Theory of Urban Fabrics
*a Product of New Models and Practices*

SYKE, Helsinki, 24 October 2013
Way of thinking  City models  Theory

Kosonen

10.9.2013  UF  Leo Kosonen
Way of thinking  City models  Theory
Way of thinking  City models  Theory

Newman

Kosonen
Need of new thinking
OLD WAY OF THINKING

A New City

Traffic

Housing
Employment
Recreation
the Centre

CIAM 1933
Modern City

29.8.2013  UF  Leo Kosonen
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
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
WAY OF THINKING
2 main systems

Traffic

Land Use

Traffic and network models and theories

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 been recognized
Urban Fabrics
The stages are based on Waves of Innovation
Urban Fabrics
First two stages – two fabrics

source: Hall 1992

2. Two systems

Walking City
Transit City

source: Hall 1992
Urban Fabrics
The Present Stage of Three Fabrics

1. One system
   Walking City

2. Two systems
   Walking City
   Transit City

3. Three systems
   Car City
   Walking City
   Transit City
Urban Fabrics
The Present Stage of Three Fabrics

1. One system
Walking City

2. Two systems
Walking City
Transit City

3. Three systems
Walking City
Transit City
Car City

Modern City of the Future (Car City)

Walking City

Transit City Fabric
Inner Transit City Fabric
Outer Transit City Fabric
Car City Fabric

Walking City Fabric

1st Wave
1845
Steam trains

2nd Wave
1900
Electric streetcars

3rd Wave
1950
Cars

4th Wave
1990
Information Technology

5th Wave
201x
6th Wave
Urban Fabrics
A Product of Travel Behaviour

"Daily Radius"

One Hour Daily Travel
Marchetti Constant 1994

Source: C. Marchetti Anthropological Invariants in Travel Behaviour
Technological Forecasting and Social Change 47, 75-88 (1994)
Urban Fabrics
Kuopio Model
A Prototype

SYSTEMS OF THE URBAN STRUCTURE

Walking City
Transit City
Car City

Oulu
Kuopio
(100 000 inh)
Jyväskylä
Lahti
Helsinki
Urban Fabrics
A Prototype
Kuopio Model

Motorization 1990-2006 by Areas of the Fabrics

Housing 2001 by Areas of the Fabrics

Kuopio 2002
Kuopio Model

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UF project

Four Cities 2010
Finland

Areas of Car- Transit- and Walking City Fabrics

13.8.2012 UF Leo Kosonen
Urban Zone project

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:

- 20–50 km
  - Rail based towns and villages
  - Car based periurban areas, villages and towns

1 hour travel time

source: UZ Syke

10.6.2013 UF Leo Kosonen
Urban Zone Project
Finland

Sources:
UZ Syke, Fingerplan 2007, Katumetro 2012

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
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:
- 20 - 50 km
  - Rail based towns and villages
  - Car based periurban areas, villages and towns

Sourcebook 1999:
- Central Business District
- Inner City
- Metropolitan Area

3.4.2013 UF Leo Kosonen
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:

- 20 - 50 km
  - Rail based towns and villages
  - Car based periurban areas, villages and towns

Sourcebook 1999:

source: Kenworthy et al An International Sourcebook 1999

Global Cities 1990

Sourcebook 1999:
Decline of the Inner Transit City Fabric

Growth of the Car City Fabric

source: Kenworthy et al An International Sourcebook 1999
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)

Source: Combination of several sources, Kosonen 2013

4.4.2013 UF Leo Kosonen
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

source: Combination of several sources, Kosonen 2013

4.4.2013 UF Leo Kosonen
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

source: Combination of several sources, Kosonen 2013
Three Urban Fabrics

A New Model

Areas and Dimensions
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

8.6.2013  *UF*  Leo Kosonen
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

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

Inner Transit City Fabric

Trams and basic buses up to 8 km
Transit City Fabric

Inner Transit City Fabric

Outer Transit City Fabric

Trams and basic buses up to 8 km

Express bus
Busway
Transit City Fabric

Inner Transit City Fabric

Outer Transit City Fabric

- Trams and basic buses up to 8 km
- Express bus
- Busway
- Feeder bus
- Metro
- Light Rail
- Local Train
Areas outside the Transit City Fabric are car based or car dependent parts of the 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.
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.
Scales of the Models

