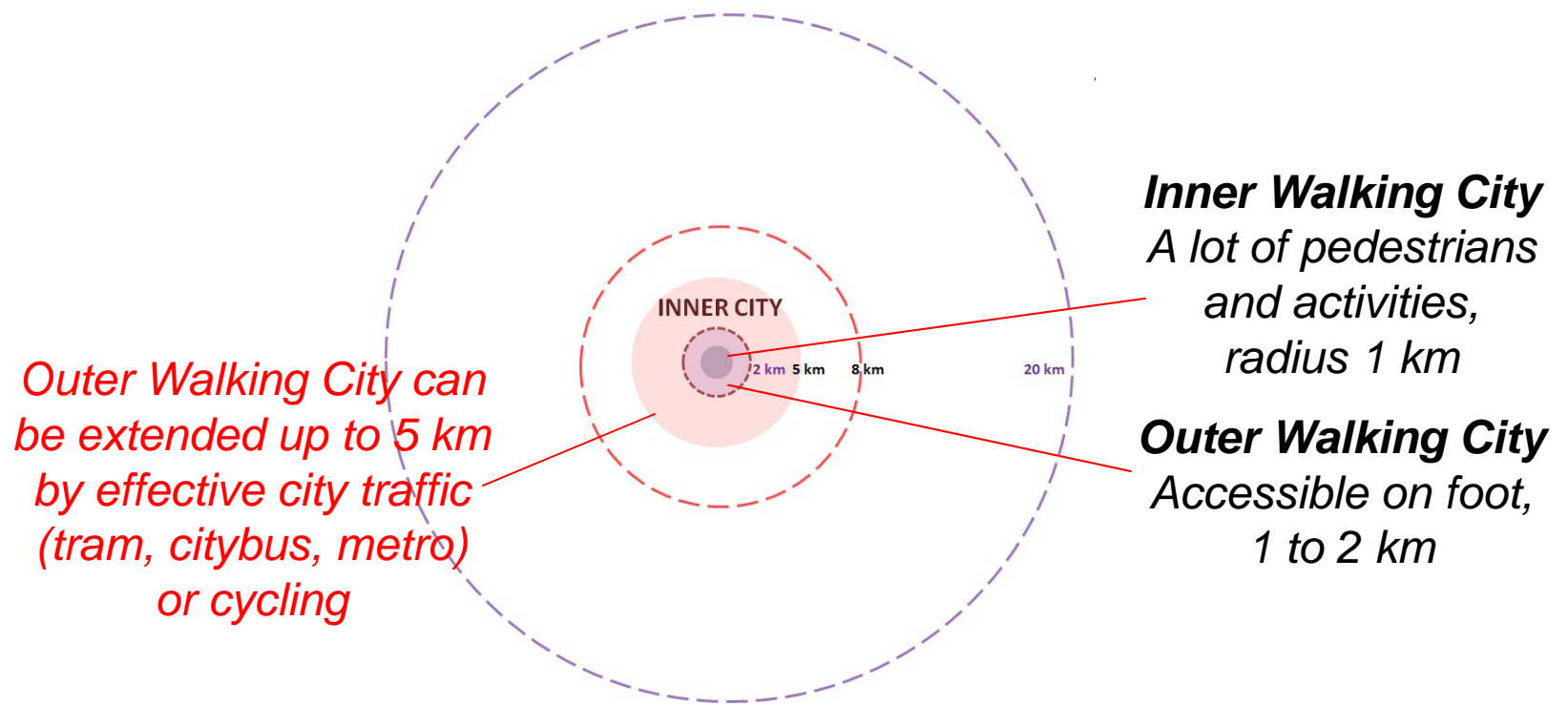
Walking City Fabric



Inner Walking City
*A lot of pedestrians
and activities,
radius 1 km*

Outer Walking City
*Accessible on foot,
1 to 2 km*

Walking City Fabric

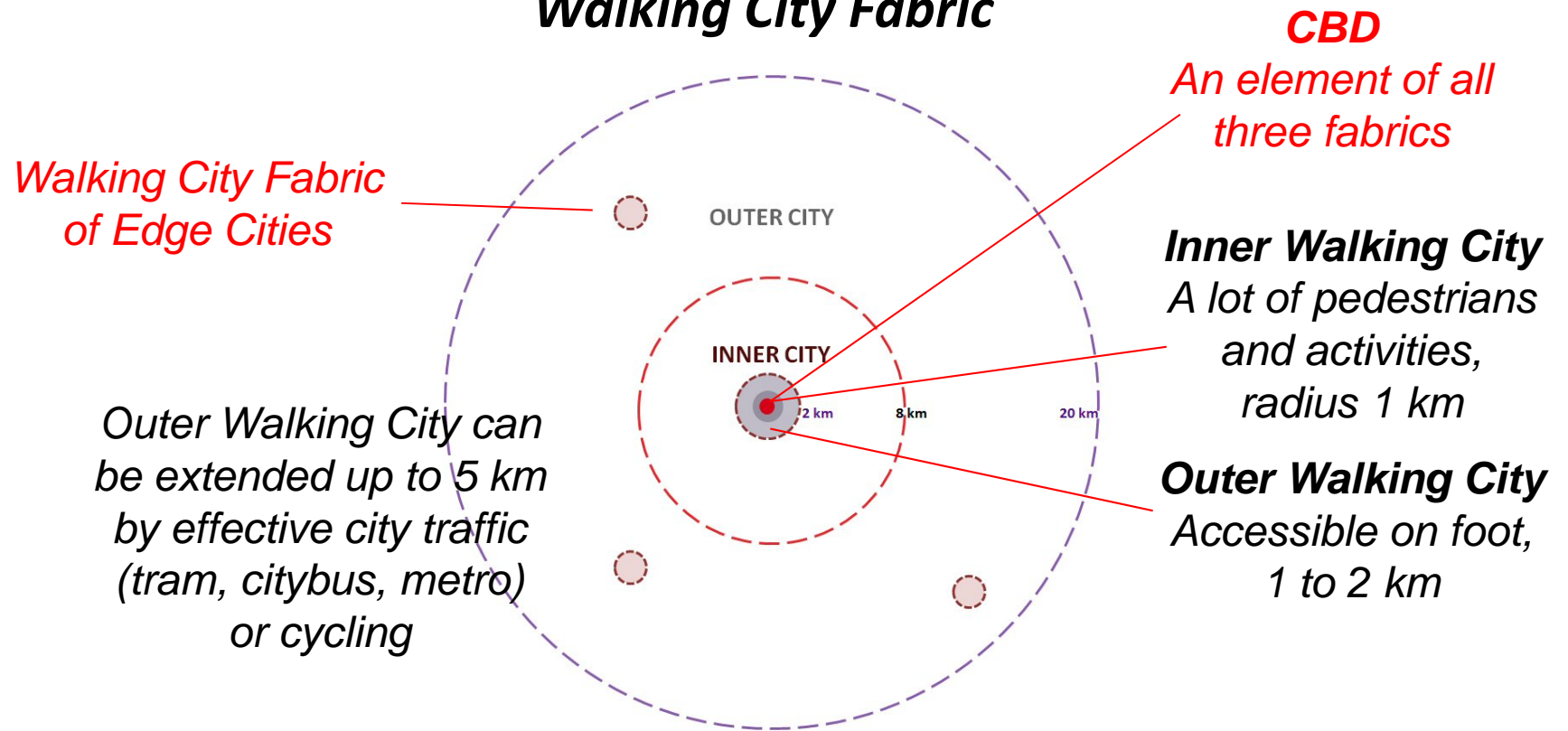


Inner Walking City
A lot of pedestrians
and activities,
radius 1 km

Outer Walking City
Accessible on foot,
1 to 2 km

*Outer Walking City can
be extended up to 5 km
by effective city traffic
(tram, citybus, metro)
or cycling*

Walking City Fabric



CBD

An element of all three fabrics

Inner Walking City

A lot of pedestrians and activities, radius 1 km

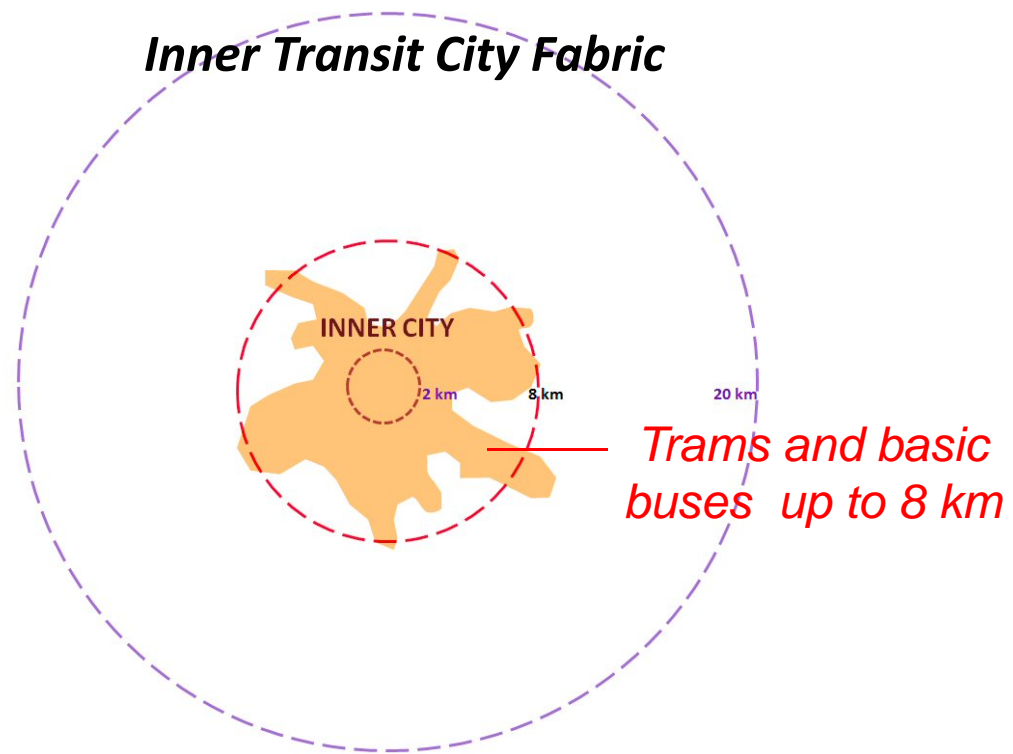
Outer Walking City

Accessible on foot, 1 to 2 km

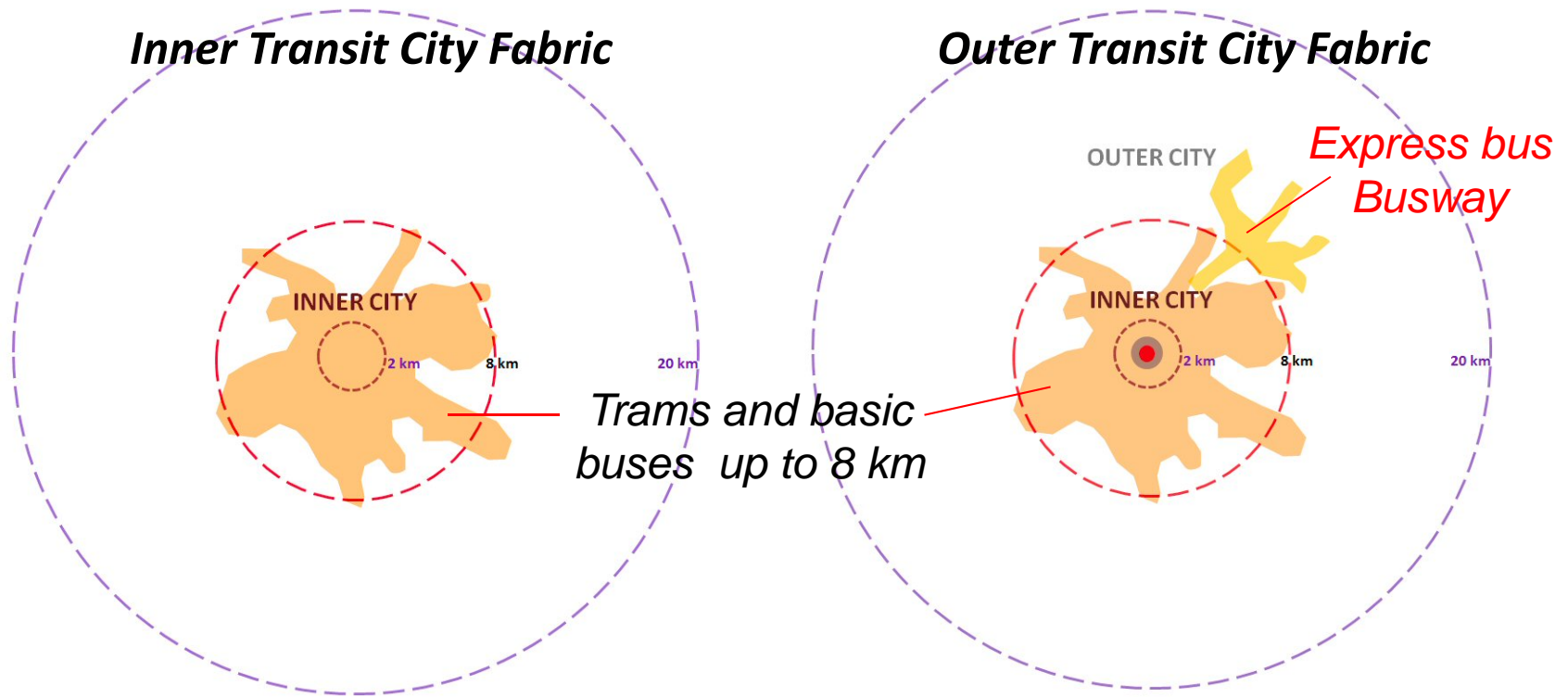
Walking City Fabric of Edge Cities

Outer Walking City can be extended up to 5 km by effective city traffic (tram, citybus, metro) or cycling

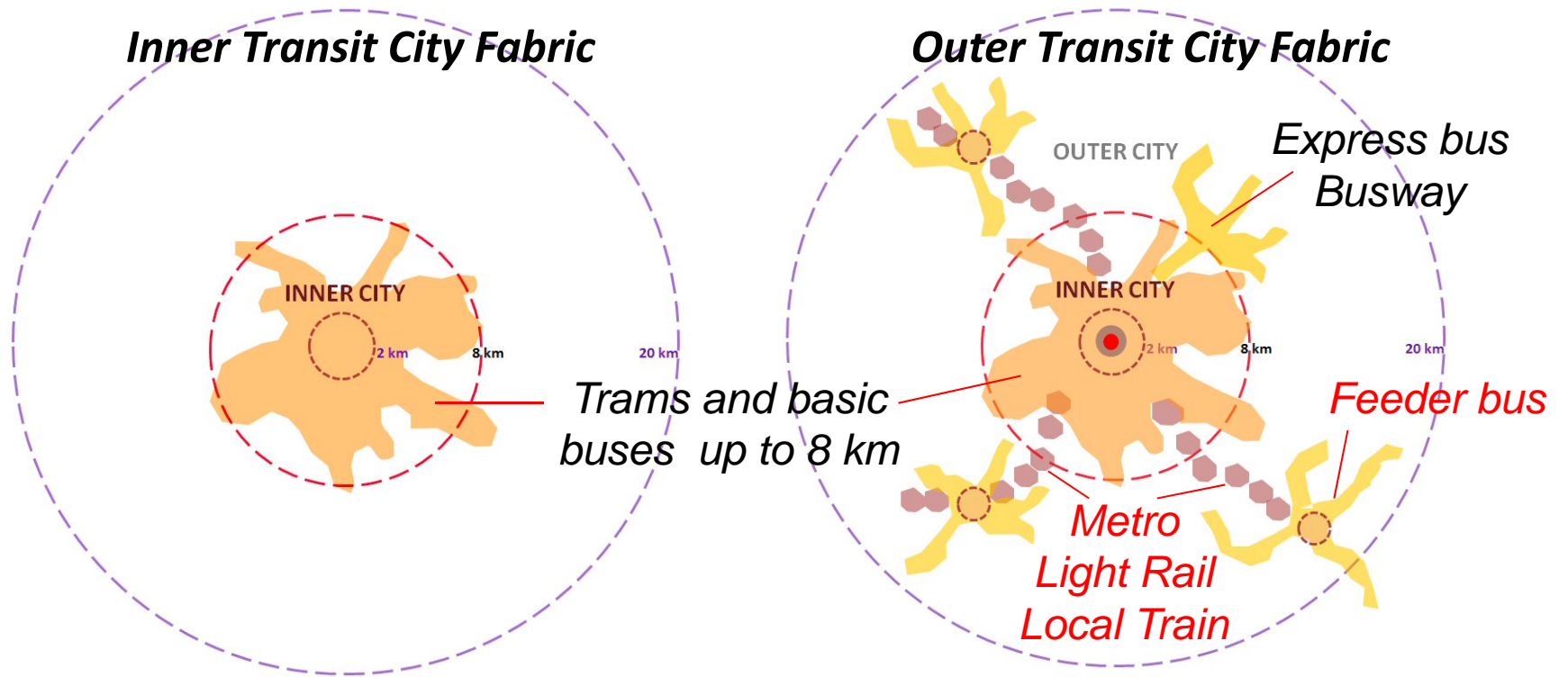
Transit City Fabric



Transit City Fabric

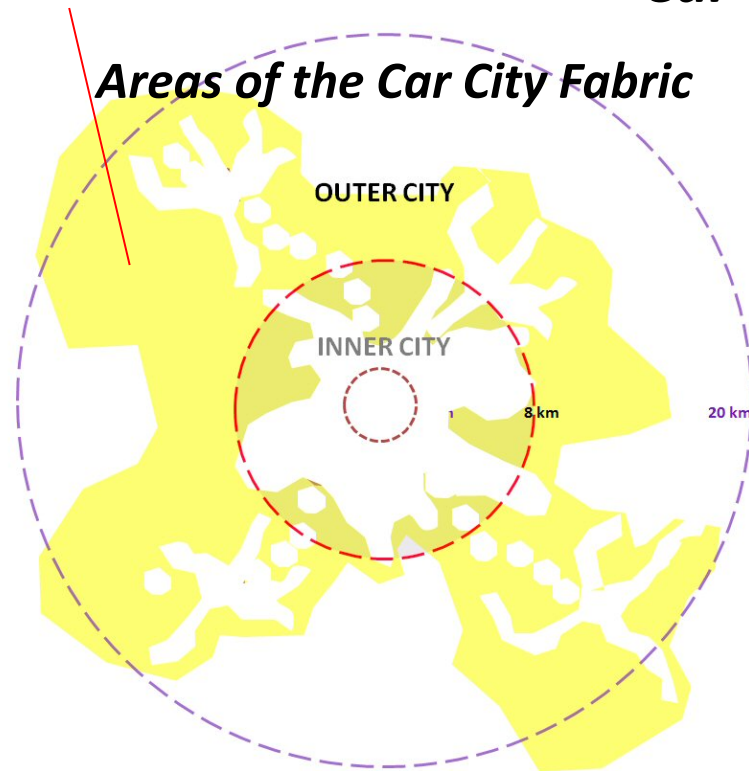


Transit City Fabric



*Areas outside the
Transit City Fabric
are car based or car
dependent parts of
the Car City Fabric*

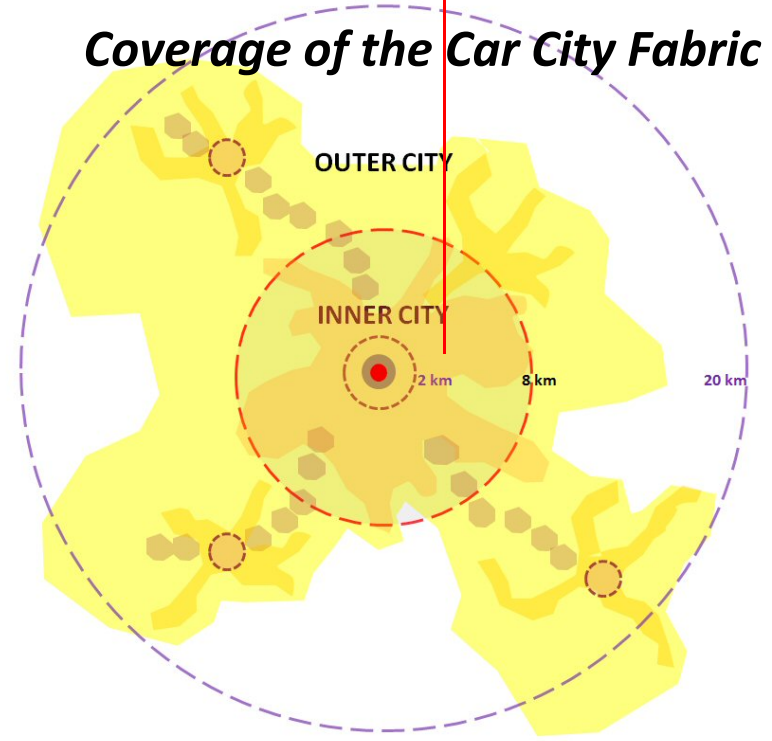
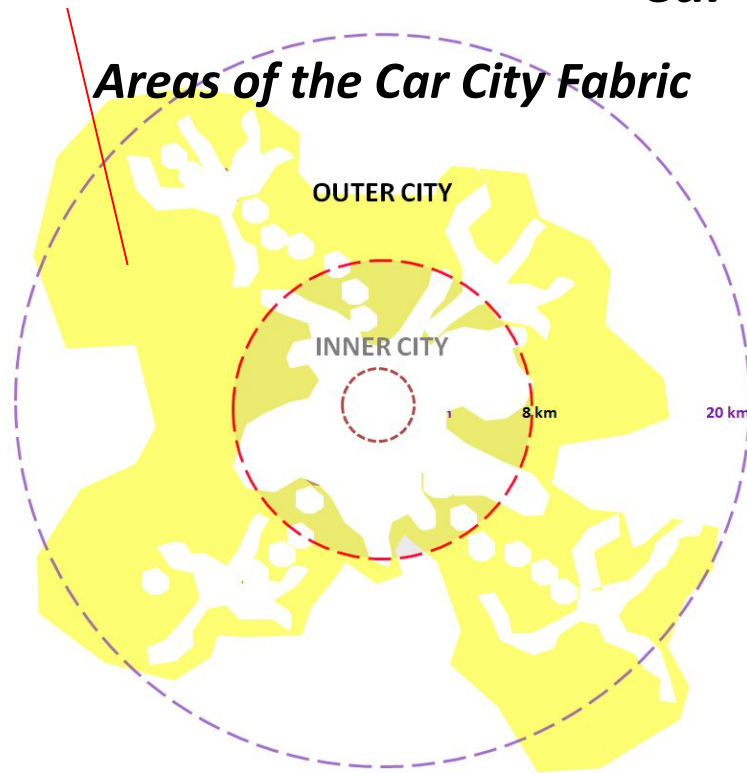
Car City Fabric



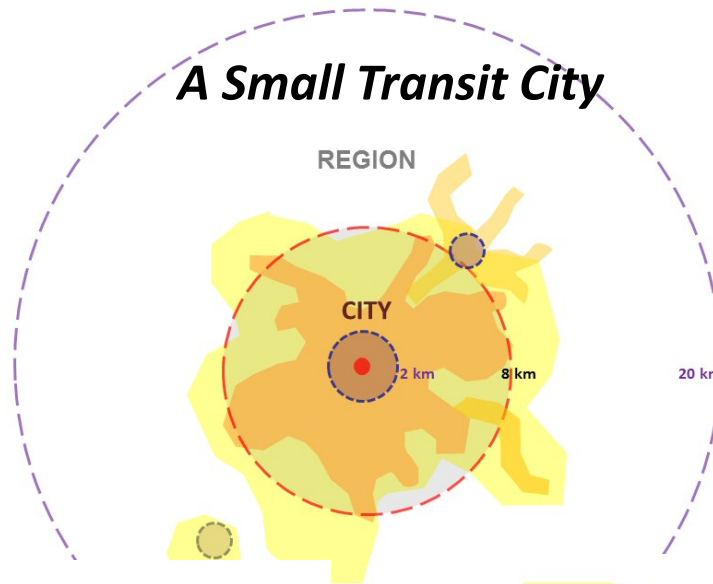
Areas outside the Transit City Fabric are car based or car dependent parts of the Car City Fabric

