Resizing / Re-seizing the City – Requirements for Diversity

Harald Frey, PhD.
Institute of Transportation, Research Center of Transport Planning and Traffic Engineering

Iva Kovacic, PhD.
Institute of Interdisciplinary Construction Process Management, Industrial Building and Interdisciplinary Planning

Maja Lorbek, Mas.
Institute of Architecture and Design, Department Housing & Design

Vienna University of Technology

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Points of origin of settlements

- Coasts and estuaries
- Crossing points of trade routes
- Topographic barriers - constraint points!
- Where the speed was "0"

- Distance of settlement patterns as a function of travel speed
- Based on pedestrian speed (and distances): 3-4 km / h, 200-300m
- More than 60,000 years of experience (settlements, 7,000 yrs cities)
Not a question of (fast) accessibility, but of independence. But depended on diversity of nature & local resources!

High rate of local mobility – micro-mobility
Structures connected to the fossil drip

Not enough resources for this kind of transport system and settlement structures (ecological footprint)
Social problems:
- No nearness
- No diversity of functions, etc.
- High (transport-) speed to compensate local deficits
speed – means of transportation (Berlin)

Extension of Berlin city

Source: Leibbrand 1964
Speed – consequences on population & density (Berlin)

Source: Lehner 1982
The city at 1900, 1950 and today (“car city”)

(urban-) sprawl as a result of constant travel time budget

Nowhere on the globe a saving of travel time has been observed so far.

Individual daily trip length with travel time budget under consideration motorization per household. Source: (Zahavi, 1981).
The Population Of Rome

Why Resizing? Ideas

future challenges

- Vienna is a growing city (fact & policy)
- lack of building sites, high density in certain inner city districts

socio-economic trends in European cities with impact on housing (Häußermann, Läpple, Siebel, 2008)

- aging society
- lifestyles
- segregation / gentrification
- migration / growing inequality
- difficulties of funding

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• **PMT – car traffic.** Usage of public space (>300-500 times higher than for children in dense urban areas

• **Increase in general consumption of the floor area**
  average floor space of dwellings has increased from 88.8 m² in year 1997 to 98.2 m² in year 2007

• **Lifestyle of homeowners:** refurbishment causes shift from the **energy conserving** attitude (e.g. through lack of central heating only the living-room is heated) towards **energy consuming** attitude (heating of entire apartment)
Challenges in planning:
  a gap between:
  • strategic planning at the scale of the city
  • and implementation (urban renewal / refurbishment)

Proposed strategies in planning:
  • integrated, interdisciplinary approach
  • long term perspective
  • room for contingency, unknown development
  • use of scenario-based planning
  • carefully chosen system boundaries
  • Combination of measures (building, neighbourhood, transport, etc.)
  • Reduction of rebound effects
Subjects of Inquiry

- **OBJECTIVE:**
  objective is to develop integral, long term and multi-optional scenarios which enable holistic redesign for dynamical systems such as neighbourhoods, city districts and urban areas.

  Resizing will address the dynamic interaction between public space, mobility, user participation and building structures in different city quarters regarding boundary conditions the habitat as a dynamical system in constant change

  **3 layers: building – neighbourhood - city**

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initial hypothesis

inherent limits of development/growth within the build environment
interdependencies of city structures on different levels

Aims

• Reaching sustainability of built environment through increasing of efficiency needs to be questioned
• Focus on: life-style, limits of growth in consumption of resources (land, energy, materials), conserving attitude

Systematic approach

• conditions of sufficiency
• long term resilience
• level of a neighbourhood, city or region
• activate the potentials of existing structures
• building stock and its inhabitants as well as the material, technical and social infrastructures of the habitat are taken into account
• strategic measures for their sustainable redesign
• extension beyond the building into habitat and community
• find specific limits of growth within the existing and potential new structures
Rebound effects

Improved Fuel Rate for a Given Vehicle Type
Failed to Lower Fuel Consumption per Vehicle

Index 1980=100

Source: EIA, CIBCWM
Optimization of a single object instead of system view – problems of indicator (efficiency)
Energy-usage in transportation and density

\[ y = 395622x^{-0.8381} \]

\[ R^2 = 0.7084 \]

Source: Knoflacher
Source Database: UITP
Limits of density – How dense is useful?

Population density vs. Means of transportation of commuters in Austria.

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Re-seizing the City – Recapturing of public space – the necessary beginning

Strategies of “De-urbanization of cities” are imaginable - cultivation and issues like self-growing of food products could be part of a resizing process. Sealed areas of traffic lanes have to be converted into fertile ground.

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Important indicators

Sufficiency instead of efficiency and

Aspects of resilience

• Properties of a resilient system: redundancy, diversity, efficiency, autonomous components, strength, adaptability, collaboration -> indicators for cities, etc.

• In practice: often reduced to short-term natural disasters
Street space

Strozzigasse, 19. Jhdt. + today

„Life“ in public space?
Speed & social environment I

Quellen: Sauter et al. 2006

Meeting zone, pedestrian priority zone

Reduction of speed

watching, take care of children 11% 10%
Doing sthg., Trade, etc. 5% 11%
Talking to others 19%
Sitting, reading 1%
Playing, sports 3% 1%

Tempo-50 Strasse (Mülhauserstr.) (N=75)
Tempo-30 Strasse (Vogesenstr.) (N=79)
Tempo-20, Begegnungszonen (N=211)
The result of the traditional resizing process... the perception of the children of „their“ environment
Carfree environment as a main indicator in resizing process

Enormous potential of re-usage of public space
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Thank you for your attention!

Contact:
Harald Frey
Phone: +43 (1) 588 01-23117
Fax: +43 (1) 588 01-23199
Email: harald.frey@tuwien.ac.at
Peak Oil leitet den Peak aller fossilen und nuklearen Energien ein

Sustainability

Economy  Society  Culture

Natural Resources and Climate
Principles and Rules

11.05.2012
Verstädterung

1950

2009

2050
Geschwindigkeit & Dichte I

MS non-motorised & PT - urban activity density

\[ y = 19.74e^{0.0283x} \]

\[ R^2 = 0.5591 \]

Daten: Kenworthy et al. 2000
Geschwindigkeit & En-Verbrauch I

Cities: avg. traffic speed - gasoline use
(without Moscow)

\[ y = 1010,7e^{0,0832x} \]
\[ R^2 = 0,5825 \]

Daten: Newman et al. 1988
Stadt der Fußgehergeschwindigkeit

Houston / Bolzano
Franz-Josefs-Kai
Verlust der Kontrolle
über die Gestaltung der Städte
Mobility in interaction with other disciplines

If we change the transport system we change everything!

nature

culture

economy

Social-system

Life quality

Power influence

Urban structures

Human being

economy

ecology

social

Source: Knoflacher
The problem of the system…

causal loops, rebound effects, difference between individual and system behaviour
Usage of public space
Speed & social environment I

Quellen: Appleyard 1981