The City

A Group of Cities

Ebenezer 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

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Scales of the Models

The City

Walking Cities

Ebeneser Howard 1898

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

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**Scales of the Models**

**The City**

**Walking Cities**
*Ebenezer Howard 1898*

**Linear (Transit) City 1880**

**Outer Transit City**

*Neighbourhood Stockholm 1945*

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**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

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URBAN FABRICS

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

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Scales of the Models

The City

Walking Cities
Ebenezer 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

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Scales of the Models

Neighbourhoods

Walking distance

1880

Linear City

Arturo Soria Y Mata

source: Sambricio 1982

Tram

250 m good

Tram stop

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Scales of the Models

Neighbourhoods

Walking distance

**Vauban**

*Freiburg*

source: City of Freiburg

Tram

250 m good

Tram stop
Scales of the Models

Neighbourhoods
Walking distance

Vauban
Freiburg

source: City of Freiburg

Local Center
400 m good
600 m fair

Tram
250 m good

Tram stop
Scales of the Models

Neighbourhoods
Walking distance

1945

Neighbourhood
Framtida Stockholm

source: Framtida Stockholm
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

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Scales of the Models
Neighbourhoods
Walking distance

1970
Milton Keynes

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URBAN FABRICS
Models
Neighbourhoods
Walking distance