Elements of the Car City Fabric are covering also the areas of the other fabrics

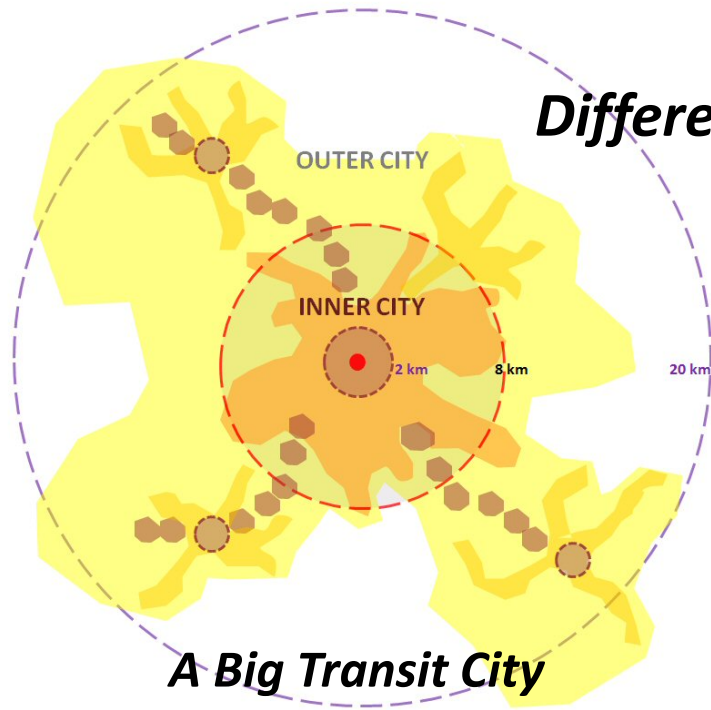
Car City Fabric



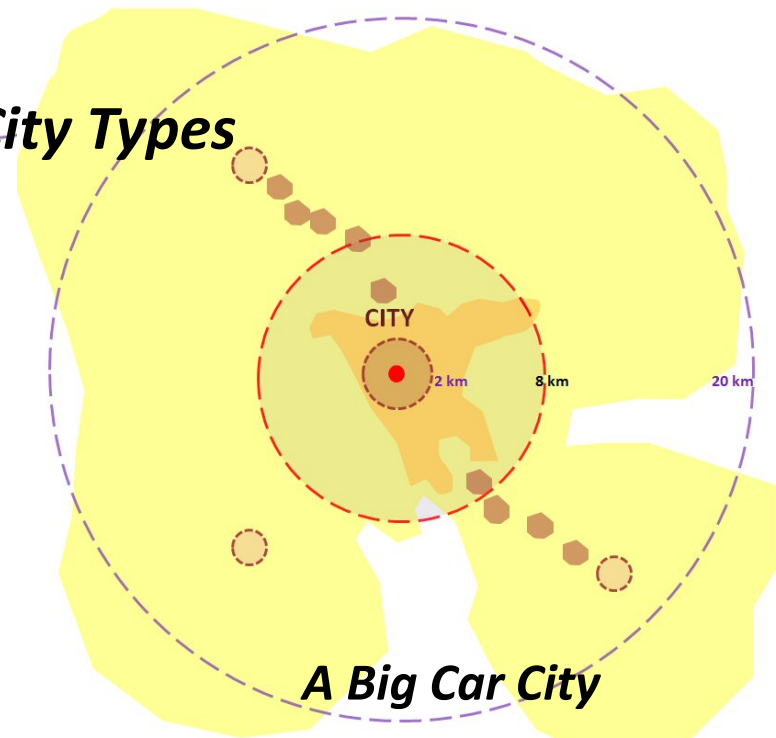
A Small Transit City



Different City Types

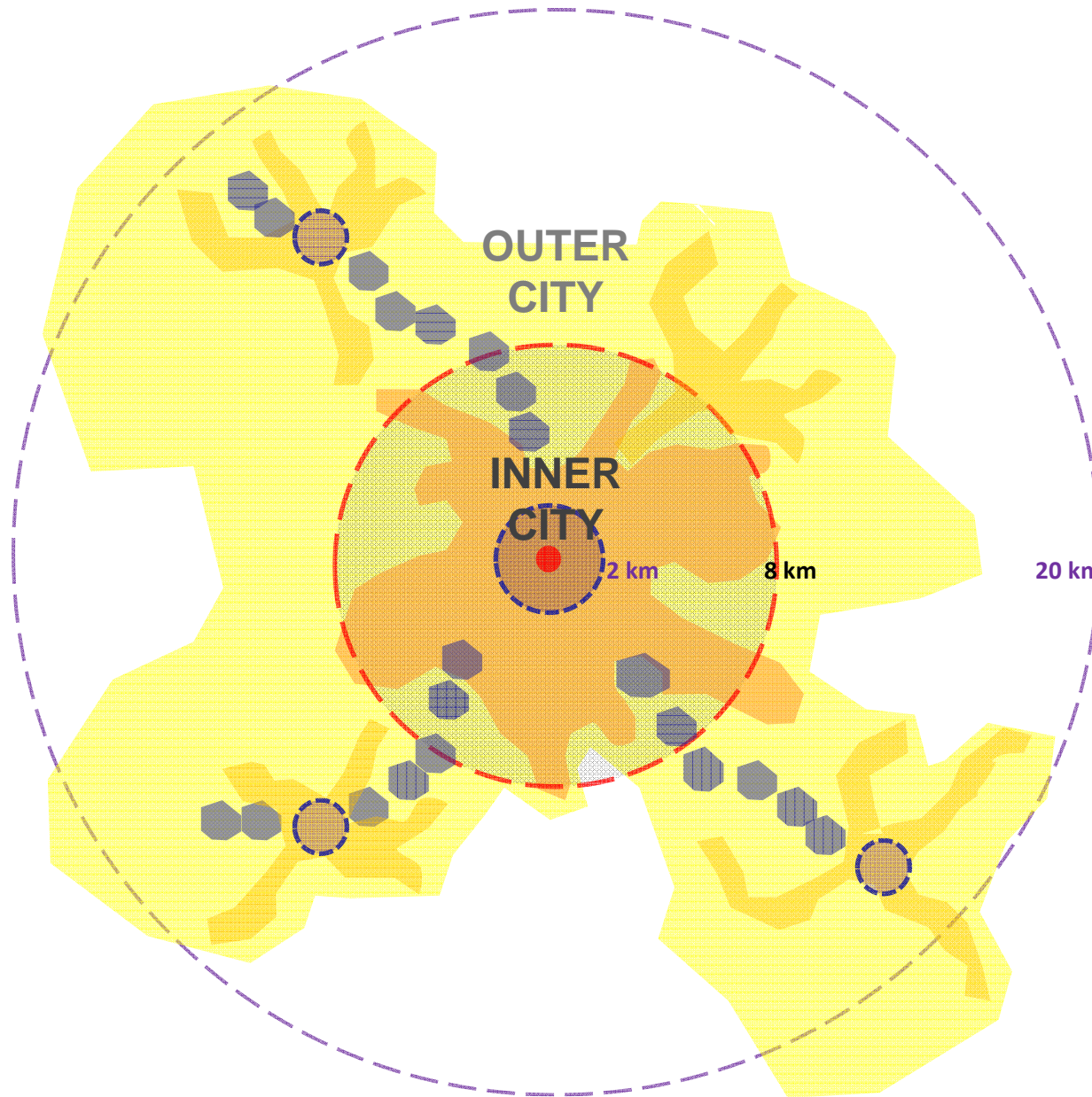


A Big Transit City



A Big Car City

Basic Model of a City



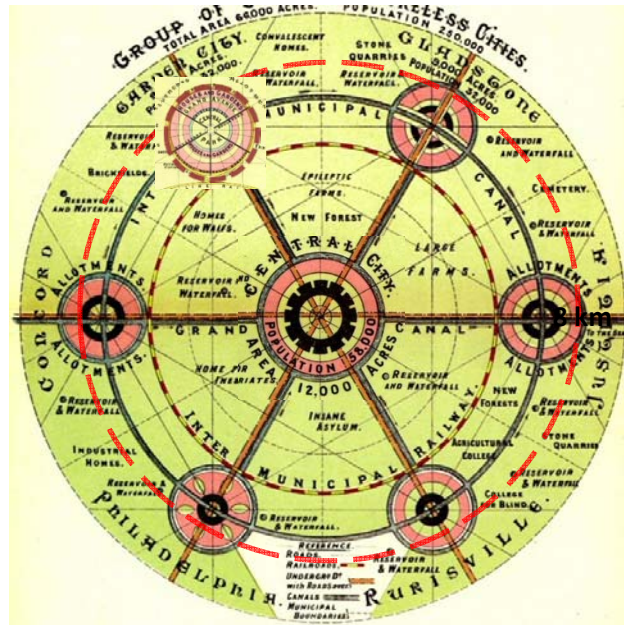
- Walking City**
- Inner Transit City**
- Outer Transit City (buses)**
- Outer Transit City (rail)**
- Inner Car City**
- Outer Car City**
- Edge Cities can be units of the Transit City Fabric or the Car City Fabric or both.
- City center is hosting the CBD and it is a combination of all three fabrics

PERI URBAN AND RURAL AREAS, OTHER CITIES
(REGION OR METROPOLITAN AREA)

Scales of the Models

The City

A Group of Cities
Ebeneser Howard 1898



20 km

UF / Urban Fabrics

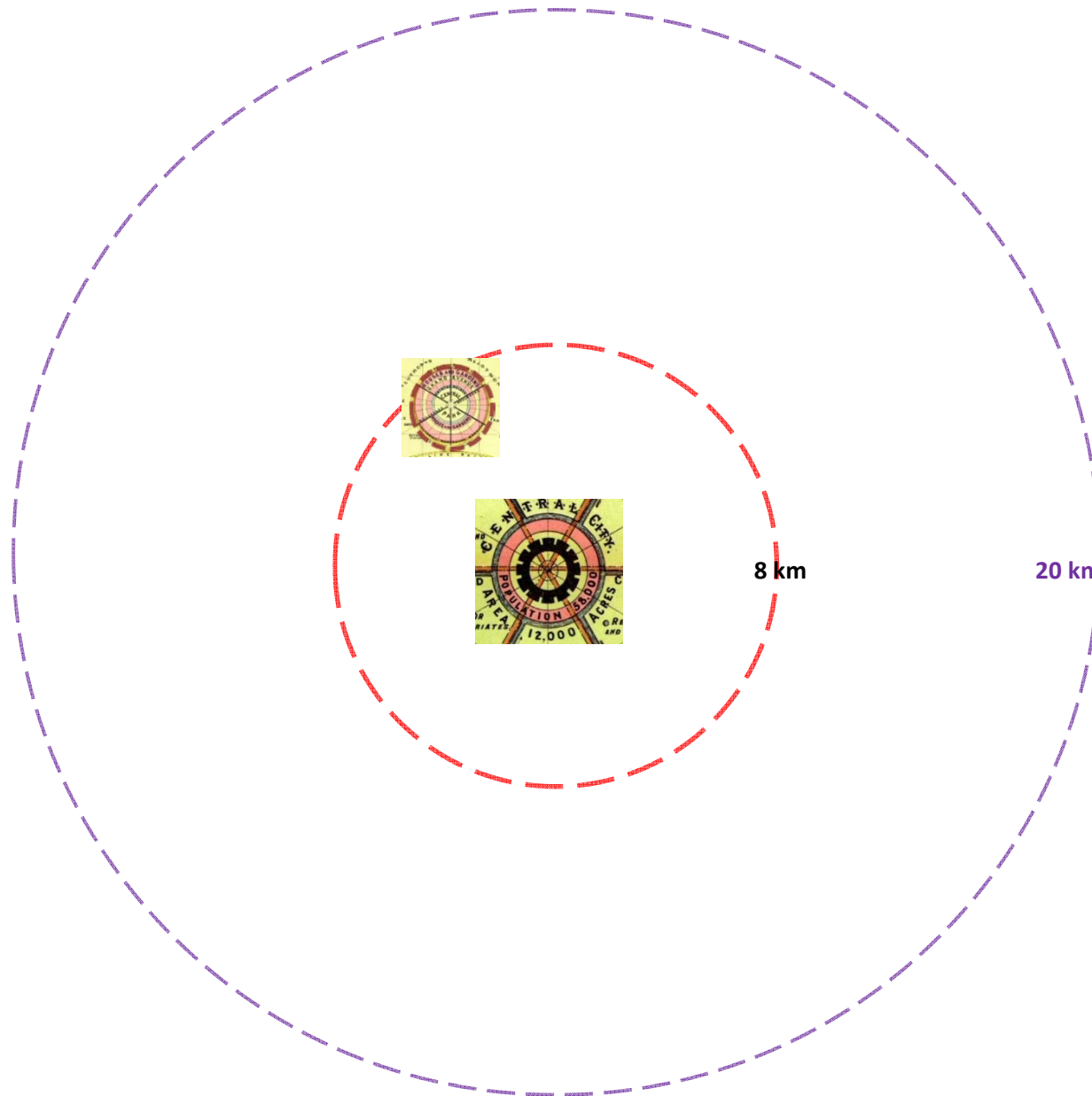
Scales:

- 2 km Walking City
- 5 km (cycling distance)
- 8 km Inner Transit City and Inner Car City
- 20 km Outer Transit City and Outer Car City

Scales of the Models

The City

Walking Cities
Ebeneser Howard 1898



UF / Urban Fabrics

Scales:

- 2 km Walking City
- 5 km (cycling distance)
- 8 km Inner Transit City and Inner Car City
- 20 km Outer Transit City and Outer Car City

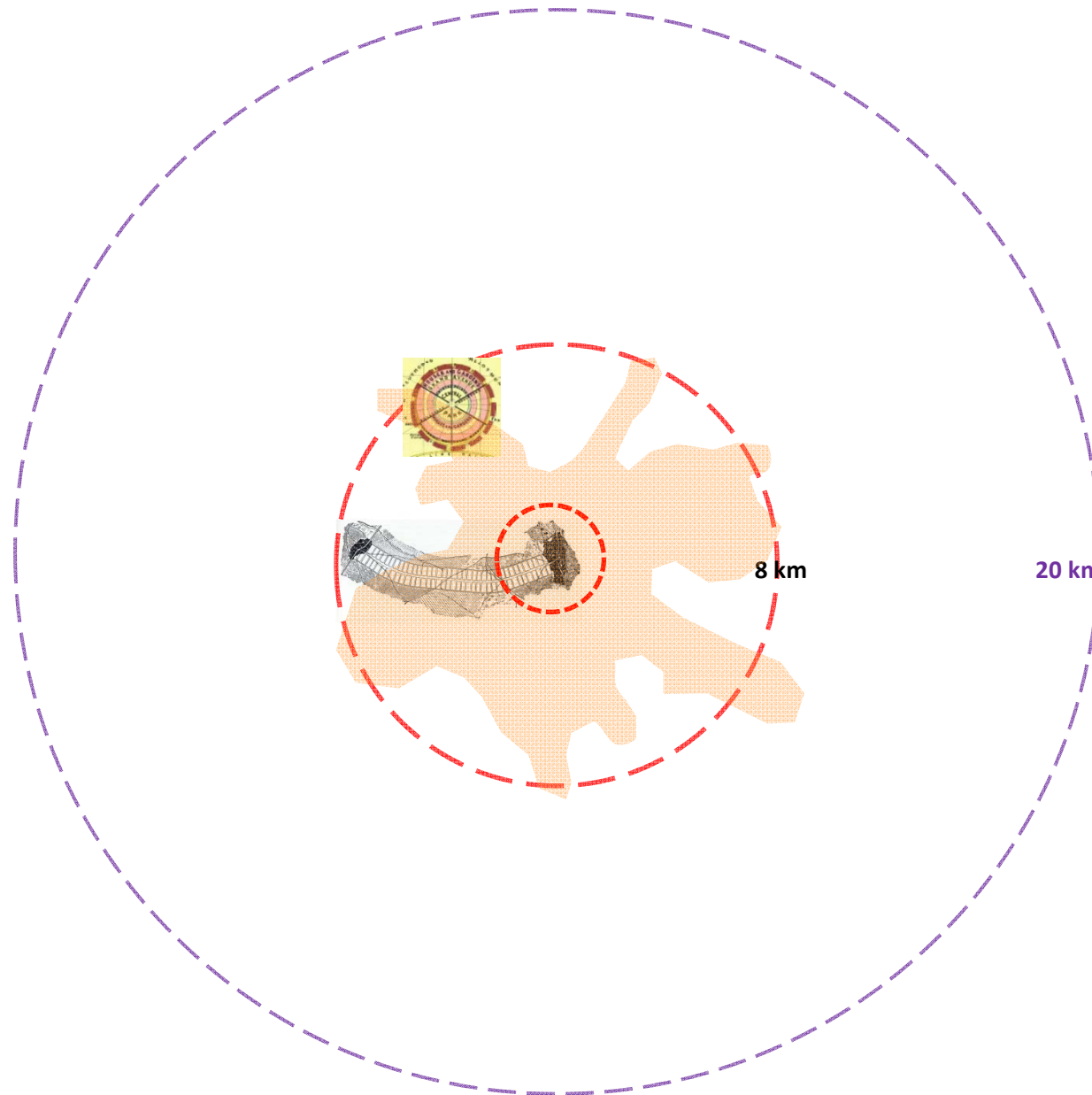
Scales of the Models

The City

Walking Cities

Ebeneser Howard 1898

Linear (Transit) City 1880



UF / Urban Fabrics

Scales:

2 km Walking City

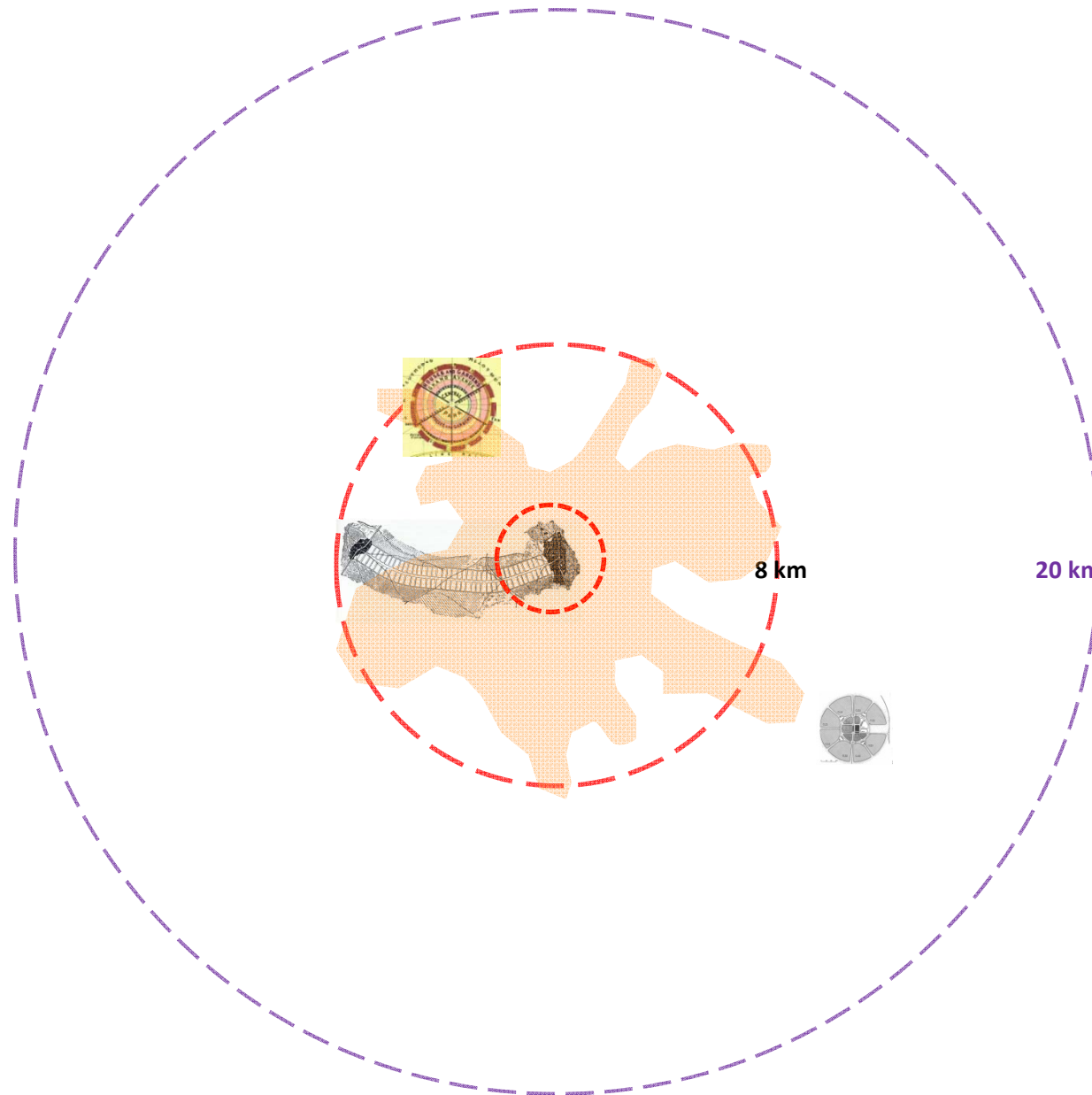
5 km (cycling distance)

8 km Inner Transit City and
Inner Car City

20 km Outer Transit City and
Outer Car City

Scales of the Models

The City



Walking Cities
Ebeneser Howard 1898
Linear (Transit) City 1880
Outer Transit City
Neighbourhood
Stockholm 1945