1990
Almere

Walking distance:
- 250 m good
- 300 m fair
- 400 m poor

Bus

source: Hankonen 1991

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Three Urban Fabrics
A New Model
Elements and Qualities
<table>
<thead>
<tr>
<th>Elements</th>
<th>Walking City Fabric</th>
<th>Transit City Fabric</th>
<th>Car City Fabric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market square, Market Mall</td>
<td>basic</td>
<td>exceptional</td>
<td>no</td>
</tr>
<tr>
<td>Pedestrian Centre</td>
<td>basic</td>
<td>special (big cities only)</td>
<td>no</td>
</tr>
<tr>
<td>Fast food Restaurants</td>
<td>basic</td>
<td>special</td>
<td>no</td>
</tr>
<tr>
<td>Active street</td>
<td>basic</td>
<td>special</td>
<td>no</td>
</tr>
<tr>
<td>Multi-storey warehouses</td>
<td>basic</td>
<td>exceptional (big cities)</td>
<td>no</td>
</tr>
<tr>
<td>Transit Centra</td>
<td>basic</td>
<td>alternative location</td>
<td>no</td>
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<tr>
<td>Small shops and service facilities by the</td>
<td>basic</td>
<td>special</td>
<td>no</td>
</tr>
<tr>
<td>Urban Parks, high quality</td>
<td>basic</td>
<td>special (location)</td>
<td>no</td>
</tr>
<tr>
<td>Parking lot</td>
<td>basic</td>
<td>special (first in small)</td>
<td>no</td>
</tr>
<tr>
<td>Bus stop (Walking City)</td>
<td>basic</td>
<td>special (big centres)</td>
<td>no</td>
</tr>
<tr>
<td>City bus lines (Walking City)</td>
<td>basic</td>
<td>special (locations)</td>
<td>no</td>
</tr>
<tr>
<td>City rail (Walking City), catchment 250 to 400 m</td>
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<tr>
<td>Good pedestrian environment</td>
<td>basic</td>
<td>basic (local centres)</td>
<td>no</td>
</tr>
<tr>
<td>Local service units (walking based)</td>
<td>basic</td>
<td>basic (need)</td>
<td>no</td>
</tr>
<tr>
<td>High density housing, blocks of flats</td>
<td>basic</td>
<td>special (location)</td>
<td>no</td>
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<tr>
<td>Office blocks</td>
<td>basic</td>
<td>special (Tend C)</td>
<td>basic (basic)</td>
</tr>
<tr>
<td>Local Park</td>
<td>basic</td>
<td>basic (Tend C and W)</td>
<td>basic (basic)</td>
</tr>
<tr>
<td>Trans. catchment 250 to 500 m (W;T)</td>
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<td>no</td>
</tr>
<tr>
<td>Bus stop, bus lines</td>
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<td>basic (need)</td>
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<tr>
<td>Inner City bases, catchment 250 to 500 m</td>
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<td>basic (T;W; coverage)</td>
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<tr>
<td>Local service centre (walking based)</td>
<td>basic</td>
<td>basic (T;W)</td>
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</tr>
<tr>
<td>Local Stations/Transit train, metro, light</td>
<td>terminal (T and C)</td>
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<td>no</td>
</tr>
<tr>
<td>University</td>
<td>special</td>
<td>special (Tend C and W)</td>
<td>special (Tend C)</td>
</tr>
<tr>
<td>Central Hospital</td>
<td>special</td>
<td>basic (Tend C)</td>
<td>Special (Tend C)</td>
</tr>
<tr>
<td>Other institutions</td>
<td>special</td>
<td>basic (Tend C and W)</td>
<td>Special (Tend C)</td>
</tr>
<tr>
<td>Sport and Recreational Centres</td>
<td>no</td>
<td>special</td>
<td>Special (Tend C)</td>
</tr>
<tr>
<td>Recreational area</td>
<td>no</td>
<td>special (location)</td>
<td>no</td>
</tr>
<tr>
<td>Medium density housing, rowhouses</td>
<td>special (old fabric, small)</td>
<td>basic (old fabric, small)</td>
<td>basic (basic)</td>
</tr>
<tr>
<td>Good cycling environment</td>
<td>Special (best centres)</td>
<td>basic (best)</td>
<td>basic (basic)</td>
</tr>
<tr>
<td>Superstores</td>
<td>no</td>
<td>special</td>
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</tr>
<tr>
<td>BRT, Busway</td>
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<td>no</td>
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<tr>
<td>Local feeder bus</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Local car city bus</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Low density housing</td>
<td>exceptional (old housing)</td>
<td>special (small cities)</td>
<td>special (limited)</td>
</tr>
<tr>
<td>Hypermarket</td>
<td>exceptional (old, small)</td>
<td>exceptional (old, small)</td>
<td>basic (limited)</td>
</tr>
<tr>
<td>Multi-storey parking units</td>
<td>Special Count, positive</td>
<td>special (big service)</td>
<td>Special (Tend C)</td>
</tr>
<tr>
<td>Underground parking unit</td>
<td>Special Count, positive</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Large parking areas</td>
<td>exceptional (big cities)</td>
<td>special (big service)</td>
<td>basic (big service)</td>
</tr>
<tr>
<td>Treeways</td>
<td>exceptional (conflicting)</td>
<td>exceptional (conflicting)</td>
<td>exceptional</td>
</tr>
<tr>
<td>Highway</td>
<td>exceptional (conflicting)</td>
<td>special (big service)</td>
<td>basic (basic)</td>
</tr>
<tr>
<td>Shopping Mall</td>
<td>no</td>
<td>no</td>
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</tr>
<tr>
<td>Car based shopping streets</td>
<td>no</td>
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<td>Park and ride</td>
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<tr>
<td>Car dependent housing</td>
<td>no</td>
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<tr>
<td>Car dependent services</td>
<td>no</td>
<td>no</td>
<td>special (location) (basic)</td>
</tr>
<tr>
<td>Etc</td>
<td>no</td>
<td>no</td>
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</tbody>
</table>

**Basic elements of the Fabrics:**

- **Walking City Fabric**
- **Walking City Fabric of the Sub-Centers**
- **Transit City Fabric**
- **Car City Fabric**
### Elements of the Fabrics

#### Walking City Fabric
- **Basic elements of the Fabrics:**
  - Walking City Fabric
  - Walking City Fabric of the Sub-Centers
  - Transit City Fabric
  - Car City Fabric

#### Transit City Fabric
- **Basic elements of the Fabrics:**
  - Walking City Fabric
  - Walking City Fabric of the Sub-Centers
  - Transit City Fabric
  - Car City Fabric

#### Car City Fabric
- **Basic elements of the Fabrics:**
  - Walking City Fabric
  - Walking City Fabric of the Sub-Centers
  - Transit City Fabric
  - Car City Fabric
## Elements of the Fabrics

### Basic elements of the Fabrics:

#### Walking City Fabric

- **Urban Fabrics**
  - Urban Fabric: Walking City, Transit City, Car City

<table>
<thead>
<tr>
<th>Elements</th>
<th>Walking City Fabric</th>
<th>Transit City Fabric</th>
<th>Car City Fabric</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inner Walking City</td>
<td>Outer Walking City</td>
<td>Inner Transit City</td>
</tr>
<tr>
<td>Market square, Market Mall</td>
<td>basic</td>
<td>basic</td>
<td>basic</td>
</tr>
<tr>
<td>Pedestrian Centre</td>
<td>basic</td>
<td>basic</td>
<td>basic</td>
</tr>
<tr>
<td>Residential street</td>
<td>basic</td>
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<td>basic</td>
</tr>
<tr>
<td>Pedestrian street</td>
<td>basic</td>
<td>basic</td>
<td>basic</td>
</tr>
<tr>
<td>Active street</td>
<td>basic</td>
<td>basic</td>
<td>basic</td>
</tr>
<tr>
<td>Multi-storey warehouses</td>
<td>basic</td>
<td>basic</td>
<td>basic</td>
</tr>
<tr>
<td>Transit Centre</td>
<td>basic</td>
<td>basic</td>
<td>basic</td>
</tr>
<tr>
<td>Shopping and service facilities by the</td>
<td>special</td>
<td>special (big cities only)</td>
<td>special (big cities only)</td>
</tr>
<tr>
<td>Urban Park, high quality</td>
<td>basic</td>
<td>basic</td>
<td>basic</td>
</tr>
<tr>
<td>Parking</td>
<td>basic</td>
<td>basic</td>
<td>basic</td>
</tr>
<tr>
<td>Bus stops, bus lines</td>
<td>basic</td>
<td>basic</td>
<td>basic</td>
</tr>
<tr>
<td>Inner city buses, catchment 250 to 300 m (W,T)</td>
<td>basic (T and C)</td>
<td>basic (T and C)</td>
<td>basic (T and C)</td>
</tr>
<tr>
<td>Local service centre (walking based)</td>
<td>basic</td>
<td>basic</td>
<td>basic</td>
</tr>
<tr>
<td>Local stations, transit train, metro, light</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>University</td>
<td>special</td>
<td>special</td>
<td>special (big cities only)</td>
</tr>
<tr>
<td>Local hospital</td>
<td>special</td>
<td>special</td>
<td>special (big cities only)</td>
</tr>
<tr>
<td>Other institutions</td>
<td>special</td>
<td>special</td>
<td>special (big cities only)</td>
</tr>
<tr>
<td>Sport and recreational centres</td>
<td>no</td>
<td>no</td>
<td>special location</td>
</tr>
<tr>
<td>Recreational area</td>
<td>no</td>
<td>no</td>
<td>special location</td>
</tr>
<tr>
<td>Residential area</td>
<td>no</td>
<td>no</td>
<td>special location</td>
</tr>
<tr>
<td>Medium density housing, rowhouses</td>
<td>special (old fabric, small)</td>
<td>special (old fabric, small)</td>
<td>basic (old fabric, small)</td>
</tr>
<tr>
<td>Good cycling environment</td>
<td>Special (best centres)</td>
<td>Special (best centres)</td>
<td>Special (best centres)</td>
</tr>
<tr>
<td>Shopping Mall</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Local centre, bus</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Low density housing</td>
<td>exceptional (small cities)</td>
<td>special (small cities)</td>
<td>special (small cities)</td>
</tr>
<tr>
<td>Hypermarket</td>
<td>exceptional (big cities)</td>
<td>special (big cities)</td>
<td>special (big cities)</td>
</tr>
<tr>
<td>Multi-storey parking units</td>
<td>Special (best), positive</td>
<td>special (big service)</td>
<td>special (big service)</td>
</tr>
<tr>
<td>Underground parking unit</td>
<td>special (best), positive</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Large parking areas</td>
<td>Special (big cities)</td>
<td>special (big cities)</td>
<td>special (big cities)</td>
</tr>
<tr>
<td>Tree area</td>
<td>exceptional (conflicting)</td>
<td>exceptional (conflicting)</td>
<td>exceptional (conflicting)</td>
</tr>
<tr>
<td>Highway</td>
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<td>Shopping Mall</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Local centre, bus</td>
<td>no</td>
<td>no</td>
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</tr>
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<td>Low density housing</td>
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<td>special (small cities)</td>
<td>special (small cities)</td>
</tr>
<tr>
<td>Hypermarket</td>
<td>exceptional (big cities)</td>
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<td>special (big cities)</td>
</tr>
<tr>
<td>Multi-storey parking units</td>
<td>Special (best), positive</td>
<td>special (big service)</td>
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</tr>
<tr>
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<td>no</td>
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<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Etc</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
</tbody>
</table>