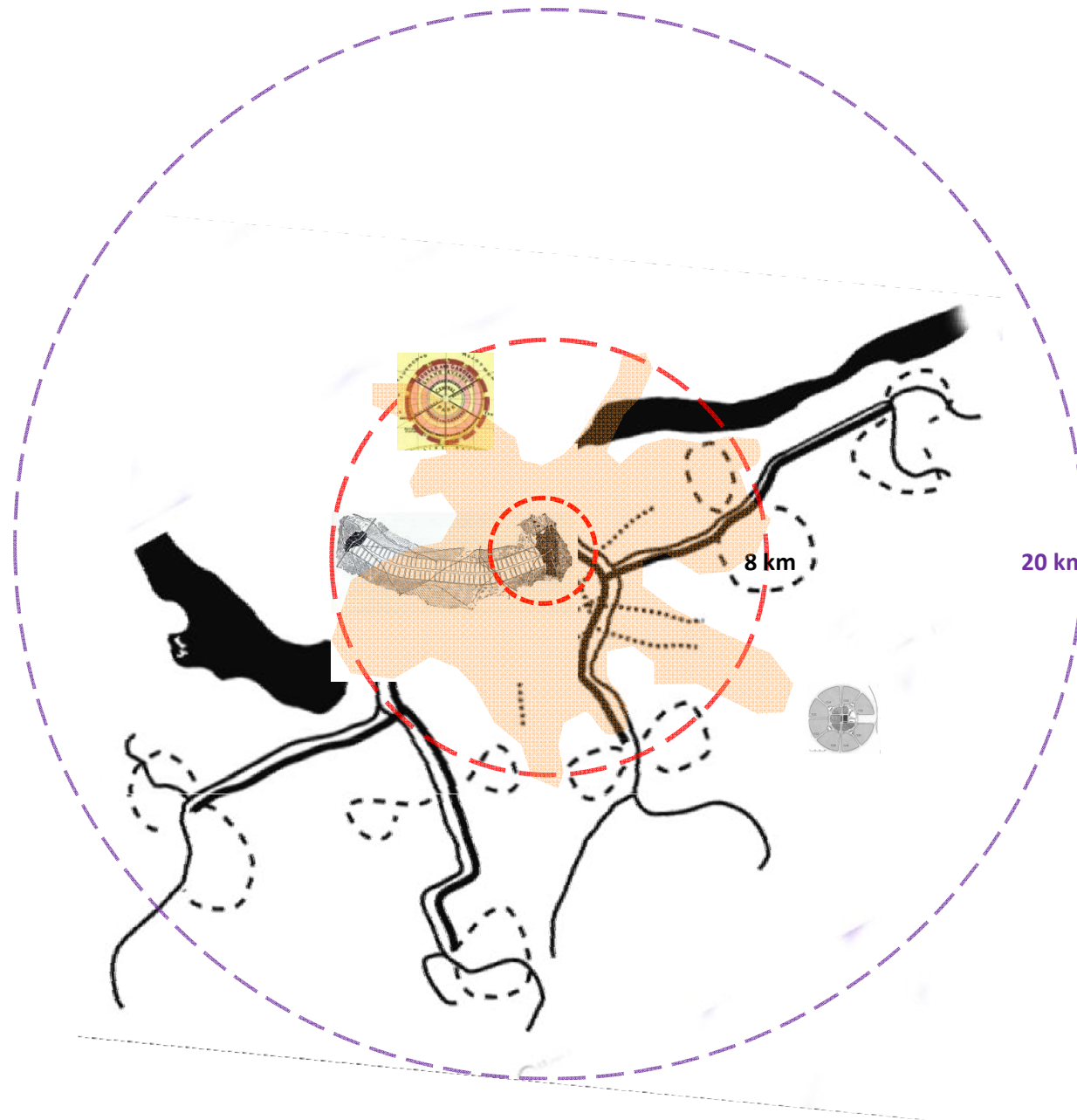
UF / Urban Fabrics

Scales:

- 2 km Walking City
- 5 km (cycling distance)
- 8 km Inner Transit City and Inner Car City
- 20 km Outer Transit City and Outer Car City

Scales of the Models

The City



- Walking Cities*
- Ebeneser Howard 1898*
- Linear (Transit) City 1880*
- Outer Transit City*
- Neighbourhood*
- Stockholm 1945*
- Inner and Outer Bus Transit Ottawa 1978*

UF / Urban Fabrics

Scales:

- 2 km Walking City
- 5 km (cycling distance)
- 8 km Inner Transit City and Inner Car City
- 20 km Outer Transit City and Outer Car City

Scales of the Models

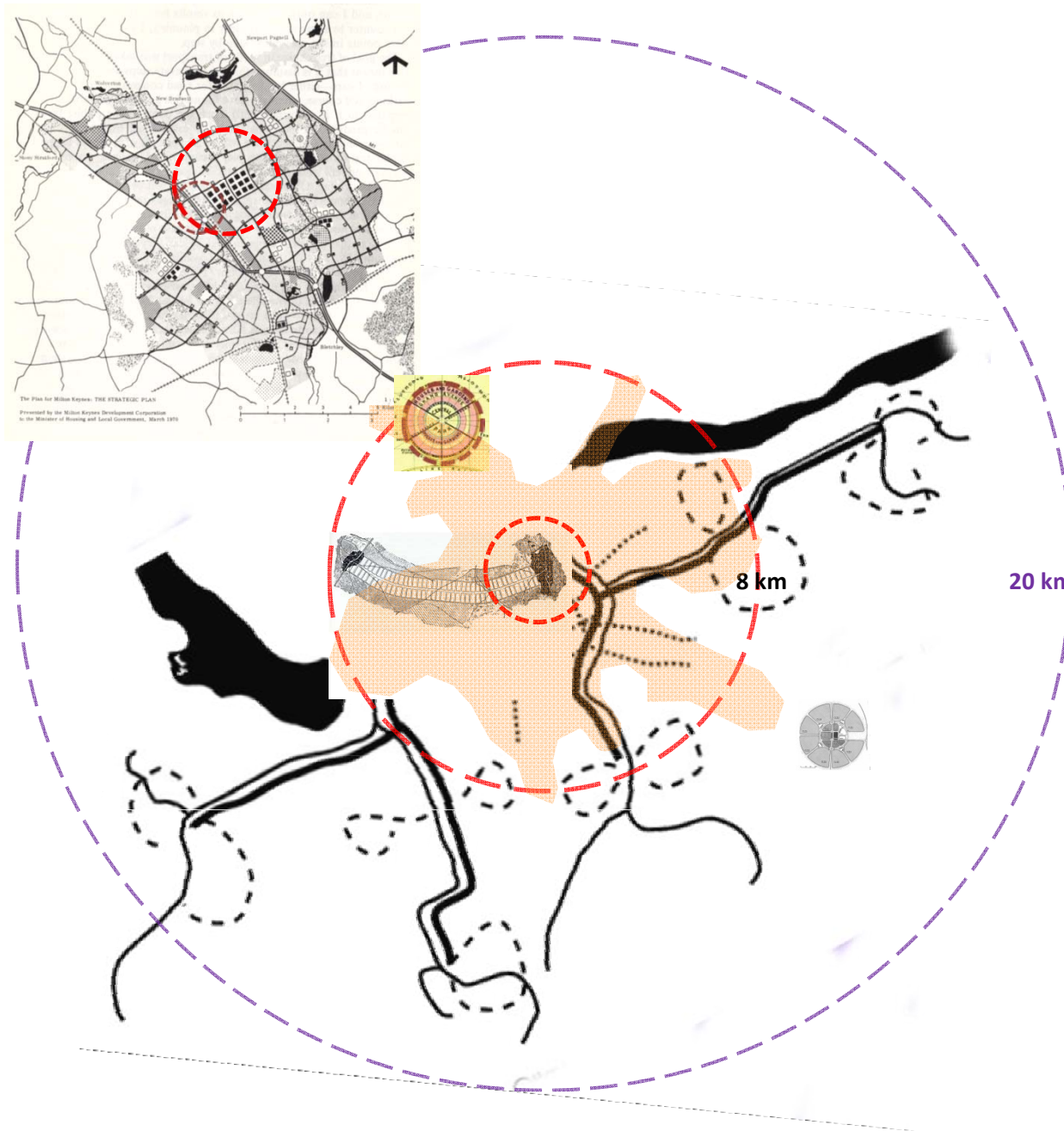
The City

- Walking Cities*
- Ebeneser Howard 1898*
- Linear (Transit) City 1880*
- Outer Transit City*
- Neighbourhood*
- Stockholm 1945*
- Inner and Outer Bus*
- Transit Ottawa 1978*
- Car- and Transit City*
- Milton Keynes 1970*

UF / Urban Fabrics

Scales:

- 2 km Walking City
- 5 km (cycling distance)
- 8 km Inner Transit City and Inner Car City
- 20 km Outer Transit City and Outer Car City



URBAN FABRICS

Scales of the Models

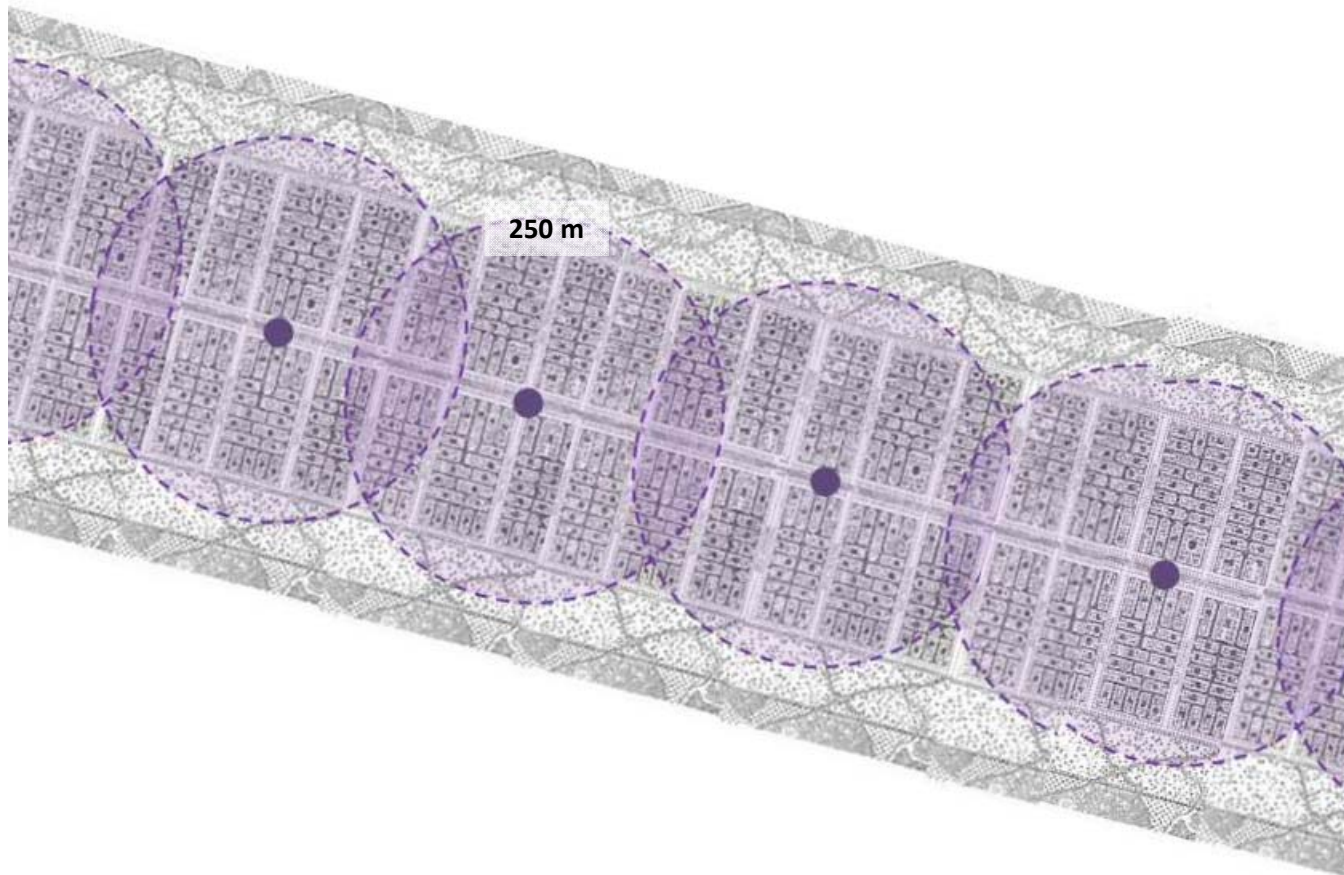
Neighbourhoods

Walking distance

1880

Linear City

Arturo Soria Y Mata



Tram

250 m good



Tram stop

source: *Sambricio 1982*

2.10.2013 **UF** Leo Kosonen

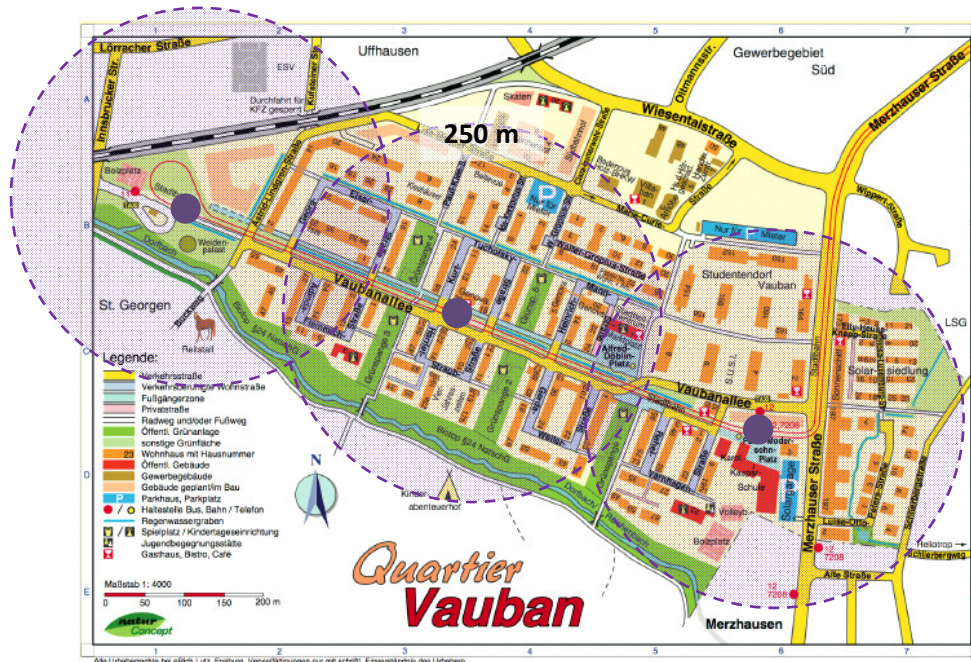
Scales of the Models

Neighbourhoods

Walking distance

Vauban

Freiburg



Tram

250 m good



Tram stop

source: City of Freiburg

2.10.2013 **UF** Leo Kosonen

URBAN FABRICS

Scales of the Models

Neighbourhoods
Walking distance

*Vauban
Freiburg*

Local Center

*400 m good
600 m fair*

Tram

250 m good



Tram stop

2.10.2013 **UF** Leo Kosonen



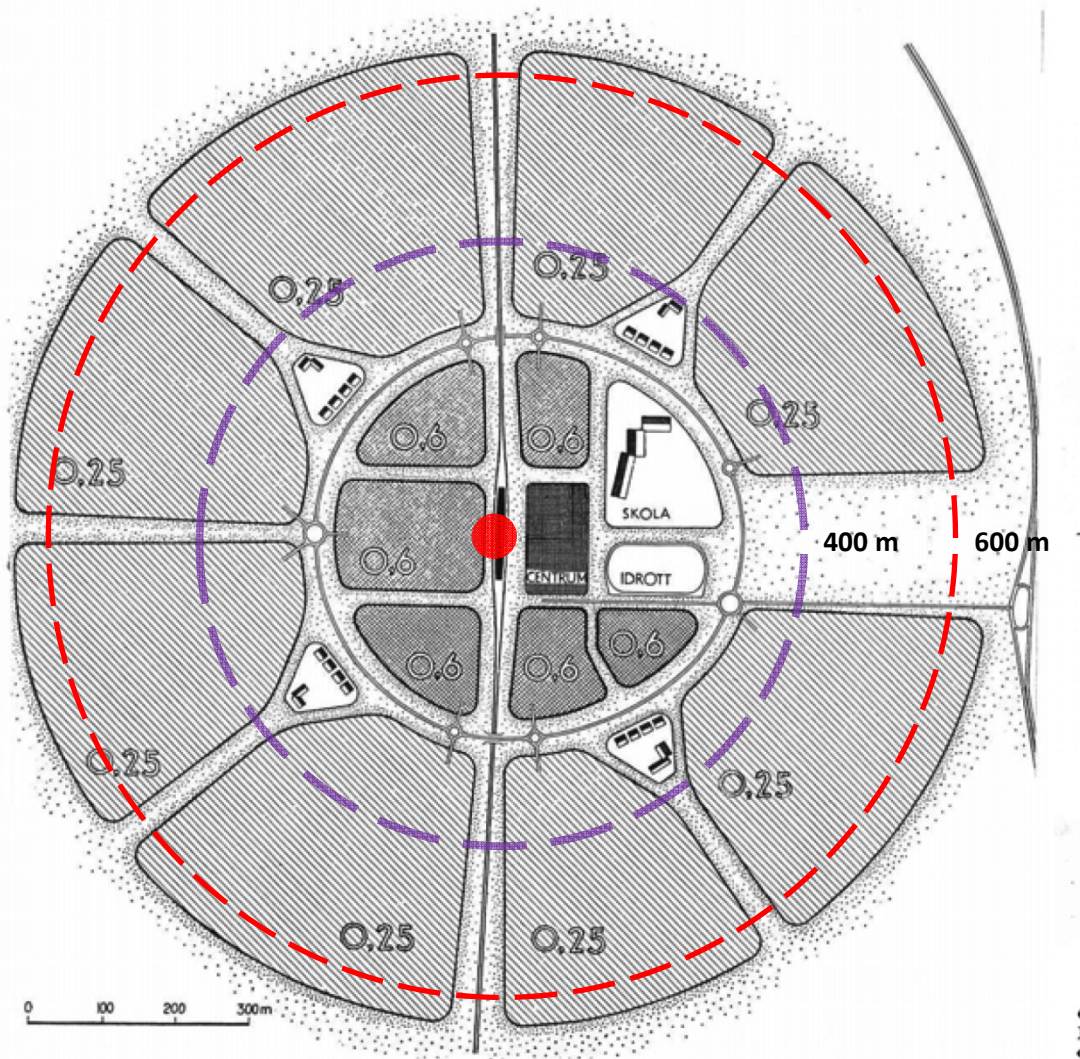
source: City of Freiburg

Scales of the Models

Neighbourhoods
Walking distance

1945

Neighbourhood
Framtida Stockholm



Railway station
400 m good
600 m fair

 Railway station

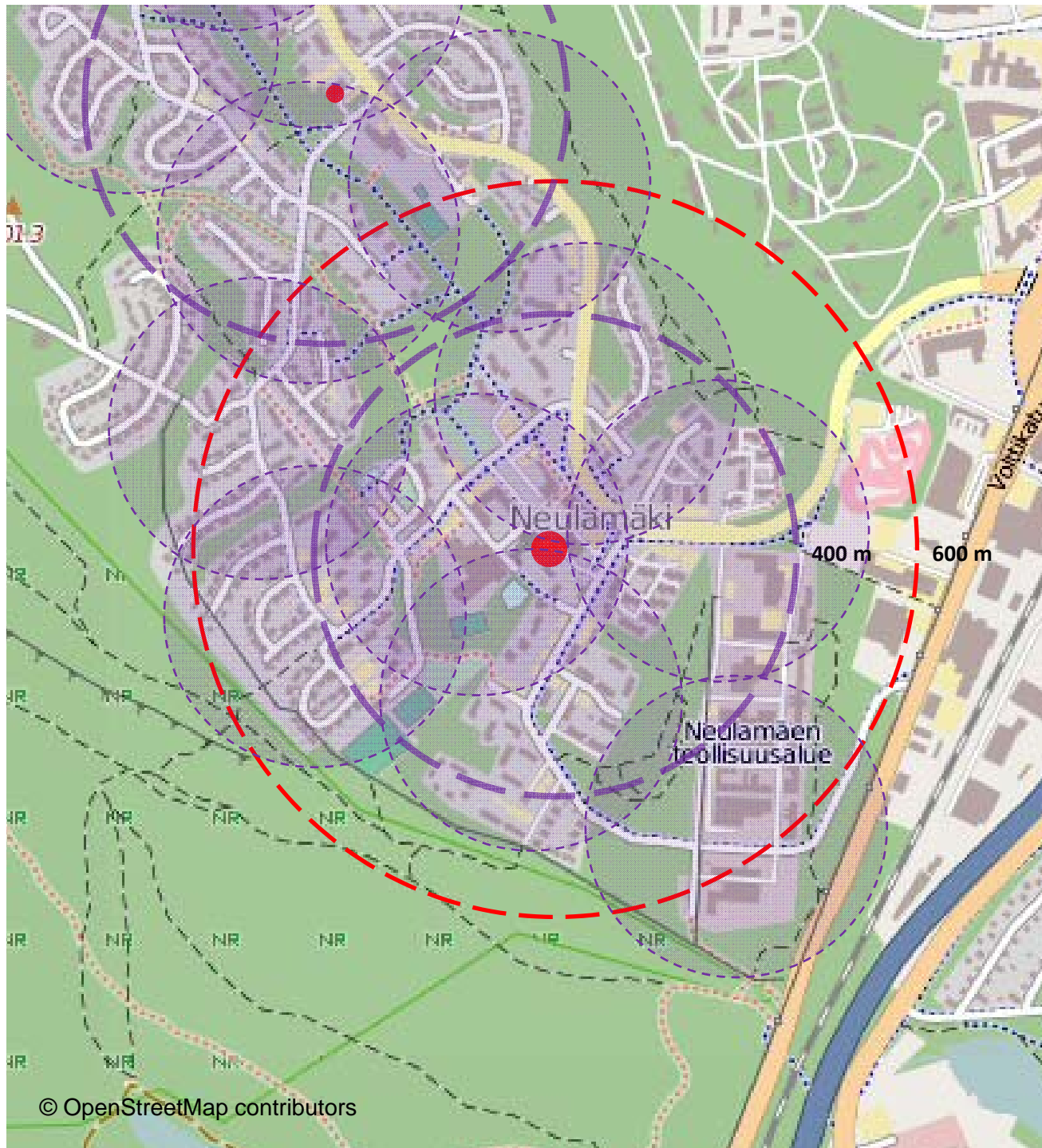
source: *Framtida Stockholm*

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Scales of the Models

Neighbourhoods
Walking distance

1975
Neulamäki
Kuopio



Local center

400 m good
600 m fair

Bus

250 m good
300 m fair

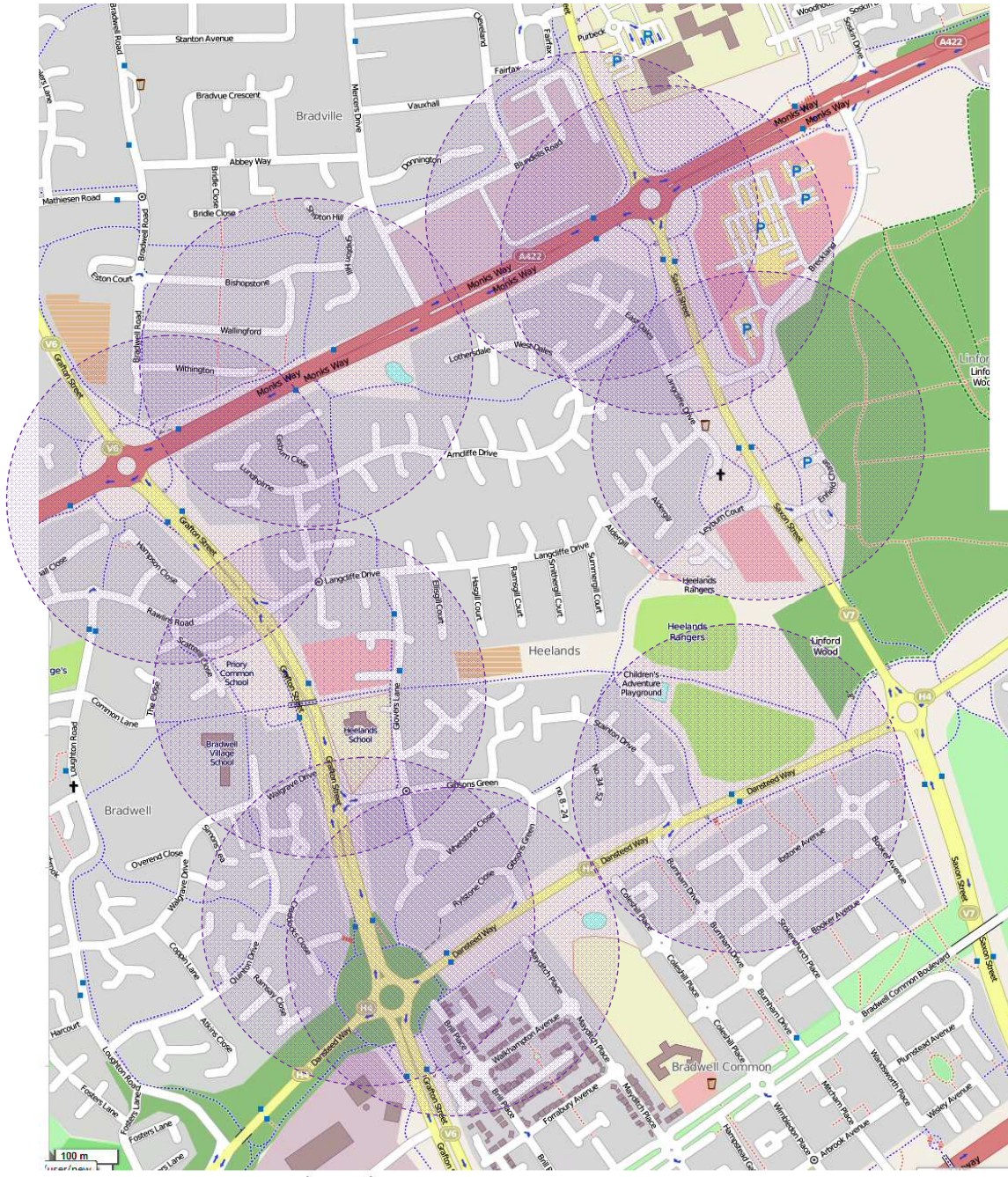
URBAN FABRICS

Scales of the Models

Neighbourhoods
Walking distance

1970

Milton Keynes



Bus

250 m good

300 m fair

400 m poor

URBAN FABRICS

Models

Neighbourhoods
Walking distance

1990
Almere



© OpenStreetMap contributors

source: Hankonen 1991

Bus

250 m good
300 m fair
400 m poor

2.10.2013 **UF** Leo Kosonen

Three Urban Fabrics
A New Model

Elements and Qualities

URBAN FABRICS

Elements of the Fabrics

Basic elements of th Fabrics:



Walking City Fabric

Walkin City Fabric of the Sub-Centers

Transit City Fabric

Car City Fabric

Elements	Walking City Fabric		Transit City Fabric		Car City Fabric	
	Inner Walking City radius 1 km	Outer Walking City (1 to 2 km)	Inner Transit City 2 to 8 km	Outer Transit City more than 8 km	Inner Car City 2 to 8 km	Outer Car City more than 8 km
Market square, Market Hall	basic for W and T	exceptional	exceptional (best sub-	exceptional (best sub-	no	no
Pedestrian Centre	basic for W and T	special (big cities only)	special (best	special (best edge	no	expectional (best edge
Pedestrian street	basic for W and T	special (best	Special (best	special (best edge	no	expectional (best edge
Active street	basic for W and T	special	special	special (best edge	no	expectional (best edge
Multi-storey warehouses	basic for W and T	expectional (big cities)	no	special (biggest sub-	no	no
Transit Centre	basic for W and T	alternative location	no	special (node)	no	no
Small shops and service facilities by the	basic	special (big cities, old	special (big sub-	special (big sub-	no	no
Urban Park, high quality	basic	special (location)	special	special	special	special
Prized parking	basic	basic (not in small	special (biggest centres	special (biggest	special (biggest units)	special (biggest centres
City bus lines (Walking City)	basic	basic	special (extensions)	no	no	no
City rail (Walking City), catchment 250 to 400 m	Special (biggest cities)	Special (biggest cities)	Special (extensions,	no	no	no
Good pedestrian environment	basic	basic	basic (local centres	basic	no	expectional (best edge
Neighbourhood with local services	basic	basic	basic	basic	special (good	special
Local service units (walking based)	basic	basic	basic	basic	special (good	no
High density housing, blocks of flats	basic	basic	basic	basic	special (location)	special
Office blocs	basic (T and W, C?)	basic T, C and W?)	basic T and C)	basic (T,C)	basic	basic
Local Park	basic	basic	basic	basic	basic (cachment)	basic (cachment)
Trams, catchment 250 to 300 m (W,T)	basic (not in small cities)	basic (not in small	basic (not in small	expectional	expectional (good	no
Bus street, bus lanes	special (T, space)	basic (need)	basic (need)	basic (need)	Special (location)	no
Inner City buses, catchment 250 to 300 m	basic (T,W)	basic (T,W, coverage?)	basic	expectional	special (good	no
Local service centre (walking based)	basic	special (old units)	basic	basic	no	no
Local Stations /Outer transit (train, metro, light	terminal (T and C)	no	special (big cities)	basic	no	no
University	special	basic (T,C and W)	basic T and C)	basic (T,C)	Special (C, T?)	no
Central Hospital	special	basic (T,C and W)	basic T and C)	basic (T,C)	Special (C, T?)	no
Other institutes	special	basic (T,C and W)	basic T and C)	basic (T,C)	Special (C, T?)	no
Sport and Recreational Centres	no	special	basic	special (location)	special (c-type)	special (location)
Recreational area	no	expectional	basic or special	special (location)	special	special (location)
Medium density housing, rowhouses	special (old fabric, small	basic (old fabric, small	basic	basic	basic	special
Good cycling environment	Special (best centres)	basic (exopt old fabric)	basic	basic	basic	special (best fabric)
Expressbus	no	no	special	basic	no	basic (in big cities)
BRT, Busway	no	no	no	basic (if no rail)	no	basic (in big cities)
Local feeder bus	no	no	no	basic, big edge cities)	no	basic (in big cities)
Local car city bus	no	no	no	symbiosis ?	basic	basic
Low density housing	expectional (old housing)	special (small cities,	special (limited	special (limited	basic	basic (limited amount)
Hypermarket	expectional C-element	special C-element,	expectional C-element,	special C-element,	basic	basic (limited amount)
Multi-storey parking units	Special C-unit, positive	special (big service	special (big service	Special (C and T)	basic (big service	basic
Underground parking unit	Special C-unit, positive	no	no	no	special (big service	special (big service
Large parking areas	Expectional (Car Cities)	special (big service	special (big service	special (big service	basic (big service	basic
Freeway	expectional (conflicting)	expectional (conflicting)	expectional (conflicting)	expectional	basic (problematic)	basic
Highway	expectional (conflicting)	special (problematic)	special (problematic)	expectional	basic	basic
Shopping Mall	no	no	no	no	Special (space)	basic
Car based shopping streets	no	no	no	no	basic (Car Cities)	no
Park and ride	no	no	no	no	no	no
Car dependent housing	no	no	no	no	Special (location)	basic (C only)
Car dependent jobs	no	no	no	no	Special (location)	basic (C only)
Car dependent services	no	no	no	no	Special (location)	basic (C only)
Etc						

URBAN FABRICS

Elements of the Fabrics

Basic elements of the Fabrics:

- Walking City Fabric
- Walking City Fabric of the Sub-Centers
- Transit City Fabric
- Car City Fabric

Elements	Walking City Fabric		Transit City Fabric		Car City Fabric	
	Inner Walking City radius 1 km	Outer Walking City (1 to 2 km)	Inner Transit City 2 to 8 km	Outer Transit City more than 8 km	Inner Car City 2 to 8 km	Outer Car City more than 8 km
Market square, Market Hall	basic for W and T	exceptional	exceptional (best sub-centres)	exceptional (best sub-centres)	no	no
Pedestrian Centre	basic for W and T	special (big cities only)	special (best)	special (best edge)	no	exceptional (best edge)
Pedestrian street	basic for W and T	special	Special (best)	special (best edge)	no	exceptional (best edge)
Active street	basic for W and T	special	special	special (best edge)	no	exceptional (best edge)
Multi-storey warehouses	basic for W and T	exceptional (big cities)	no	special (biggest sub-centres)	no	no
Transit Centre	basic for W and T	alternative location	no	special (node)	no	no
Small shops and service facilities by the street	basic	special (big cities, old fabric)	special (big sub-centres)	special (big sub-centres)	no	no
Urban Park, high quality	basic	special (location)	special	special	special	special
Prized parking	basic	basic (not in small cities)	special (biggest centres)	special (biggest centres)	special (biggest units)	special (biggest centres)
City bus lines (Walking City)	basic	basic	special (extensions)	no	no	no
City rail (Walking City), catchment 250 to 400 m	Special (big cities)	Special (big cities)	Special (extensions, sub-centres)	no	no	no
Good pedestrian environment	basic	basic	basic (local centres)	basic	no	exceptional (best edge)
Neighbourhood with local services	basic	basic	basic	basic	special (good)	special
Local service units (walking based)	basic	basic	basic	basic	special (good)	no
High density housing, blocks of flats	basic	basic	basic	basic	special (location)	special
Office blocs	basic (T and W, C?)	basic (T, C and W?)	basic (T and C)	basic (T, C)	basic	basic
Local Park	basic	basic	basic	basic	basic (catchment)	basic (catchment)
Trams, catchment 250 to 300 m (W,T)	basic (not in small cities)	basic (not in small cities)	basic (not in small cities)	exceptional	exceptional (good)	no
Bus street, bus lanes	special (T, space)	basic (need)	basic (need)	basic (need)	Special (location)	no
Inner City buses, catchment 250 to 300 m	basic (T,W)	basic (T,W, coverage?)	basic	exceptional	special (good)	no
Local service centre (walking based)	basic	special (old units)	basic	basic	no	no
Local Stations /Outer transit (train, metro, light rail)	terminal (T and C)	no	special (big cities)	basic	no	no
University	special	basic (T,C and W)	basic (T and C)	basic (T,C)	Special (C, T?)	no
Central Hospital	special	basic (T,C and W)	basic (T and C)	basic (T,C)	Special (C, T?)	no
Other institutes	special	basic (T,C and W)	basic (T and C)	basic (T,C)	Special (C, T?)	no
Sport and Recreational Centres	no	special	basic	special (location)	special (c-type)	special (location)
Recreational area	no	exceptional	basic or special	special (location)	special	special (location)
Medium density housing, rowhouses	special (old fabric, small centres)	basic (old fabric, small centres)	basic	basic	basic	special (best fabric)
Good cycling environment	Special (best centres)	basic (except old fabric)	basic	basic	basic	special (best fabric)
Expressbus	no	no	special	basic	no	basic (in big cities)
BRT, Busway	no	no	no	basic (if no rail)	no	basic (in big cities)
Local feeder bus	no	no	no	basic, big edge cities)	no	basic (in big cities)
Local car city bus	no	no	no	no	basic	basic
Low density housing	exceptional (old housing)	special (small cities, old fabric)	special (limited)	special (limited)	basic	basic (limited amount)
Hypermarket	exceptional C-element	special C-element,	exceptional C-element,	special C-element,	basic	basic (limited amount)
Multi-storey parking units	Special C-unit, positive	special (big service)	special (big service)	Special (C and T)	basic (big service)	basic
Underground parking unit	Special C-unit, positive	no	no	no	special (big service)	special (big service)
Large parking areas	Exceptional (Car Cities)	special (big service)	special (big service)	special (big service)	basic (big service)	basic
Freeway	exceptional (conflicting)	exceptional (conflicting)	exceptional (conflicting)	exceptional	basic (problematic)	basic
Highway	exceptional (conflicting)	special (problematic)	special (problematic)	exceptional	basic	basic
Shopping Mall	no	no	no	no	Special (space)	basic
Car based shopping streets	no	no	no	no	basic (Car Cities)	no
Park and ride	no	no	no	no	no	no
Car dependent housing	no	no	no	no	Special (location)	basic (C only)
Car dependent jobs	no	no	no	no	Special (location)	basic (C only)
Car dependent services	no	no	no	no	Special (location)	basic (C only)
Etc						

URBAN FABRICS

Elements of the Fabrics

Elements	Walking City		Transit City		Car City	
	Inner Walking City radius 1 km	Outer Walking City (1 to 2 km)	Inner Transit City 2 to 8 km	Outer Transit City more than 8 km	Inner Car City 2 to 8 km	Outer Car City more than 8 km
Market square, Market Hall	basic for W and T	exceptional	exceptional (best sub-centres)	exceptional (best sub-centres)	no	no
Pedestrian Centre	basic for W and T	special (big cities only)	special (best)	special (best edge)	no	exceptional (best edge)
Pedestrian street	basic for W and T	special	Special (best)	special (best edge)	no	exceptional (best edge)
Active street	basic for W and T	special	special	special (best edge)	no	exceptional (best edge)
Multi-storey warehouses	basic for W and T	exceptional (big cities)	no	special (biggest sub-centres)	no	no
Transit Centre	basic for W and T	alternative location	no	special (node)	no	no
Small shops and service facilities by the street	basic	special (big cities, old centres)	special (big sub-centres)	special (big sub-centres)	no	no
Urban Park, high quality	basic	special (location)	no	special	special	special
Prized parking	basic	basic (not in small cities)	special (big cities)	special (biggest)	special (biggest units)	special (biggest centres)
City bus lines (Walking City)	basic	basic	special (extension)	no	no	no
City rail (Walking City), catchment 250 to 400 m	Special (biggest cities)	Special (biggest cities)	Special (extension)	no	no	no
Good pedestrian environment	basic	basic	basic (local centres)	basic	no	exceptional (best edge)
Neighbourhood with local services	basic	basic	basic	basic	special (good)	special
Local service units (walking based)	basic	basic	basic	basic	special (good)	no
High density housing, blocks of flats	basic	basic	basic	basic	special (location)	special
Office blocs	basic (T and W, C?)	basic (T, C and W?)	basic (T and C)	basic (T, C)	basic	basic
Local Park	basic	basic	basic	basic	basic (catchment)	basic (catchment)
Trams, catchment 250 to 300 m (W,T)	basic (not in small cities)	basic (not in small cities)	basic (not in small cities)	exceptional	exceptional (good)	no
Bus street, bus lanes	special (T, space)	basic (need)	basic (need)	basic (need)	Special (location)	no
Inner City buses, catchment 250 to 300 m	basic (T,W)	basic (T,W, coverage?)	basic	exceptional	special (good)	no
Local service centre (walking based)	basic	special (old units)	basic	basic	no	no
Local Stations /Outer transit (train, metro, light rail)	terminal (T and C)	no	special (big cities)	basic	no	no
University	special	basic (T,C and W)	basic (T and C)	basic (T,C)	Special (C, T?)	no
Central Hospital	special	basic (T,C and W)	basic (T and C)	basic (T,C)	Special (C, T?)	no
Other institutes	special	basic (T,C and W)	basic (T and C)	basic (T,C)	Special (C, T?)	no
Sport and Recreational Centres	no	special	basic	special (location)	special (c-type)	special (location)
Recreational area	no	exceptional	basic or special	special (location)	special	special (location)
Medium density housing, rowhouses	special (old fabric, small centres)	basic (old fabric, small centres)	basic	basic	basic	special
Good cycling environment	Special (best centres)	basic (except old fabric)	basic	basic	basic	special (best fabric)
Expressbus	no	no	special	basic	no	basic (in big cities)
BRT, Busway	no	no	no	basic (if no rail)	no	basic (in big cities)
Local feeder bus	no	no	no	basic, big edge cities)	no	basic (in big cities)
Local car city bus	no	no	no	symbiosis ?	basic	basic
Low density housing	exceptional (old housing)	special (small cities, old fabric)	special (limited)	special (limited)	basic	basic (limited amount)
Hypermarket	exceptional C-element	special C-element,	exceptional C-element,	special C-element,	basic	basic (limited amount)
Multi-storey parking units	Special C-unit, positive	special (big service)	special (big service)	Special (C and T)	basic (big service)	basic
Underground parking unit	Special C-unit, positive	no	no	no	special (big service)	special (big service)
Large parking areas	Exceptional (Car Cities)	special (big service)	special (big service)	special (big service)	basic (big service)	basic
Freeway	exceptional (conflicting)	exceptional (conflicting)	exceptional (conflicting)	exceptional	basic (problematic)	basic
Highway	exceptional (conflicting)	special (problematic)	special (problematic)	exceptional	basic	basic
Shopping Mall	no	no	no	no	Special (space)	basic
Car based shopping streets	no	no	no	no	basic (Car Cities)	no
Park and ride	no	no	no	no	no	no
Car dependent housing	no	no	no	no	Special (location)	basic (C only)
Car dependent jobs	no	no	no	no	Special (location)	basic (C only)
Car dependent services	no	no	no	no	Special (location)	basic (C only)
Etc						

Symbiosis



Basic elements of the Fabrics:

- Walking City Fabric
- Walking City Fabric of the Sub-Centers
- Transit City Fabric
- Car City Fabric

Elements

Walking City

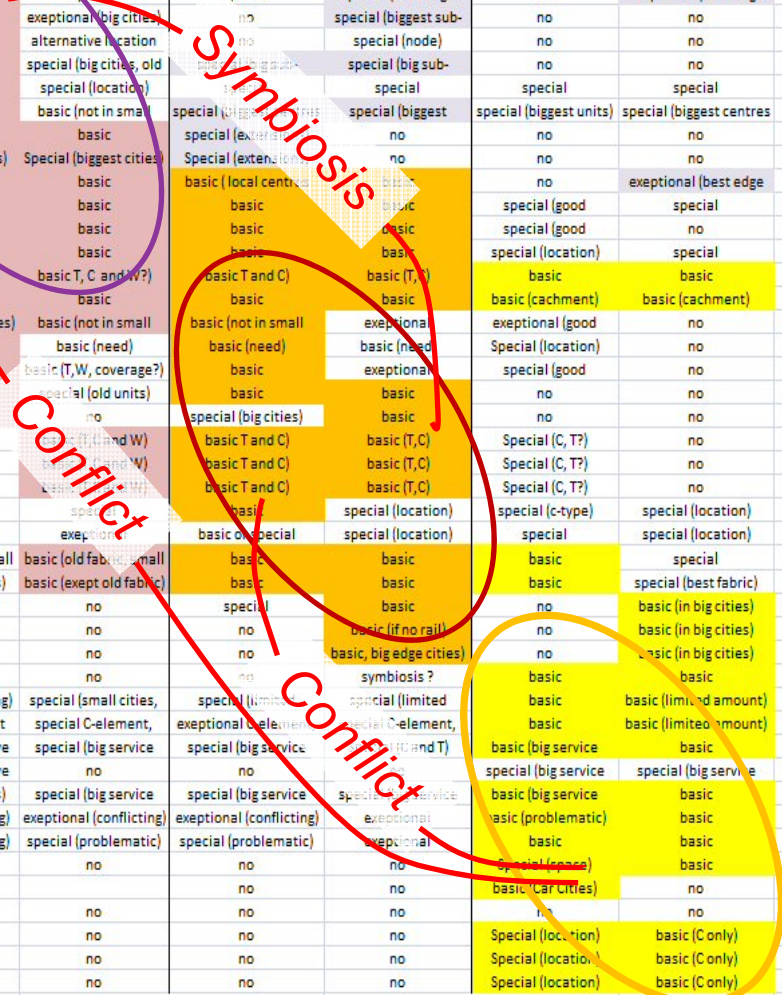
Transit City

Car City

URBAN FABRICS

Elements of the Fabrics

Elements	Walking City Fabric		Transit City Fabric		Car City Fabric	
	Inner Walking City radius 1 km	Outer Walking City (1 to 2 km)	Inner Transit City 2 to 8 km	Outer Transit City more than 8 km	Inner Car City 2 to 8 km	Outer Car City more than 8 km
Market square, Market Hall	basic for W and T	exceptional	exceptional (best sub-	exceptional (best sub-	no	no
Pedestrian Centre	basic for W and T	special (big cities only)	special (best	special (best edge	no	exceptional (best edge
Pedestrian street	basic for W and T	special (best	Special (best	special (best edge	no	exceptional (best edge
Active street	basic for W and T	special	special	special (best edge	no	exceptional (best edge
Multi-storey warehouses	basic for W and T	exceptional (big cities)	no	special (biggest sub-	no	no
Transit Centre	basic for W and T	alternative location	no	special (node)	no	no
Small shops and service facilities by the	basic	special (big cities, old	special (big sub-	special (big sub-	no	no
Urban Park, high quality	basic	special (location)	no	special	special	special
Prized parking	basic	basic (not in small	special (big cities)	special (biggest	special (biggest units)	special (biggest centres
City bus lines (Walking City)	basic	basic	special (extension)	no	no	no
City rail (Walking City), catchment 250 to 400 m	Special (biggest cities)	Special (biggest cities)	Special (extension)	no	no	no
Good pedestrian environment	basic	basic	basic (local centres)	basic	no	exceptional (best edge
Neighbourhood with local services	basic	basic	basic	basic	special (good	special
Local service units (walking based)	basic	basic	basic	basic	special (good	no
High density housing, blocks of flats	basic	basic	basic	basic	special (location)	special
Office blocs	basic (T and W, C?)	basic T, C and W?)	basic T and C)	basic (T, C)	basic	basic
Local Park	basic	basic	basic	basic	basic (catchment)	basic (catchment)
Trams, catchment 250 to 300 m (W,T)	basic (not in small cities)	basic (not in small	basic (not in small	exceptional	exceptional (good	no
Bus street, bus lanes	special (T, space)	basic (need)	basic (need)	basic (need)	Special (location)	no
Inner City buses, catchment 250 to 300 m	basic (T,W)	basic (T,W, coverage?)	basic	exceptional	special (good	no
Local service centre (walking based)	basic	special (old units)	basic	basic	no	no
Local Stations /Outer transit (train, metro, light	terminal (T and C)	no	special (big cities)	basic	no	no
University	special	special (T and W)	basic T and C)	basic (T,C)	Special (C, T?)	no
Central Hospital	special	special (T and W)	basic T and C)	basic (T,C)	Special (C, T?)	no
Other institutes	special	special (T and W)	basic T and C)	basic (T,C)	Special (C, T?)	no
Sport and Recreational Centres	no	special	basic	special (location)	special (c-type)	special (location)
Recreational area	no	exceptional	basic or special	special (location)	special	special (location)
Medium density housing, rowhouses	special (old fabric, small	basic (old fabric, small	basic	basic	basic	special
Good cycling environment	Special (best centres)	basic (except old fabric)	basic	basic	basic	special (best fabric)
Expressbus	no	no	special	basic	no	basic (in big cities)
BRT, Busway	no	no	no	basic (if no rail)	no	basic (in big cities)
Local feeder bus	no	no	no	basic, big edge cities)	no	basic (in big cities)
Local car city bus	no	no	no	symbiosis ?	basic	basic
Low density housing	exceptional (old housing)	special (small cities,	special (limited	special (limited	basic	basic (limited amount)
Hypermarket	exceptional C-element	special C-element,	exceptional C-element	special C-element,	basic	basic (limited amount)
Multi-storey parking units	Special C-unit, positive	special (big service	special (big service	special (big service	basic (big service	basic
Underground parking unit	Special C-unit, positive	no	no	special (big service	special (big service	special (big service
Large parking areas	Exceptional (Car Cities)	special (big service	special (big service	special (big service	basic (big service	basic
Freeway	exceptional (conflicting)	exceptional (conflicting)	exceptional (conflicting)	exceptional	basic (problematic)	basic
Highway	exceptional (conflicting)	special (problematic)	special (problematic)	exceptional	basic	basic
Shopping Mall	no	no	no	no	Special (space)	basic
Car based shopping streets	no	no	no	no	basic (Car Cities)	no
Park and ride	no	no	no	no	no	no
Car dependent housing	no	no	no	no	Special (location)	basic (C Only)
Car dependent jobs	no	no	no	no	Special (location)	basic (C Only)
Car dependent services	no	no	no	no	Special (location)	basic (C Only)
Etc						



Walking City Fabric

Walking City Fabric of the Sub-Centers

Transit City Fabric

Car City Fabric

Basic elements of th Fabrics:

Elements

Walking City

Transit City

Car City

URBAN FABRICS

Elements of the Fabrics

Elements	Walking City Fabric		Transit City Fabric		Car City Fabric	
	Inner Walking City radius 1 km	Outer Walking City (1 to 2 km)	Inner Transit City 2 to 8 km	Outer Transit City more than 8 km	Inner Car City 2 to 8 km	Outer Car City more than 8 km
Market square, Market Hall	basic for W and T	exceptional	exceptional (best sub-centre)	exceptional (best sub-centre)	no	no
Pedestrian Centre	basic for W and T	special (big cities only)	special (best)	special (best edge)	no	exceptional (best edge)
Pedestrian street	basic for W and T	special (best)	Special (best)	special (best edge)	no	exceptional (best edge)
Active street	basic for W and T	special	special	special (best edge)	no	exceptional (best edge)
Multi-storey warehouses	basic for W and T	exceptional (big cities)	no	special (biggest sub-centre)	no	no
Transit Centre	basic for W and T	alternative location	no	special (node)	no	no
Small shops and service facilities by the street	basic	special (big cities, old fabric)	special (big sub-centre)	special (big sub-centre)	no	no
Urban Park, high quality	basic	special (location)	no	special	special	special
Prized parking	basic	basic (not in small cities)	special (big cities)	special (biggest)	special (biggest units)	special (biggest centres)
City bus lines (Walking City)	basic	basic	special (extension)	no	no	no
City rail (Walking City), catchment 250 to 400 m	Special (biggest cities)	Special (biggest cities)	Special (extension)	no	no	no
Good pedestrian environment	basic	basic	basic (local centres)	basic	no	exceptional (best edge)
Neighbourhood with local services	basic	basic	basic	basic	special (good)	special
Local service units (walking based)	basic	basic	basic	basic	special (good)	no
High density housing, blocks of flats	basic	basic	basic	basic	special (location)	special
Office blocs	basic (T and W, C?)	basic T, C and W?	basic T and C	basic (T, C)	basic	basic
Local Park	basic	basic	basic	basic	basic (catchment)	basic (catchment)
Trams, catchment 250 to 300 m (W,T)	basic (not in small cities)	basic (not in small cities)	basic (not in small cities)	exceptional	exceptional (good)	no
Bus street, bus lanes	special (T, space)	basic (need)	basic (need)	basic (need)	Special (location)	no
Inner City buses, catchment 250 to 300 m	basic (T,W)	basic (T,W, coverage?)	basic	exceptional	special (good)	no
Local service centre (walking based)	basic	special (old units)	basic	basic	no	no
Local Stations /Outer transit (train, metro, light rail)	terminal (T and W)	no	special (big cities)	basic	no	no
University	special	special (T and W)	basic T and C	basic (T,C)	special (T,C)	no
Central Hospital	special	special (T and W)	basic T and C	basic (T,C)	Special (T,C)	no
Other institutes	special	special (T and W)	basic T and C	basic (T,C)	Special (T,C)	no
Sport and Recreational Centres	no	special (location)	basic	special (location)	special (catchment)	special (location)
Recreational area	no	exceptional	basic (special)	special (location)	special	special (location)
Medium density housing, rowhouses	special (old fabric, small cities)	basic (old fabric, small cities)	basic	basic	basic	special (best fabric)
Good cycling environment	Special (best centres)	basic (except old fabric)	basic	basic	basic	special (best fabric)
Expressbus	no	no	special	basic	no	basic (in big cities)
BRT, Busway	no	no	no	basic (if no rail)	no	basic (in big cities)
Local feeder bus	no	no	no	basic, big edge cities)	no	basic (in big cities)
Local car city bus	no	no	no	no	basic	basic
Low density housing	exceptional (old housing)	special (small cities, old fabric)	special (limited)	special (limited)	basic	basic (limited amount)
Hypermarket	exceptional C-element	special C-element, old fabric)	exceptional C-element	special C-element	basic	basic (limited amount)
Multi-storey parking units	Special C-unit, positive	special (big service)	special (big service)	special (big service)	basic (big service)	basic
Underground parking unit	Special C-unit, positive	no	no	special (big service)	special (big service)	special (big service)
Large parking areas	Exceptional (Car Cities)	special (big service)	special (big service)	special (big service)	basic (big service)	basic
Freeway	exceptional (conflicting)	exceptional (conflicting)	exceptional (conflicting)	exceptional	basic (problematic)	basic
Highway	exceptional (conflicting)	special (problematic)	special (problematic)	exceptional	basic	basic
Shopping Mall	no	no	no	no	Special (space)	basic
Car based shopping streets	no	no	no	no	basic (Car Cities)	no
Park and ride	no	no	no	no	no	no
Car dependent housing	no	no	no	no	Special (location)	basic (C Only)
Car dependent jobs	no	no	no	no	Special (location)	basic (C Only)
Car dependent services	no	no	no	no	Special (location)	basic (C Only)
Etc						

Conflict

Symbiosis

Symbiosis

Conflict



Basic elements of th Fabrics:

- Walking City Fabric
- Walkin City Fabric of the Sub-Centers
- Transit City Fabric
- Car City Fabric

Elements

Walking City

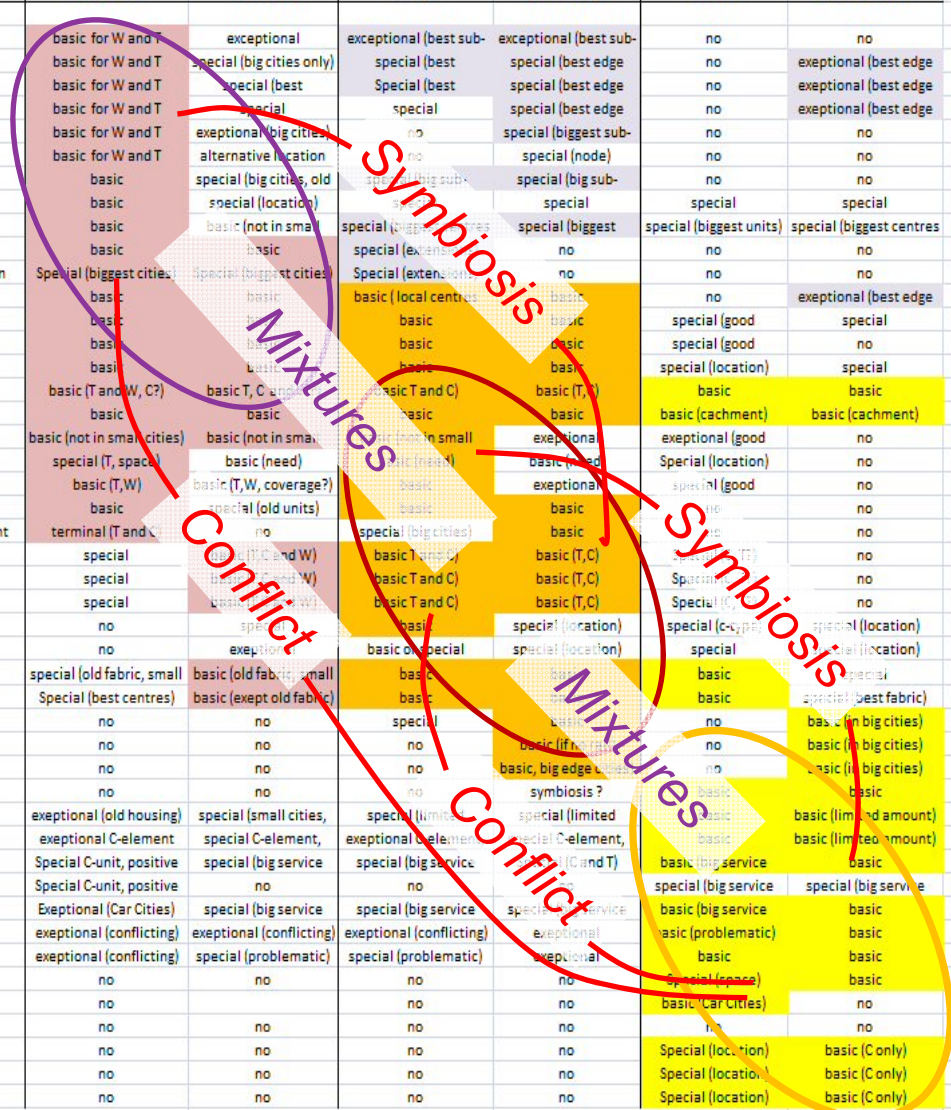
Transit City

Car City

URBAN FABRICS

Elements of the Fabrics

Elements	Walking City Fabric		Transit City Fabric		Car City Fabric	
	Inner Walking City radius 1 km	Outer Walking City (1 to 2 km)	Inner Transit City 2 to 8 km	Outer Transit City more than 8 km	Inner Car City 2 to 8 km	Outer Car City more than 8 km
Market square, Market Hall	basic for W and T	exceptional	exceptional (best sub-	exceptional (best sub-	no	no
Pedestrian Centre	basic for W and T	special (big cities only)	special (best	special (best edge	no	exceptional (best edge
Pedestrian street	basic for W and T	special (best	Special (best	special (best edge	no	exceptional (best edge
Active street	basic for W and T	special	special	special (best edge	no	exceptional (best edge
Multi-storey warehouses	basic for W and T	exceptional (big cities)	no	special (biggest sub-	no	no
Transit Centre	basic for W and T	alternative location	no	special (node)	no	no
Small shops and service facilities by the	basic	special (big cities, old	special (big sub-	special (big sub-	no	no
Urban Park, high quality	basic	special (location)	no	special	special	special
Prized parking	basic	basic (not in small	special (biggest	special (biggest	special (biggest units)	special (biggest centres
City bus lines (Walking City)	basic	basic	special (extension)	no	no	no
City rail (Walking City), catchment 250 to 400 m	Special (biggest cities)	Special (biggest cities)	Special (extension)	no	no	no
Good pedestrian environment	basic	basic	basic (local centres)	basic	no	exceptional (best edge
Neighbourhood with local services	basic	basic	basic	basic	special (good	special
Local service units (walking based)	basic	basic	basic	basic	special (good	no
High density housing, blocks of flats	basic	basic	basic	basic	special (location)	special
Office blocs	basic (T and W, C?)	basic T, C and W	basic T and C	basic (T, C)	basic	basic
Local Park	basic	basic	basic	basic	basic (catchment)	basic (catchment)
Trams, catchment 250 to 300 m (W,T)	basic (not in small cities)	basic (not in small	basic (not in small	exceptional	exceptional (good	no
Bus street, bus lanes	special (T, space)	basic (need)	basic (need)	basic (need)	Special (location)	no
Inner City buses, catchment 250 to 300 m	basic (T,W)	basic (T,W, coverage?)	basic	exceptional	special (good	no
Local service centre (walking based)	basic	special (old units)	basic	basic	no	no
Local Stations /Outer transit (train, metro, light	terminal (T and C)	no	special (big cities)	no	no	no
University	special	special (T and W)	basic T and C	basic (T,C)	special (T)	no
Central Hospital	special	special (T and W)	basic T and C	basic (T,C)	Special	no
Other institutes	special	special (T and W)	basic T and C	basic (T,C)	Special	no
Sport and Recreational Centres	no	special	basic	special (location)	special (catchment)	special (location)
Recreational area	no	exceptional	basic or special	special (location)	special	special (location)
Medium density housing, rowhouses	special (old fabric, small	basic (old fabric, small	basic	basic	basic	special (best fabric)
Good cycling environment	Special (best centres)	basic (except old fabric)	basic	basic	basic	basic (limited amount)
Expressbus	no	no	special	basic	no	basic (in big cities)
BRT, Busway	no	no	no	basic (if	no	basic (in big cities)
Local feeder bus	no	no	no	basic, big edge	no	basic (in big cities)
Local car city bus	no	no	no	symbiosis ?	basic	basic
Low density housing	exceptional (old housing)	special (small cities,	special (limited	special (limited	basic	basic (limited amount)
Hypermarket	exceptional C-element	special C-element,	exceptional C-element	special C-element,	basic	basic (limited amount)
Multi-storey parking units	Special C-unit, positive	special (big service	special (big service	special (big service	basic (big service	basic
Underground parking unit	Special C-unit, positive	no	no	special (big service	special (big service	special (big service
Large parking areas	Exceptional (Car Cities)	special (big service	special (big service	special (big service	basic (big service	basic
Freeway	exceptional (conflicting)	exceptional (conflicting)	exceptional (conflicting)	exceptional	basic (problematic)	basic
Highway	exceptional (conflicting)	special (problematic)	special (problematic)	exceptional	basic	basic
Shopping Mall	no	no	no	no	Special (space)	basic
Car based shopping streets	no	no	no	no	basic (Car Cities)	no
Park and ride	no	no	no	no	no	no
Car dependent housing	no	no	no	no	Special (location)	basic (C Only)
Car dependent jobs	no	no	no	no	Special (location)	basic (C Only)
Car dependent services	no	no	no	no	Special (location)	basic (C Only)
Etc						



Walking City Fabric

Walking City Fabric of the Sub-Centers

Transit City Fabric

Car City Fabric

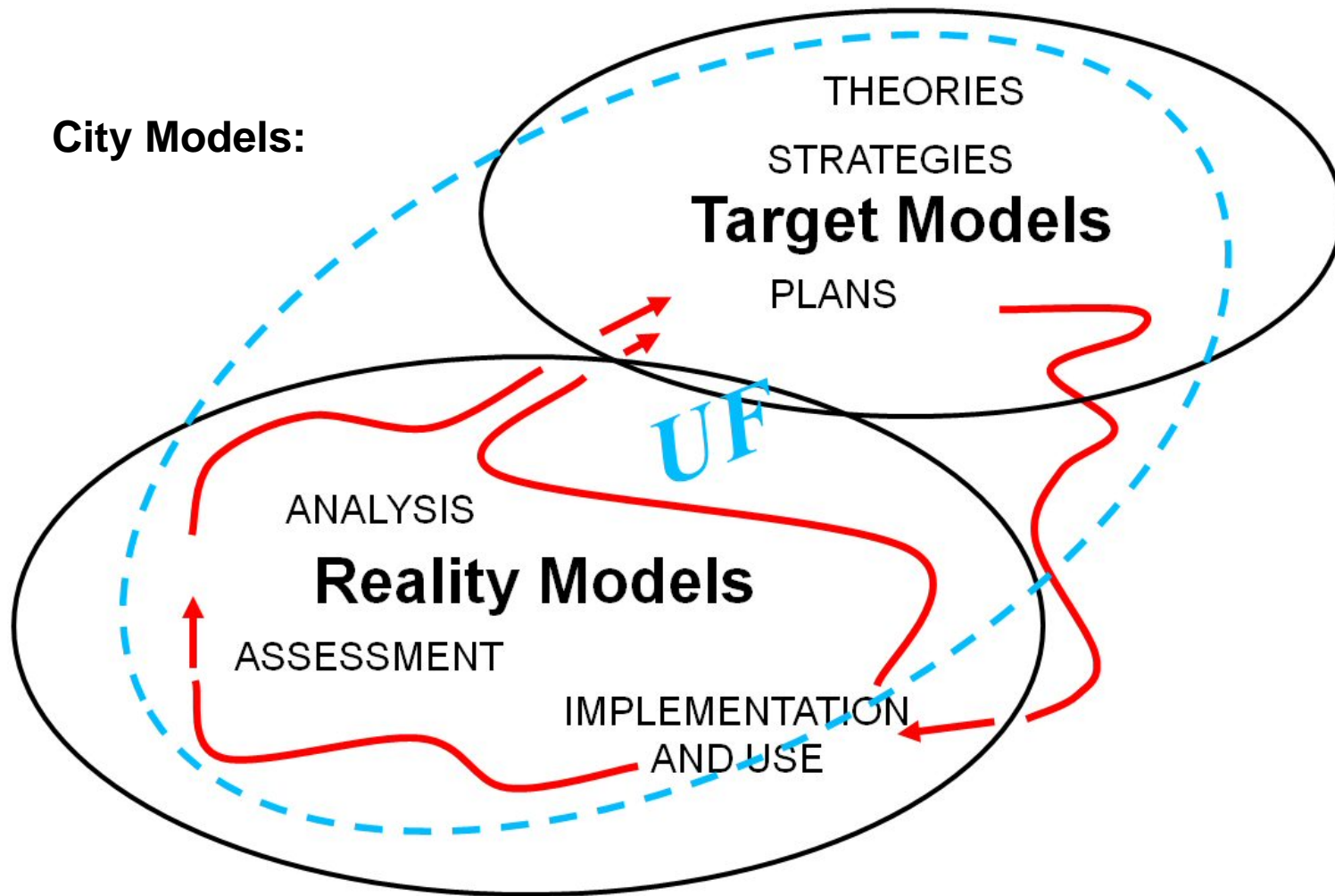
Basic elements of th Fabrics:

Three Urban Fabrics
A New Model

Comprehensive dynamic model

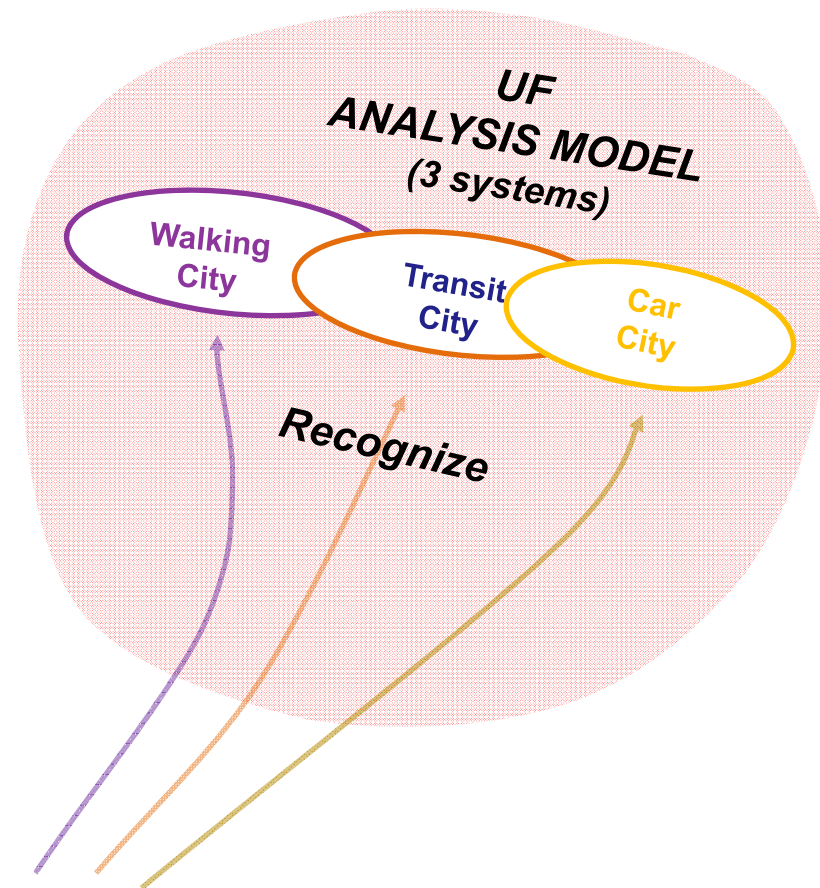
UF Project

Comprehensive dynamic model



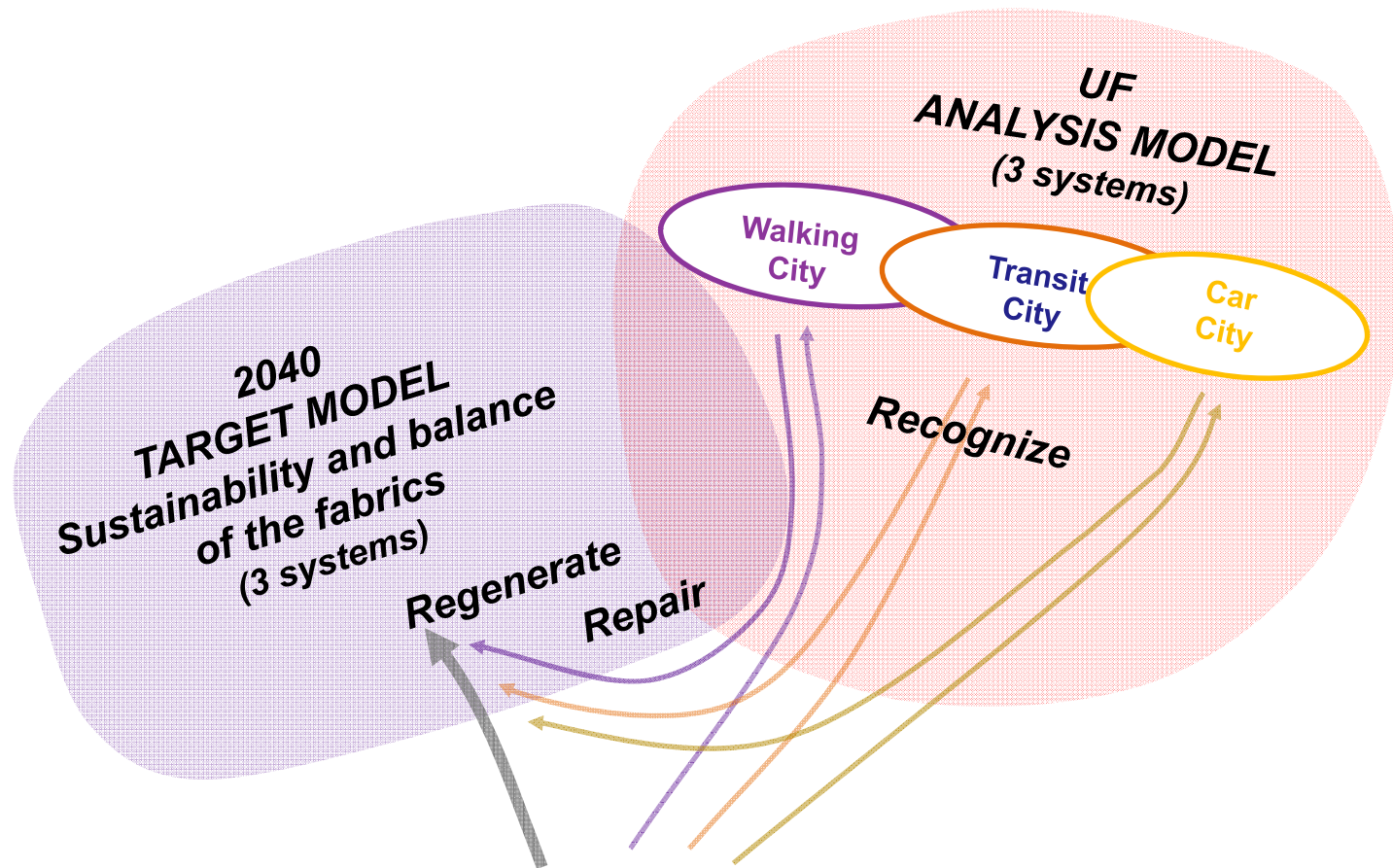
Three Urban Fabrics
A New Theory

Theory of Urban Fabrics

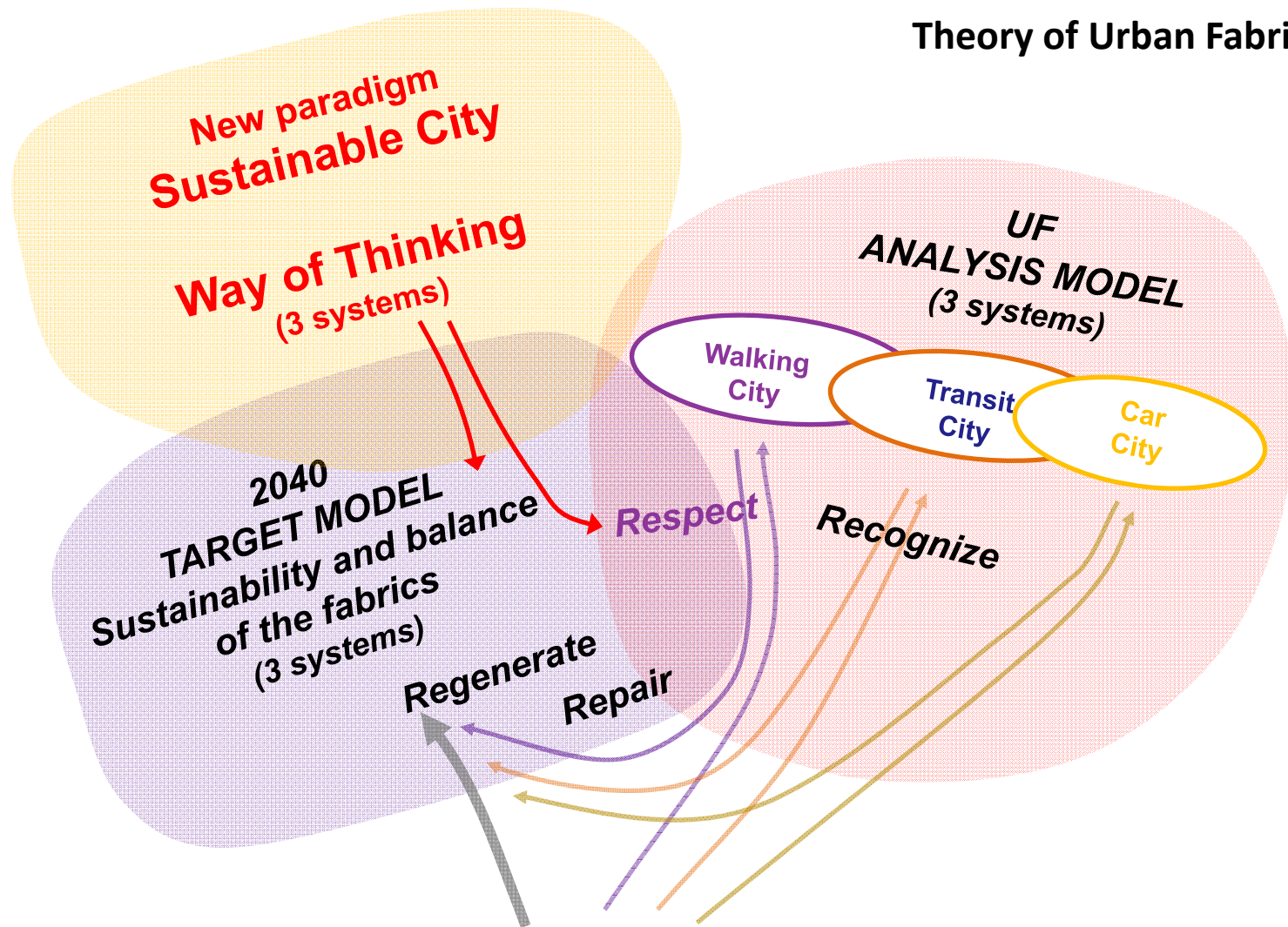


Cities since 1950
Three Urban Fabrics
(3 systems)
Walking City, Transit City and Car City

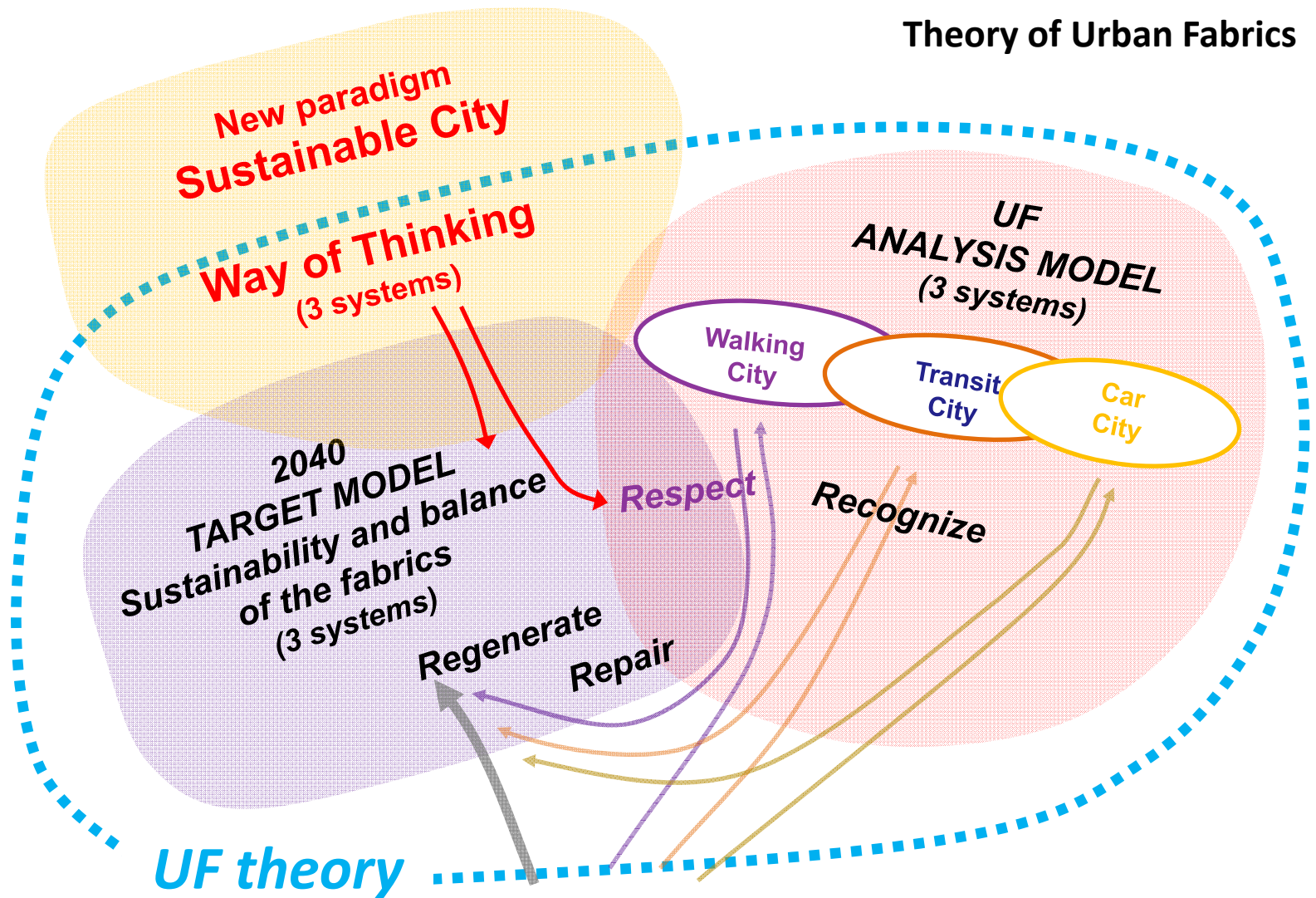
Theory of Urban Fabrics



Cities since 1950
Three Urban Fabrics
(3 systems)
Walking City, Transit City and Car City



Cities since 1950
Three Urban Fabrics
(3 systems)
Walking City, Transit City and Car City

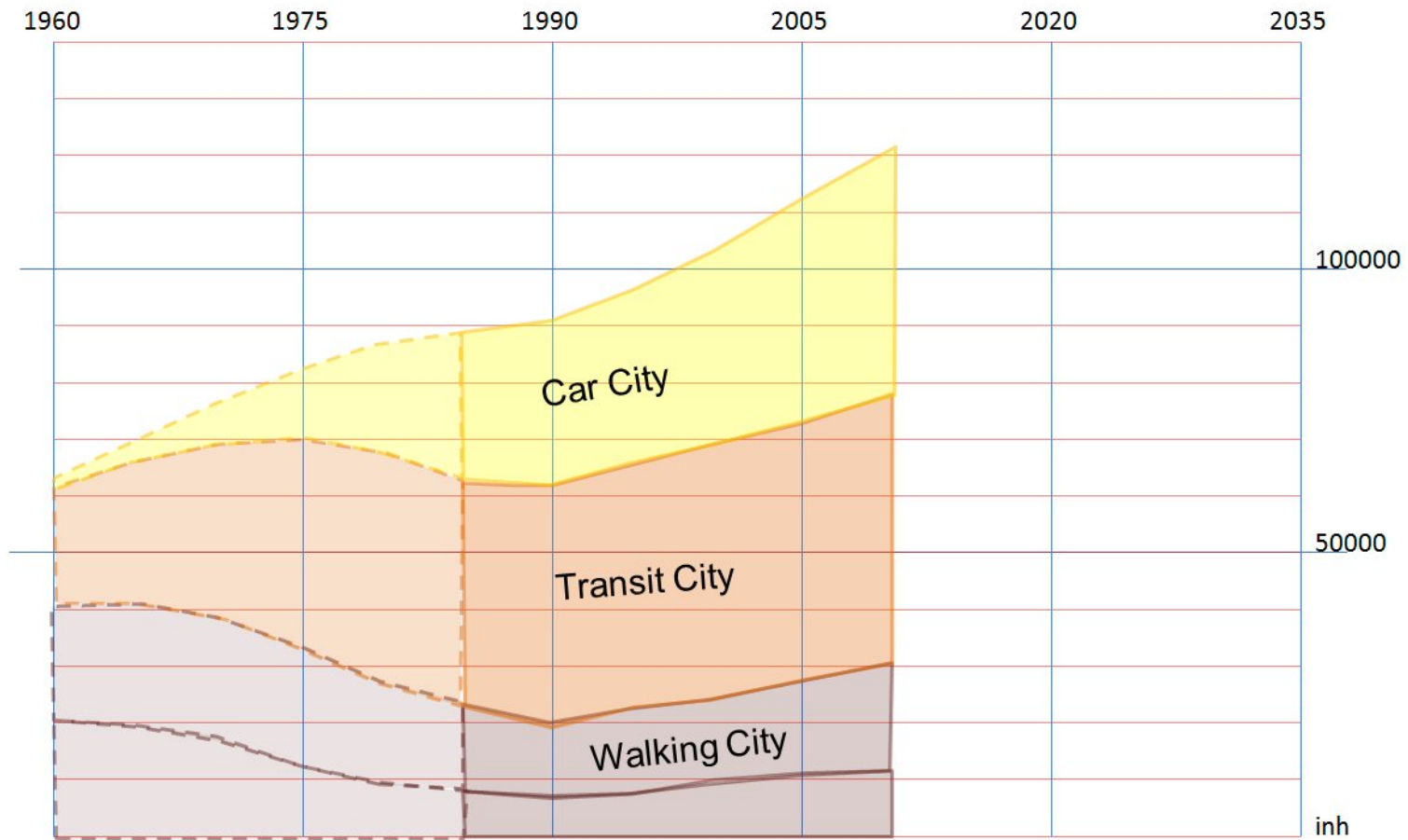


Cities since 1950
Three Urban Fabrics
(3 systems)
Walking City, Transit City and Car City

Challenges

History of the Fabrics 1960-2010

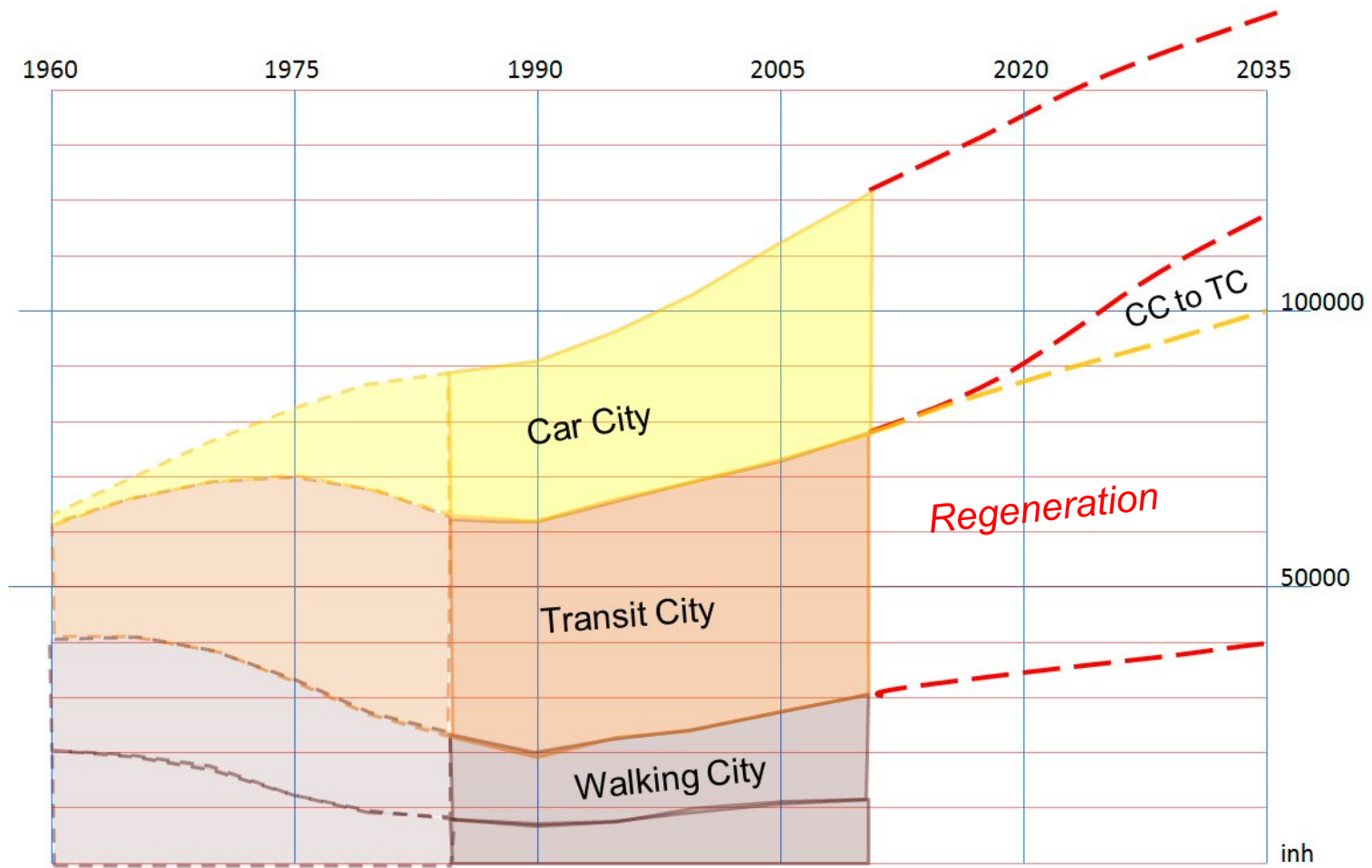
*The Fabrics of the Finnish Cities
have faced periods of **growth and
decline***



**Population by Areas of Urban Fabrics
An Intermediate City, Finland (Radius 8 km)**

Scenario A 2010-2035

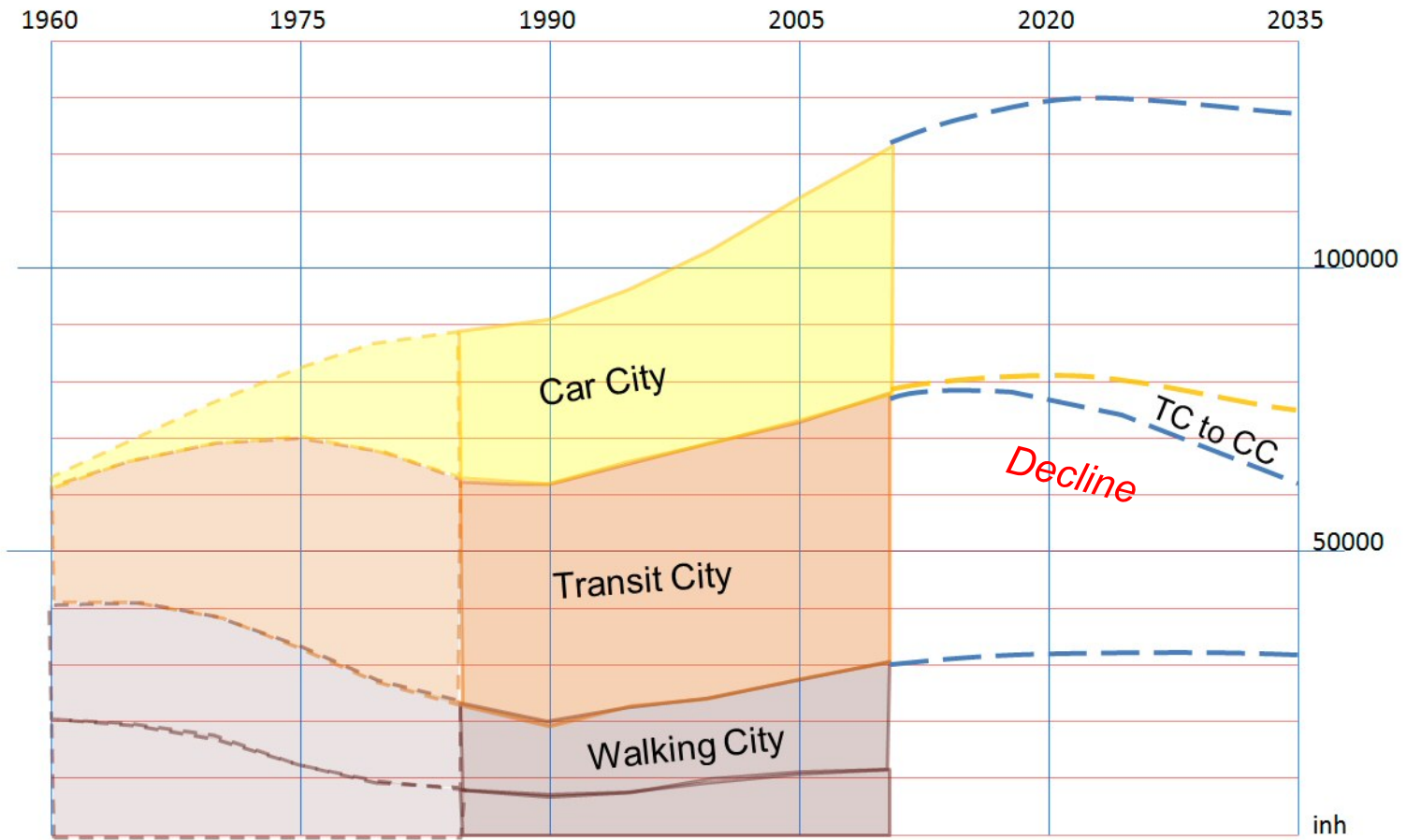
Growth of the *Transit City Fabric* leads to *growth*



Population by Areas of Urban Fabrics
An Intermediate City, Finland (Radius 8 km)

Scenario B 2010-2035

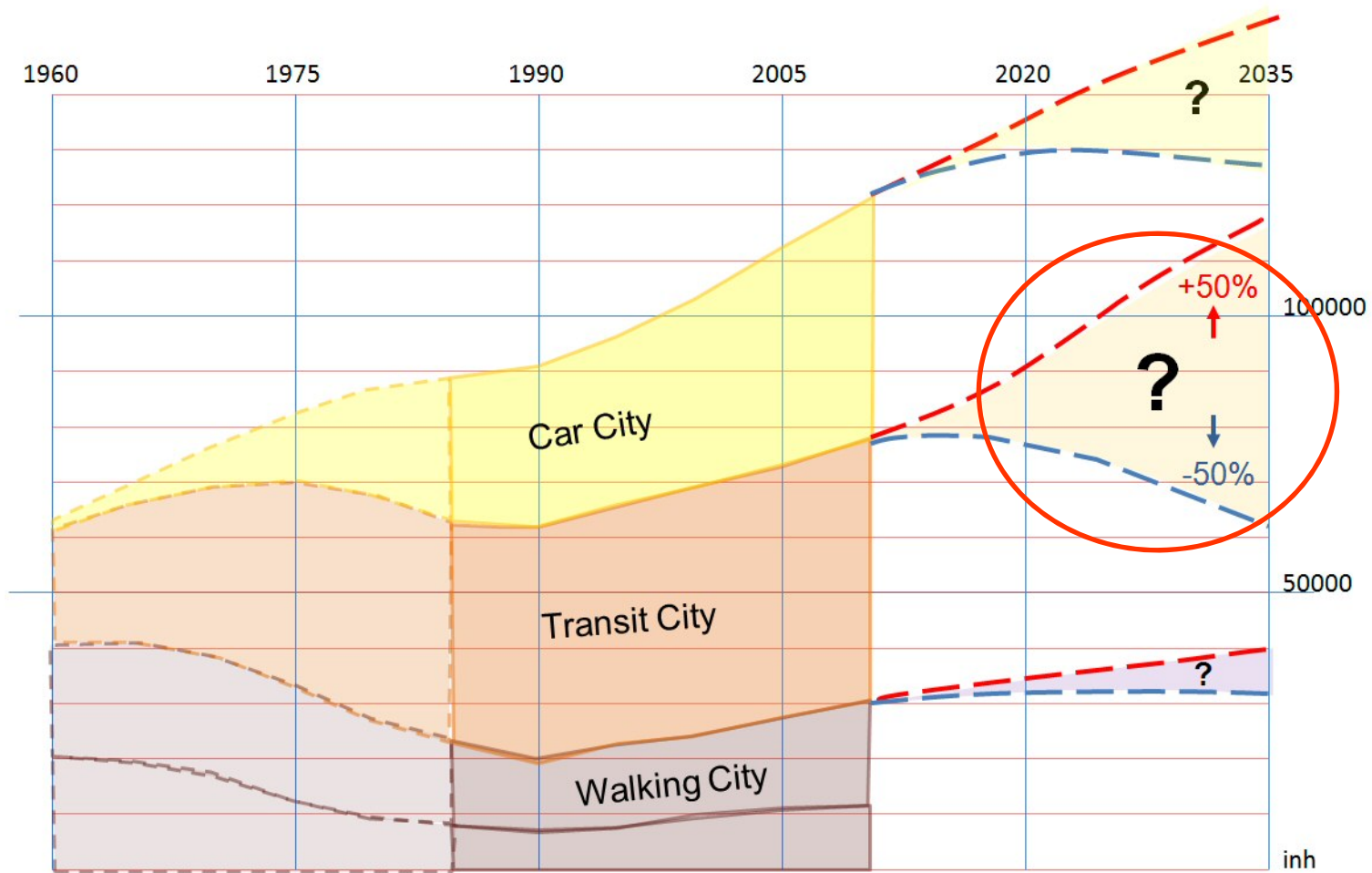
Decline of the *Transit City Fabric* leads to *decline*