### Elements

- **Walking City Fabric**
- **Transit City Fabric**
- **Car City Fabric**
# Elements of the Fabrics

## Basic elements of the Fabrics:

### Walking City Fabric
- Walking City Fabric
- Transit City Fabric
- Car City Fabric

### Elements

<table>
<thead>
<tr>
<th>Elements</th>
<th>Walking City Fabric</th>
<th>Transit City Fabric</th>
<th>Car City Fabric</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inner Walking City</td>
<td>Inner Transit City</td>
<td>Inner Car City</td>
</tr>
<tr>
<td></td>
<td>(radius: 1 km)</td>
<td>(radius: 1 to 2 km)</td>
<td>(radius: 1 to 2 km)</td>
</tr>
<tr>
<td></td>
<td>Outer Walking City</td>
<td>Outer Transit City</td>
<td>Outer Car City</td>
</tr>
<tr>
<td></td>
<td>(1 to 2 km)</td>
<td>(radius: more than 8 km)</td>
<td>(radius: more than 8 km)</td>
</tr>
</tbody>
</table>

### Examples of Elements
- Market square, Market Hall
- Pedestrian Center
- Recreation area

### Symbiosis and Conflict
- Symbiosis indicates elements that can coexist harmoniously.
- Conflict indicates elements that may clash or cause issues when placed together.

## URBAN FABRICS

26.2.2013  **UF**  Leo Kosonen
### 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 of the Fabrics

### Basic elements of the Fabrics:

<table>
<thead>
<tr>
<th>Walking City Fabric</th>
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<tbody>
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<td></td>
<td></td>
<td></td>
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</table>