**Population by Areas of Urban Fabrics
An Intermediate City, Finland (Radius 8 km)**

Potentials and Challenges 2010-2035

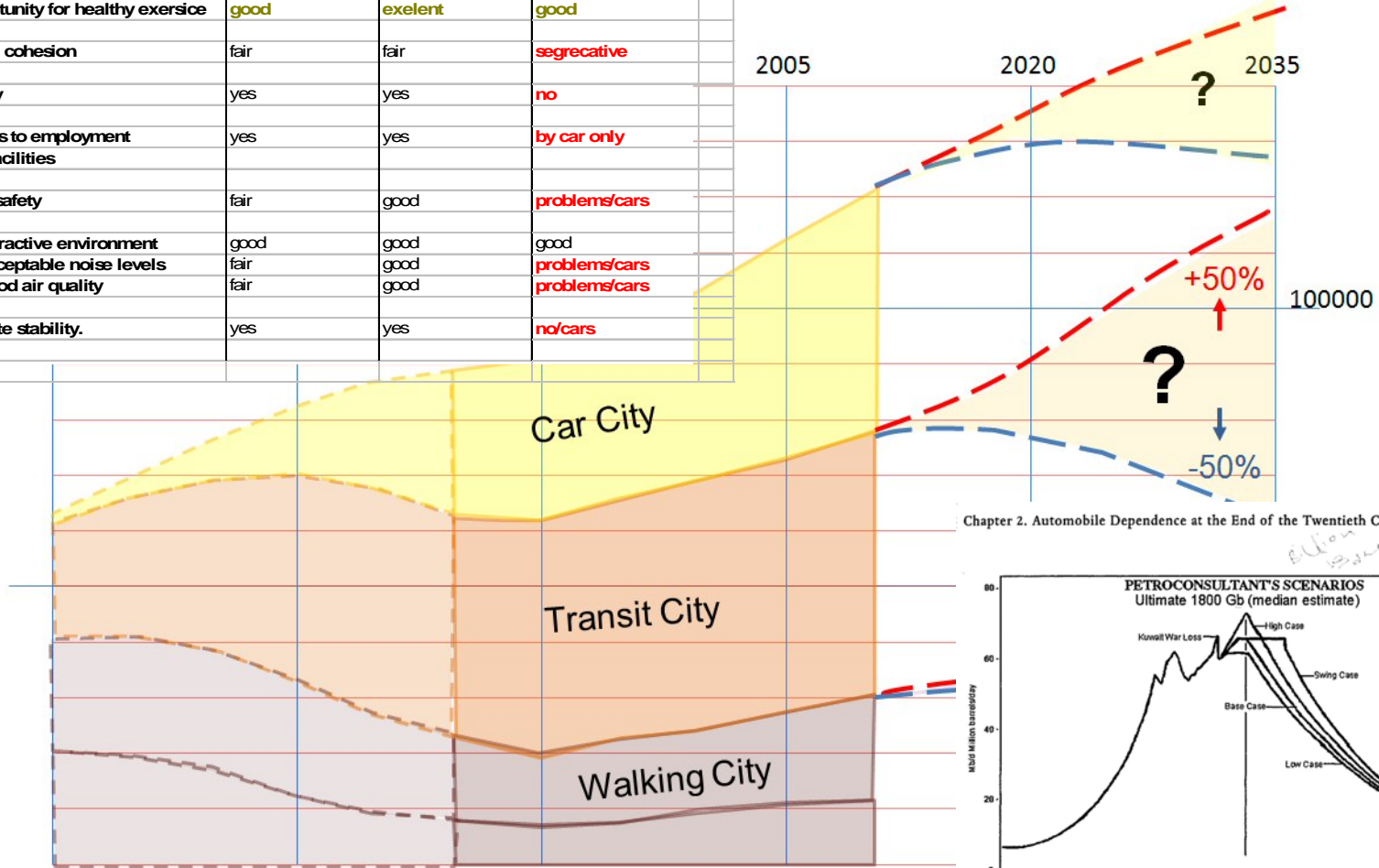
*The Transit City Fabric is the
key factor of the change*



Population by Areas of Urban Fabrics
An Intermediate City, Finland (Radius 8 km)

Kuopio			
Healthy objectives			
28.8.2006 / Leo Kosonen			
	<i>Inner City/ Walking City</i>	<i>Urban fingers/ Transit City</i>	<i>Urban sprawl/ Car City</i>
• opportunity for healthy exercise	good	exelent	good
• social cohesion	fair	fair	segrecreative
• equity	yes	yes	no
• access to employment and facilities	yes	yes	by car only
• road safety	fair	good	problems/cars
• an attractive environment	good	good	good
• acceptable noise levels	fair	good	problems/cars
• good air quality	fair	good	problems/cars
• climate stability.	yes	yes	no/cars

Challenges are addressing sustainability and resilience of each of the Fabrics



Chapter 2. Automobile Dependence at the End of the Twentieth Century

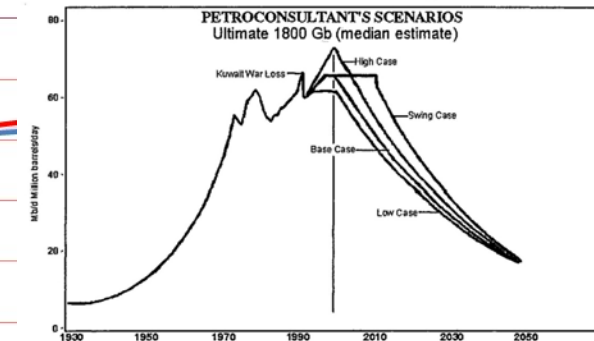
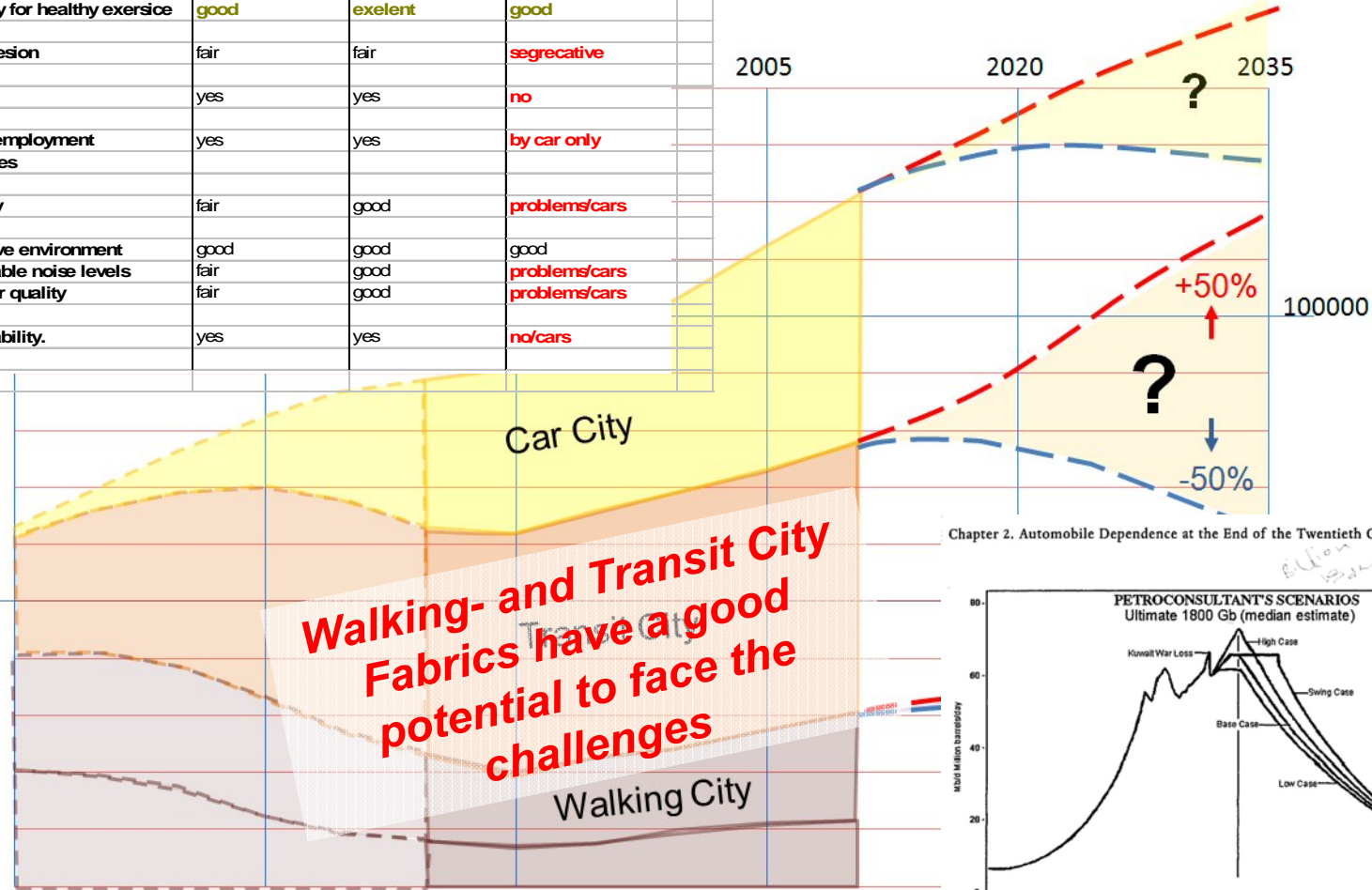


Figure 2.6. World oil production, 1930–2050. Source: Campbell and Laherrère (1995). Notes: Base Case: anticipated path; High Case: strong economic growth path; Swing Case: swing oil producers in Middle East decide to rationalize oil production; Low Case: weak economic growth path (some expensive oil is never developed).

Population by Areas of Urban Fabrics An Intermediate City, Finland (Radius 8 km)

Kuopio			
Healthy objectives			
28.8.2006 / Leo Kosonen			
	<i>Inner City/ Walking City</i>	<i>Urban fingers/ Transit City</i>	<i>Urban sprawl/ Car City</i>
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• good air quality	fair	good	problems/cars
• climate stability.	yes	yes	no/cars

Challenges are addressing sustainability and recilience of each of the Fabrics



Chapter 2. Automobile Dependence at the End of the Twentieth Century

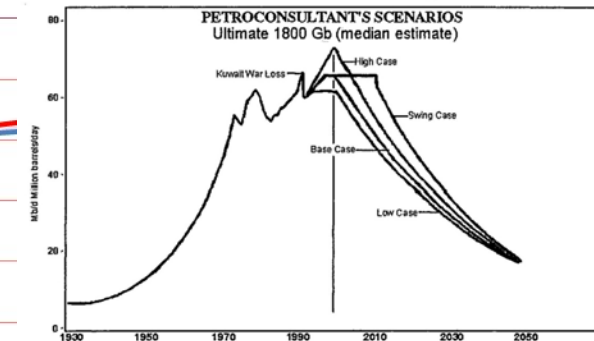
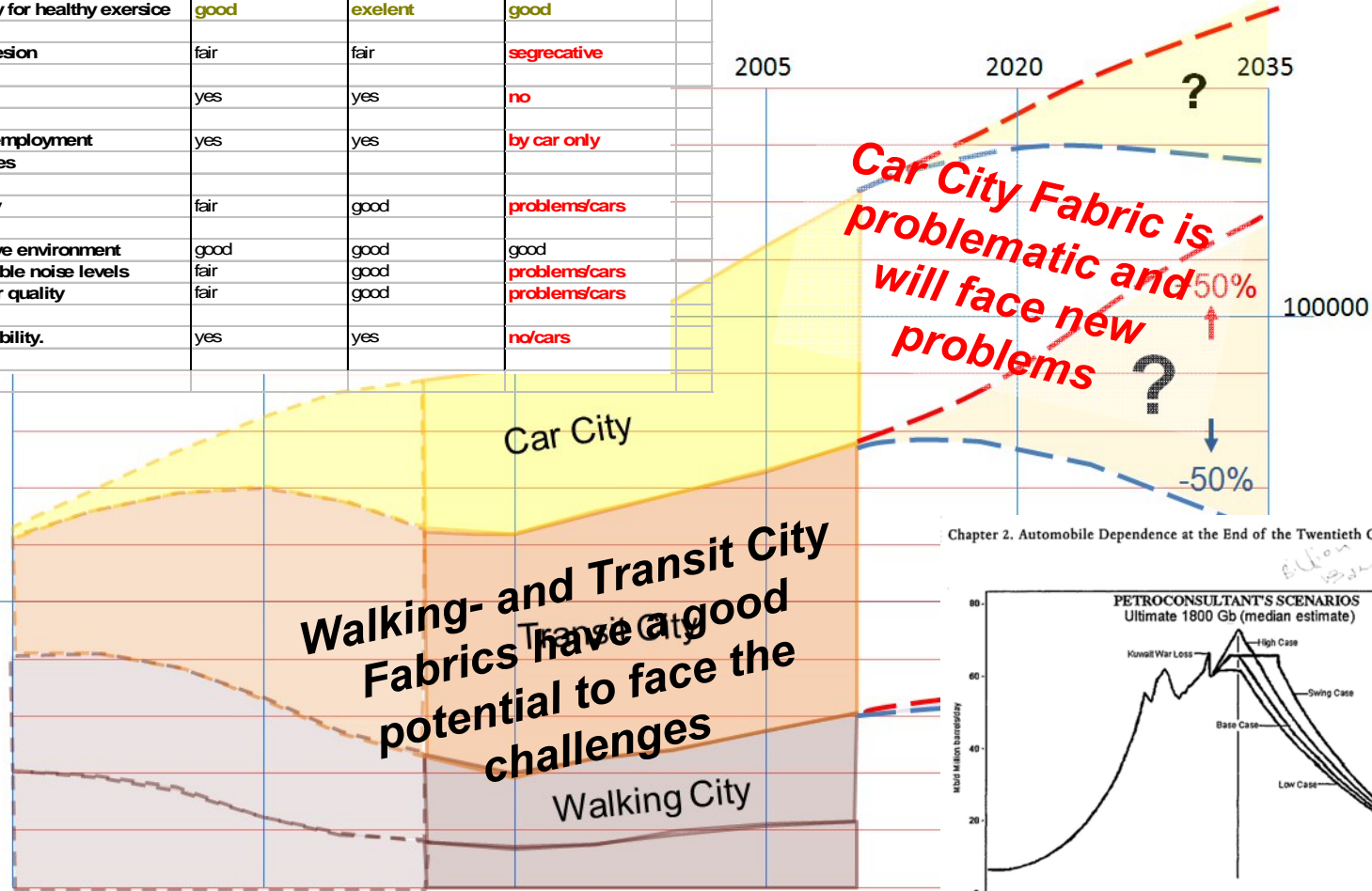


Figure 2.6. World oil production, 1930–2050. Source: Campbell and Laherrère (1995). Notes: Base Case: anticipated path; High Case: strong economic growth path; Swing Case: swing oil producers in Middle East decide to rationalize oil production; Low Case: weak economic growth path (some expensive oil is never developed).

Population by Areas of Urban Fabrics An Intermediate City, Finland (Radius 8 km)

Kuopio			
Healthy objectives			
28.8.2006 / Leo Kosonen			
	<i>Inner City/ Walking City</i>	<i>Urban fingers/ Transit City</i>	<i>Urban sprawl/ Car City</i>
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• acceptable noise levels	fair	good	problems/cars
• good air quality	fair	good	problems/cars
• climate stability.	yes	yes	no/cars

Challenges are addressing sustainability and recilience of each of the Fabrics



Chapter 2. Automobile Dependence at the End of the Twentieth Century

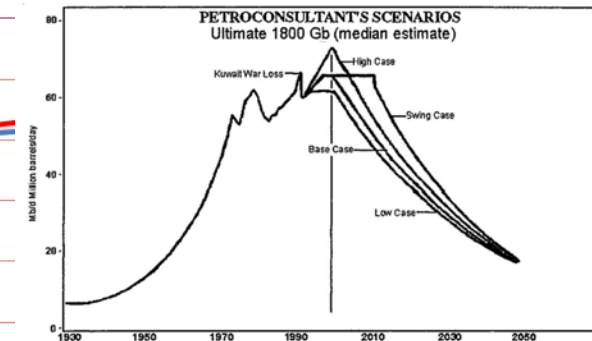


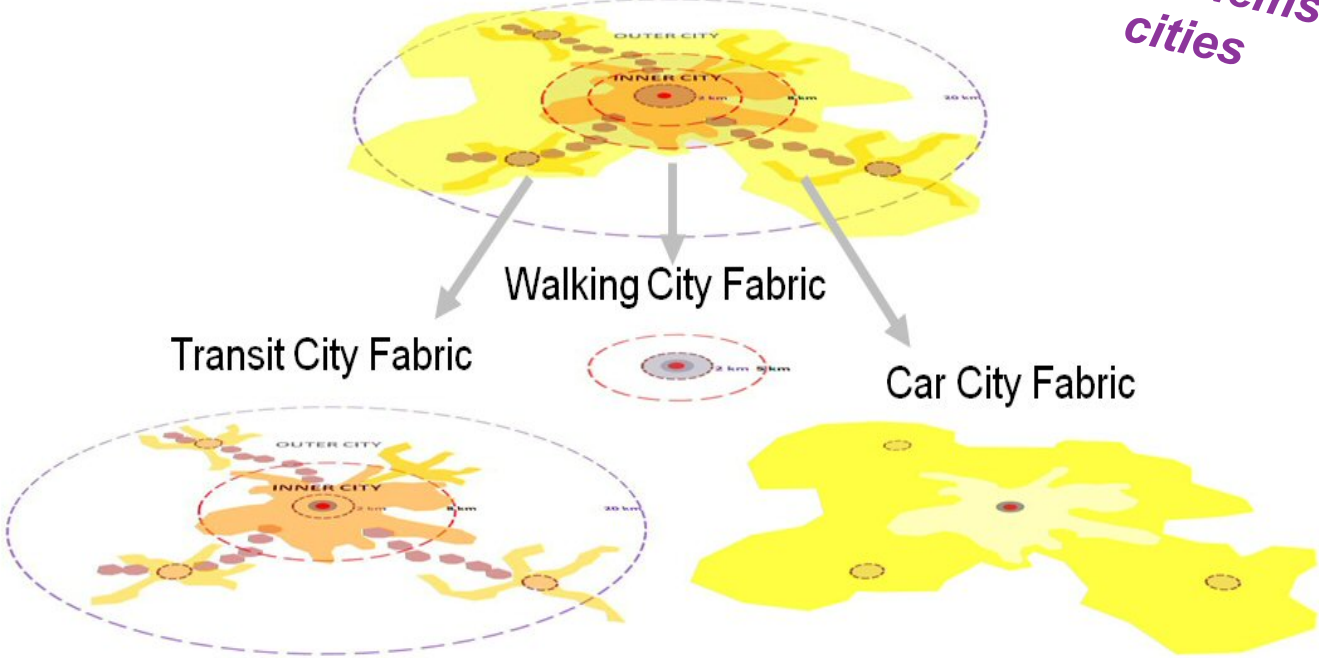
Figure 2.6. World oil production, 1930–2050. Source: Campbell and Laherrère (1995). Notes: Base Case: anticipated path; High Case: strong economic growth path; Swing Case: swing oil producers in Middle East decide to rationalize oil production; Low Case: weak economic growth path (some expensive oil is never developed).

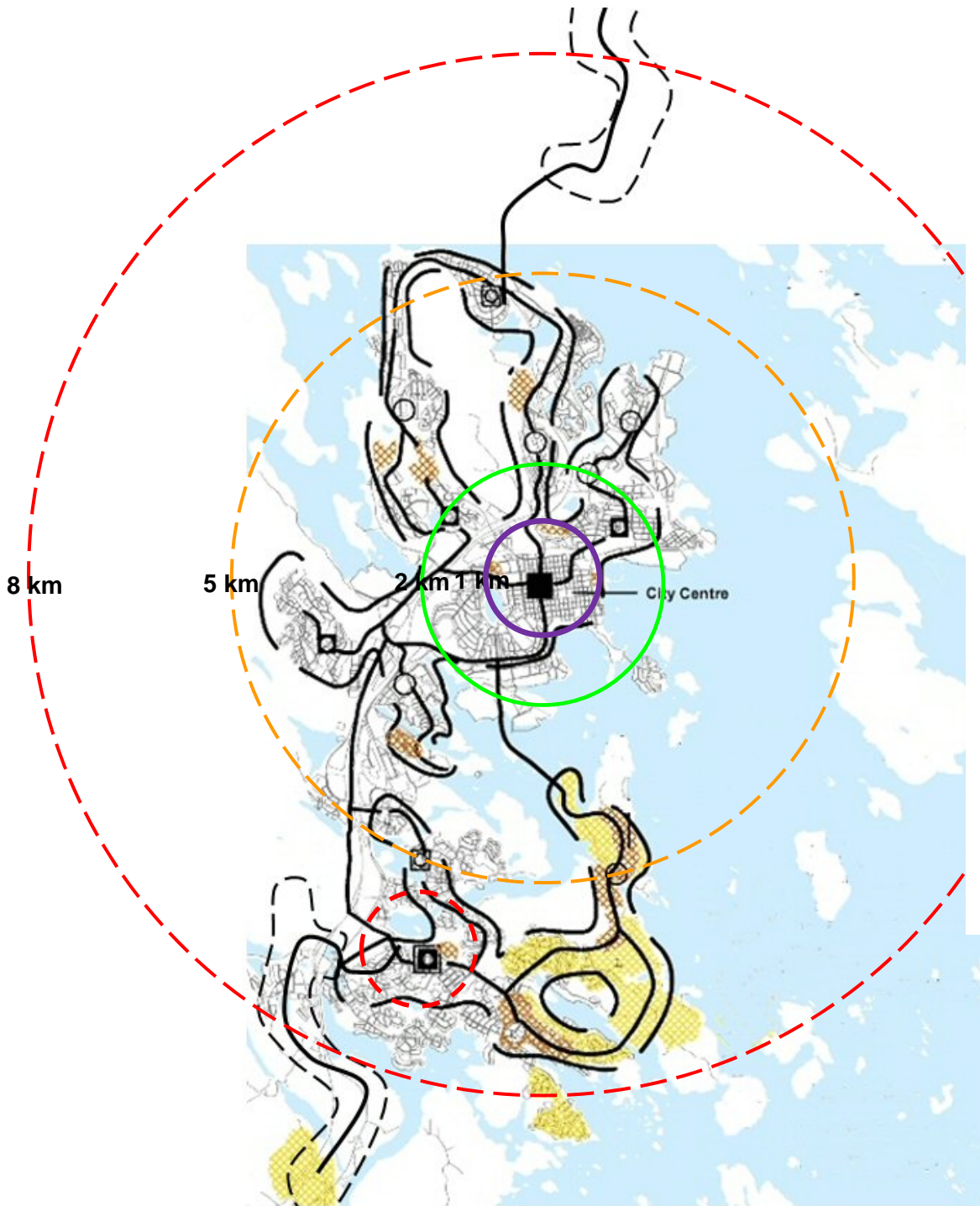
Population by Areas of Urban Fabrics An Intermediate City, Finland (Radius 8 km)

Three Urban Fabrics

**Recognize
Repair
Regenerate**

*A good tool to
address
potentials, needs
and problems of
cities*





Future Model 2020

Finger Model of Kuopio (2000)

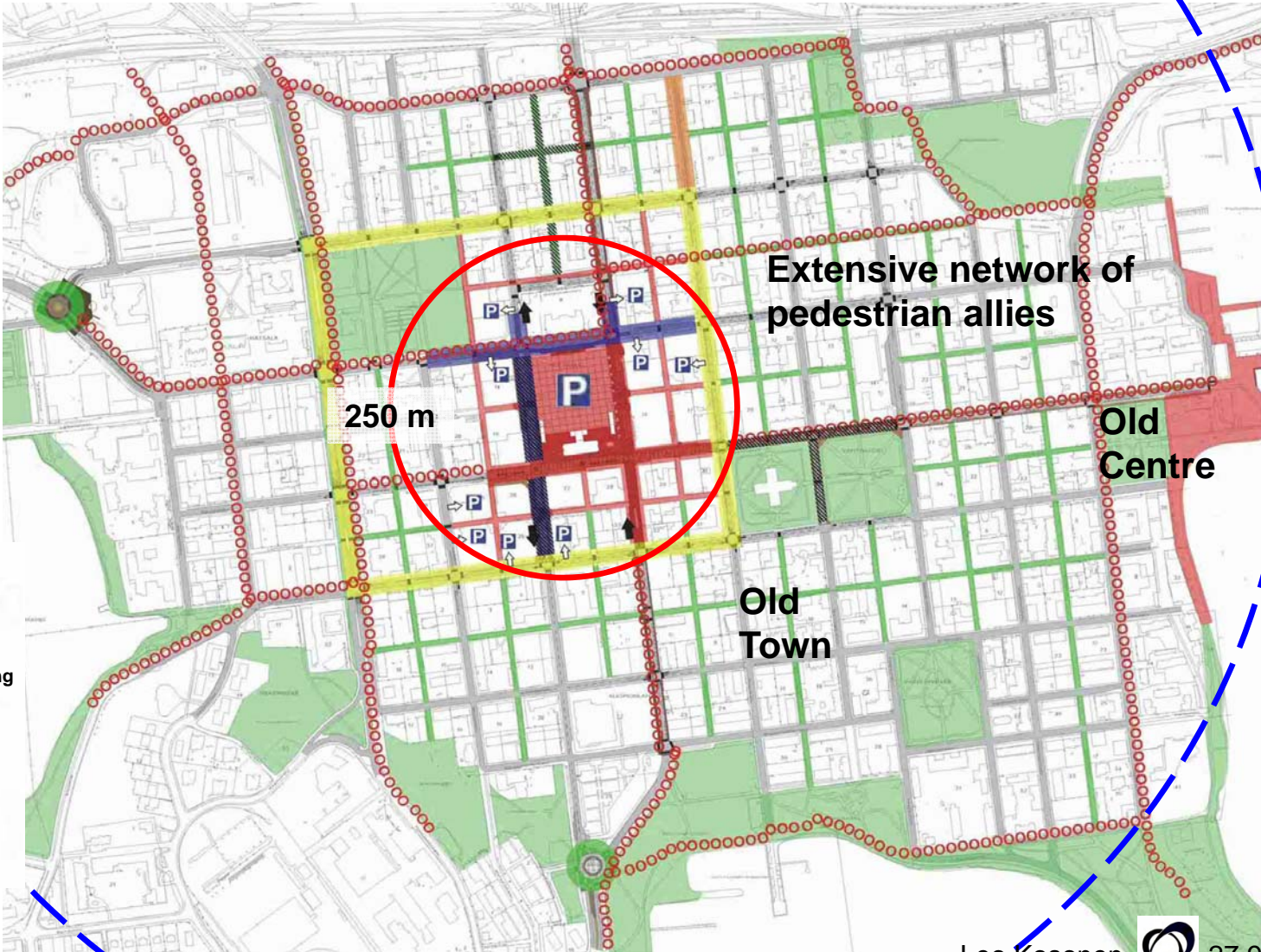
Fingers of the Walking- and Transit City Fabrics need to be repaired and regenerated.