### Elements

<table>
<thead>
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<th>Walking City Fabric</th>
<th>Transit City Fabric</th>
<th>Car City Fabric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market square, Market Hall</td>
<td>basic for Wc T</td>
<td>exceptional</td>
<td>no</td>
</tr>
<tr>
<td>Pedestrian Centre</td>
<td>basic for Wc T</td>
<td>special (big cities) only</td>
<td>no</td>
</tr>
<tr>
<td>Restaurant street</td>
<td>basic for Wc T</td>
<td>special (best)</td>
<td>no</td>
</tr>
<tr>
<td>Retail street</td>
<td>basic for Wc T</td>
<td>special (best edge)</td>
<td>no</td>
</tr>
<tr>
<td>Active streets</td>
<td>basic for Wc T</td>
<td>special (best edge)</td>
<td>no</td>
</tr>
<tr>
<td>Multi-storey warehouses</td>
<td>basic for Wc T</td>
<td>exceptional</td>
<td>no</td>
</tr>
<tr>
<td>Transit Centres</td>
<td>basic for Wc T</td>
<td>alternative location</td>
<td>no</td>
</tr>
<tr>
<td>Small shops and service facilities by the</td>
<td>basic</td>
<td>special</td>
<td>no</td>
</tr>
<tr>
<td>Urban Parks, high quality</td>
<td>basic</td>
<td>special (in small)</td>
<td>no</td>
</tr>
<tr>
<td>Paid parking</td>
<td>basic</td>
<td>special (in small)</td>
<td>no</td>
</tr>
<tr>
<td>City bus lines (Walking City)</td>
<td>special</td>
<td>special (biggest sub)</td>
<td>no</td>
</tr>
<tr>
<td>City hall (Walking City), catchment 250 to 500 m</td>
<td>special</td>
<td>special (in small)</td>
<td>no</td>
</tr>
<tr>
<td>Good pedestrian environment</td>
<td>basic</td>
<td>basic</td>
<td>no</td>
</tr>
<tr>
<td>Neighborhood with local services</td>
<td>basic</td>
<td>special (good)</td>
<td>no</td>
</tr>
<tr>
<td>Local service units (walking based)</td>
<td>basic</td>
<td>special (good)</td>
<td>no</td>
</tr>
<tr>
<td>High density housing, blocks of flats</td>
<td>basic</td>
<td>special (good)</td>
<td>no</td>
</tr>
<tr>
<td>Office blocks</td>
<td>basic (T=0, C=0)</td>
<td>basic</td>
<td>no</td>
</tr>
<tr>
<td>Local Park</td>
<td>basic</td>
<td>basic</td>
<td>no</td>
</tr>
<tr>
<td>Transit, catchment 250 to 500 m (W,T)</td>
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<td>basic</td>
<td>no</td>
</tr>
<tr>
<td>Bus street, bus lines</td>
<td>special (in small)</td>
<td>basic (in small)</td>
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<tr>
<td>Inner city buses, catchment 250 to 300 m</td>
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<td>basic (T,W, coverage)</td>
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<tr>
<td>Local service centre (walking based)</td>
<td>basic</td>
<td>basic</td>
<td>no</td>
</tr>
<tr>
<td>Local Stations (Out transit train, metro, light)</td>
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<td>special (in small)</td>
<td>no</td>
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<tr>
<td>University</td>
<td>special</td>
<td>basic</td>
<td>no</td>
</tr>
<tr>
<td>Central Hospital</td>
<td>special</td>
<td>special</td>
<td>no</td>
</tr>
<tr>
<td>Other institutions</td>
<td>special</td>
<td>special</td>
<td>no</td>
</tr>
<tr>
<td>Sport and Recreational Centres</td>
<td>special</td>
<td>special</td>
<td>no</td>
</tr>
<tr>
<td>Recreational area</td>
<td>special</td>
<td>special</td>
<td>no</td>
</tr>
<tr>
<td>Medium density housing, rowhouses</td>
<td>special (old fabric, small)</td>
<td>special (old fabric, small)</td>
<td>no</td>
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<tr>
<td>Good cycling environment</td>
<td>special (best centres)</td>
<td>special (best centres)</td>
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<tr>
<td>Suspension</td>
<td>no</td>
<td>no</td>
<td>basic (old cities)</td>
</tr>
<tr>
<td>BRT, Busway</td>
<td>no</td>
<td>no</td>
<td>basic (old cities)</td>
</tr>
<tr>
<td>Local feeder bus</td>
<td>no</td>
<td>no</td>
<td>basic (old cities)</td>
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<tr>
<td>Low density housing</td>
<td>exceptional (old housing)</td>
<td>special (small cities)</td>
<td>no</td>
</tr>
<tr>
<td>Hypermarket</td>
<td>exceptional (C element)</td>
<td>special (big service, limited)</td>
<td>no</td>
</tr>
<tr>
<td>Multi-storey parking units</td>
<td>Special C, positive</td>
<td>special (big service, limited)</td>
<td>no</td>
</tr>
<tr>
<td>Underground parking unit</td>
<td>Special C, positive</td>
<td>no</td>
<td>special (big service, limited)</td>
</tr>
<tr>
<td>Large parking areas</td>
<td>exceptional (C, Cities)</td>
<td>special (big service)</td>
<td>special (big service)</td>
</tr>
<tr>
<td>Treeway</td>
<td>exceptional (conflicting)</td>
<td>exceptional (conflicting)</td>
<td>basic (problematic)</td>
</tr>
<tr>
<td>Highway</td>
<td>exceptional (conflicting)</td>
<td>exceptional (conflicting)</td>
<td>basic (problematic)</td>
</tr>
<tr>
<td>Shopping Mall</td>
<td>no</td>
<td>no</td>
<td>basic (old cities)</td>
</tr>
<tr>
<td>Car based shopping streets</td>
<td>no</td>
<td>no</td>
<td>basic (old cities)</td>
</tr>
<tr>
<td>Park and ride</td>
<td>no</td>
<td>no</td>
<td>basic (old cities)</td>
</tr>
<tr>
<td>Car dependent housing</td>
<td>no</td>
<td>no</td>
<td>basic (old cities)</td>
</tr>
<tr>
<td>Car dependent services</td>
<td>no</td>
<td>no</td>
<td>basic (old cities)</td>
</tr>
<tr>
<td>Car independent services</td>
<td>no</td>
<td>no</td>
<td>basic (old cities)</td>
</tr>
<tr>
<td>Etc</td>
<td>no</td>
<td>no</td>
<td>basic (old cities)</td>
</tr>
</tbody>
</table>
Three Urban Fabrics
A New Model

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

2040 TARGET MODEL
Sustainability and balance of the fabrics
(3 systems)

UF ANALYSIS MODEL
(3 systems)
Walking City
Transit City
Car City

Regenerate
Repair
Recognize
Theory of Urban Fabrics

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

2040
TARGET MODEL
Sustainability and balance
of the fabrics
(3 systems)

New paradigm
Sustainable City

Way of Thinking
(3 systems)

UF ANALYSIS MODEL
(3 systems)

Walking City
Transit City
Car City

29.8.2013 UF Leo Kosonen
Cities since 1950
Three Urban Fabrics
(3 systems)
Walking City, Transit City and Car City
Challenges
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

<table>
<thead>
<tr>
<th>Inner City / Walking City</th>
<th>Urban fingers / Transit City</th>
<th>Urban sprawl / Car City</th>
</tr>
</thead>
<tbody>
<tr>
<td>• opportunity for healthy exercise</td>
<td>good</td>
<td>excellent</td>
</tr>
<tr>
<td>• social cohesion</td>
<td>fair</td>
<td>fair</td>
</tr>
<tr>
<td>• equity</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>• access to employment and facilities</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>• road safety</td>
<td>fair</td>
<td>good</td>
</tr>
<tr>
<td>• an attractive environment</td>
<td>good</td>
<td>good</td>
</tr>
<tr>
<td>acceptable noise levels</td>
<td>fair</td>
<td>good</td>
</tr>
<tr>
<td>good air quality</td>
<td>fair</td>
<td>good</td>
</tr>
<tr>
<td>• climate stability</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>

Challenges are addressing sustainability and resilience of each of the Fabrics.

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

26.2.2013 **UF** Leo Kosonen
### Challenges are addressing sustainability and resilience of each of the Fabrics

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

| Challenges are addressing sustainability and resilience of each of the Fabrics |
|---------------------------------|--------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| **Inner City / Walking City**   | **Urban fingers / Transit City** | **Urban sprawl / Car City** |
| opportunity for healthy exercise | good | excellent | good |
| social cohesion                 | fair | fair      | segregative |
| 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      |

---

**Kuopio**

**Healthy objectives**

28.8.2006 / Leo Kosonen
**Healthy objectives**

28.8.2006 / Leo Kosonen

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<td>segregative</td>
</tr>
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<td>yes</td>
<td>no</td>
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<tr>
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<td>yes</td>
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<td>no/cars</td>
</tr>
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</table>

Challenges are addressing sustainability and resilience of each of the Fabrics.

Car City Fabric is problematic and will face new problems.

Walking- and Transit City Fabrics have a good potential to face the challenges.

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

Recognize
Repair
Regenerate

Walking City Fabric
Transit City Fabric
Car City Fabric

A good tool to address potentials, needs and problems of cities
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).
Leo Kosonen 27.9.2007

KUOPIO

Extensive network of pedestrian allies
Walking City around the Pedestrian centre

250 m

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

Old Centre
Old Town
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)

8.6.2013  UF  Leo Kosonen
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)

8.6.2013  UF  Leo Kosonen
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
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.
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.

8.6.2013  UF  Leo Kosonen
A Finger of the Transit City Fabric

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A bus street combines the areas.
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)
An Element of all Three Fabrics - a Landscape Street

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

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

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

8.6.2013  UF  Leo Kosonen
There has been about 700 tram systems, in more than 500 towns and cities of these 16 European countries. About 400 systems were closed down before the end of 1950's, and 100 more during the next three decades. Since 1990, only 4 systems have been closed down, and new systems have been opened.

These countries have about 180 cities, which have a tram system in 2012, most of them in Germany (about 50) and in France (about 30). Also Spain, Poland, Italy and Romania have more than 10 cities, which have a tram system.

The tram systems were replaced by buses and cars.

In most cases the transit city fabric exists, even if the transit system has been changed from trams to buses.