This promotes sustainable and healthy urban development.

The fingers balance the growth and development of the Car City Fabric (yellow colour).

Walking City around the Pedestrian centre

1 km



Extensive network of
pedestrian allies

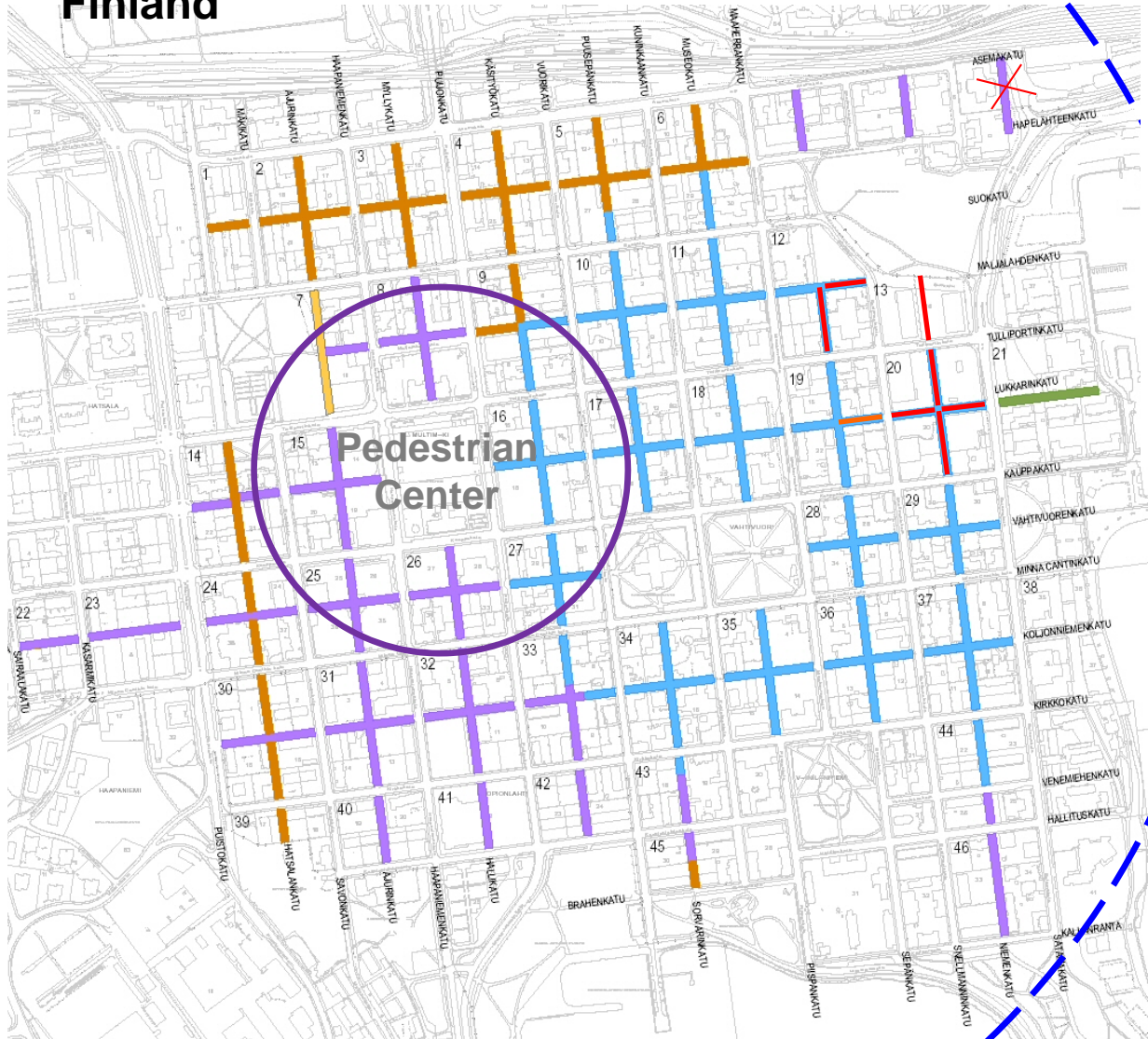
Old
Centre

Old
Town

250 m

- Pedestrian street
- Bus street
- Shared street
- Underground parking
- Drive into parking
- Parking street
- Parking hals
- Pedestrian route
- One way street

Kuopio Model Finland



Walking City Fabric

Old alleys 10 km, 1776-

Old alleys were used as an element of the Car City Fabric (parking)

They have been turned back to a basic element of the Walking City Fabric (walking and cycling only)

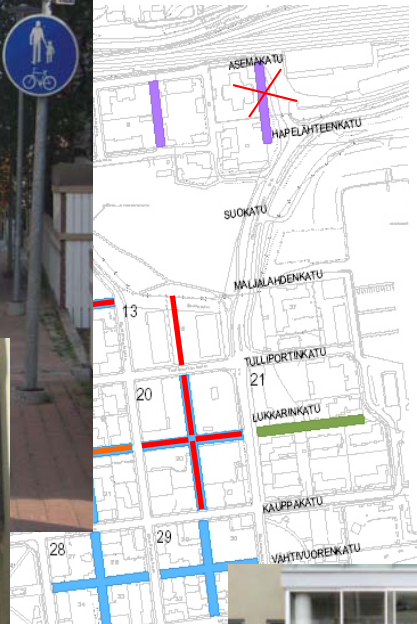


Walking City Fabric

Old alleys 10 km, 1776-

Old alleys were used as an element of the Car City Fabric (parking)

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Walking City Fabric

Old alleys 10 km, 1776-

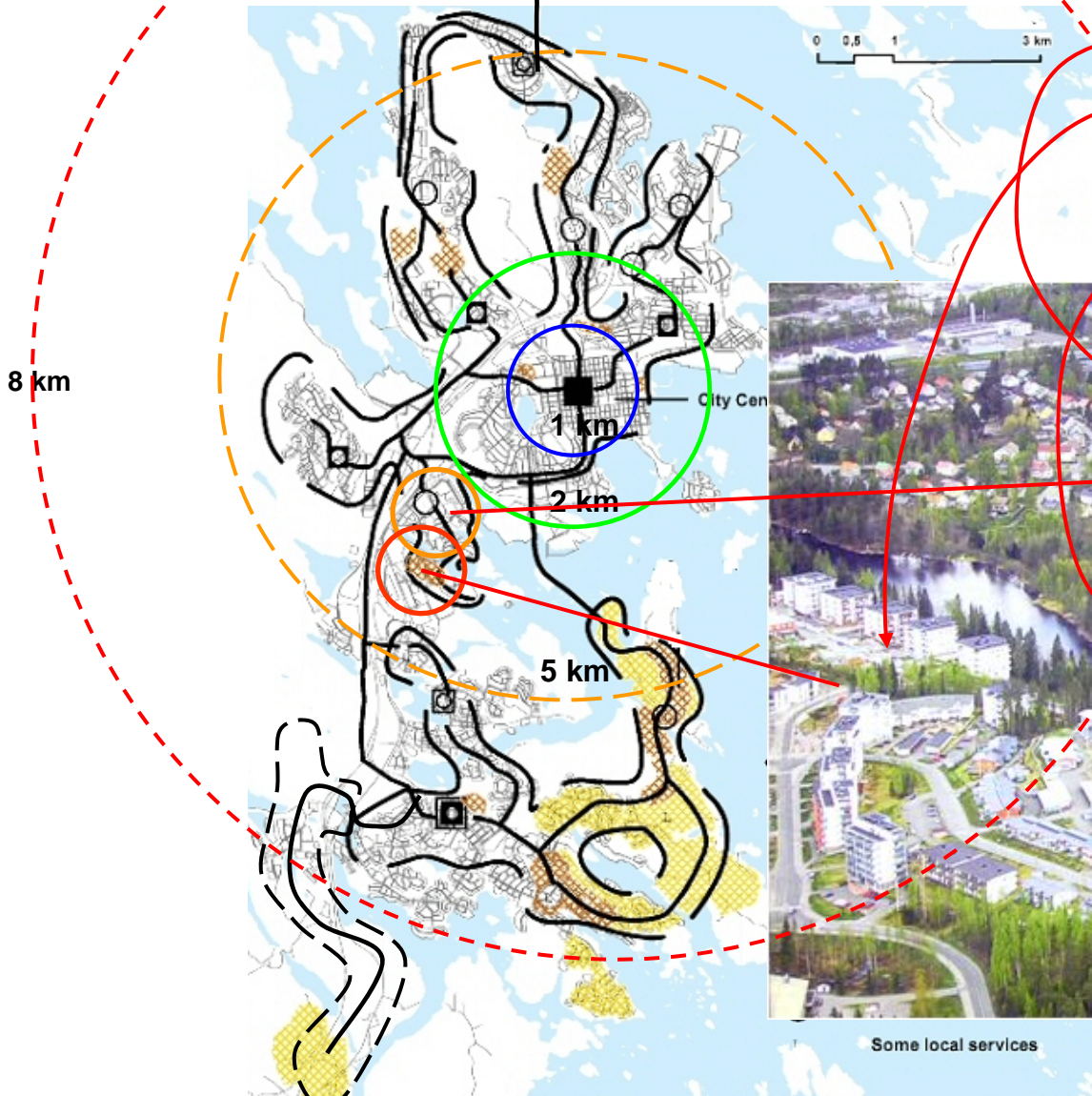
Old alleys were used as an element of the Car City Fabric (parking)

They have been turned back to a basic element of the Walking City Fabric (walking and cycling only)



New Walking City type housing for 4000 inh

Kuopio Model Finland



A Finger of the Transit City Fabric

A small neighbourhood of 2500 inh was renovated and a supplementary bus oriented area of 1300 inh was built.

A bus street combines the areas.



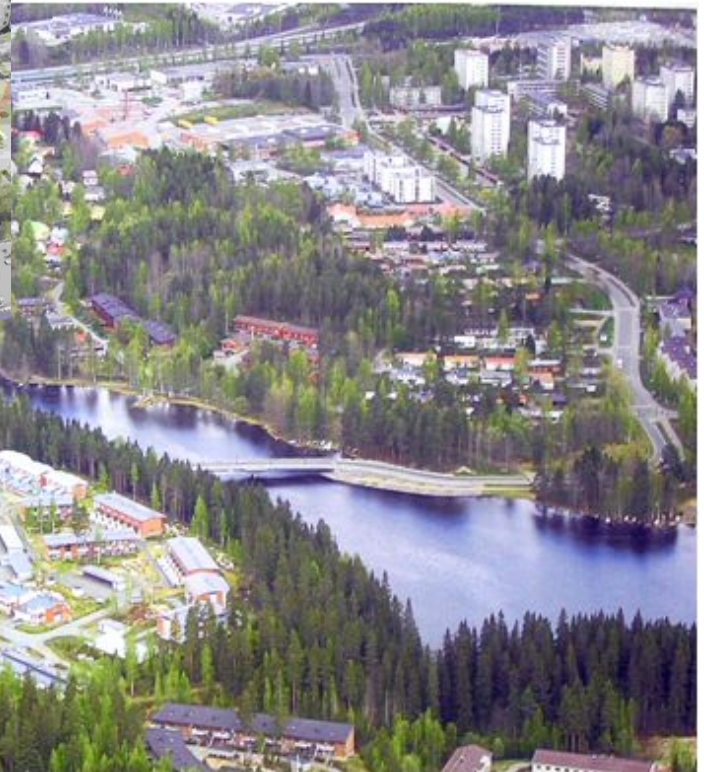
Some local services



A Finger of the Transit City Fabric

A small neighbourhood of 2500 inh was renovated and a supplementary bus oriented area of 1300 inh was built.

A bus street combines the areas.



Some local services



A Finger of the Transit City Fabric

A small neighbourhood of 2500 inh was renovated and a supplementary bus oriented area of 1300 inh was built.

A bus street combines the areas.



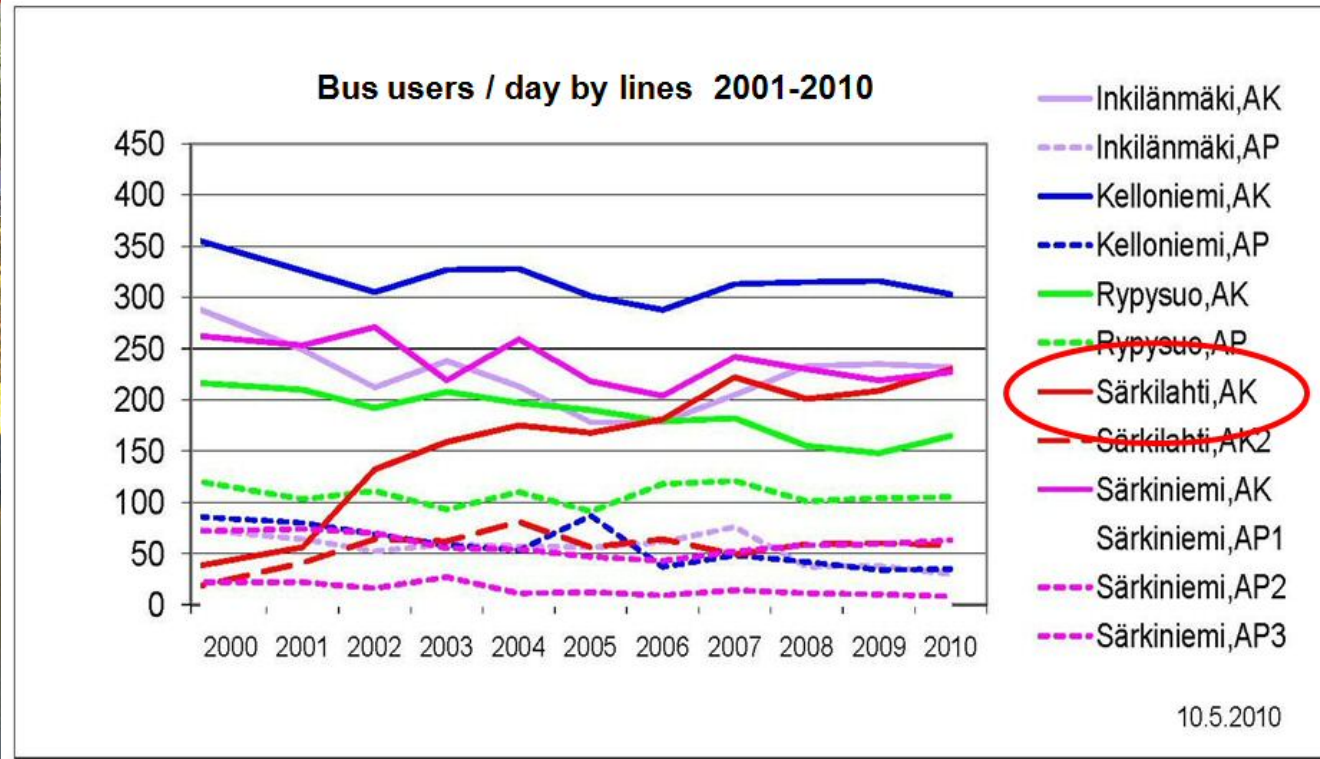
Some local services



A Finger of the Transit City Fabric

A small neighbourhood of 2500 inh was renovated and a supplementary bus oriented area of 1300 inh was built.

A bus street combines the



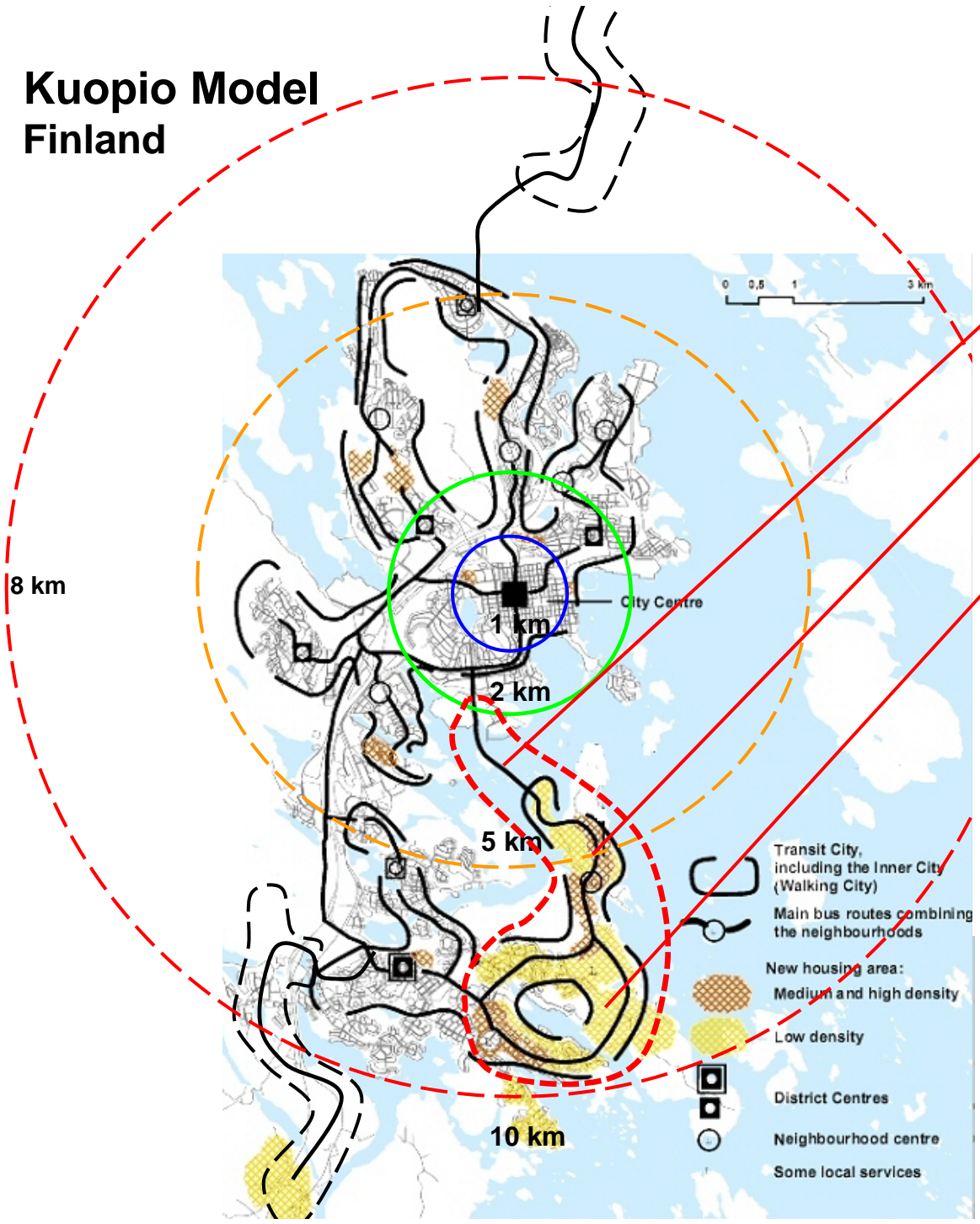
Kuopio Model Finland

An Element of all Three Fabrics - a Landscape Street

Landscape Street is a new access to growth areas and a beautiful park

New potential for a well located TOD of 8000 inh.

Improved location for areas of the Car City Fabric (6000 inh)



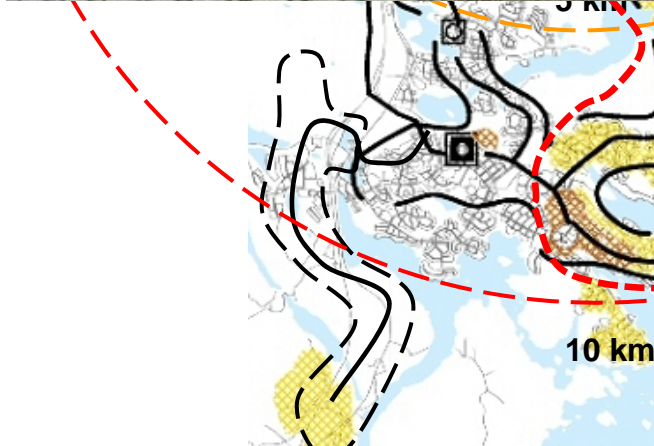


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Neighbourhood centre
Some local services

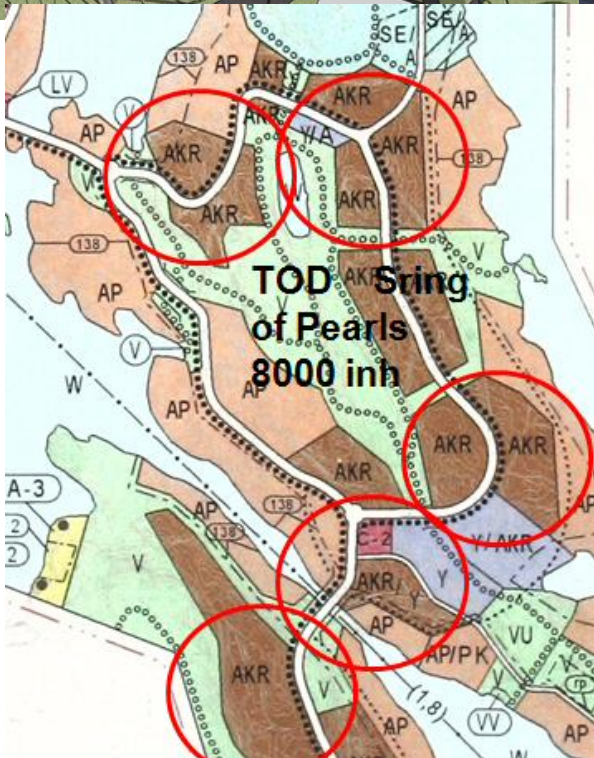


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50% reduction of costs and GHG emissions of transportation in 50 years

