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# Sustainability

**Guenter Emberger, Dr.**  
**Institute for Transport Planning and**  
**Traffic Engineering**  
**University of Technology, Vienna,**  
**Austria**  
 contact: Guenter.Emberger@tuwien.ac.at

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## Introduction



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## Introduction



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## Introduction

**Keyfacts**

- ~ 8 million population
- capital Vienna (1.6 million population)
- 570 km (east – west), 300 km (north south)
- 8 Neighbours: Italy, Switzerland, Lichtenstein, Germany, Czech Republic, Slovakia, Hungary, and Slovenia
- Language: German
- Climate: 4 degree January (up to -20 degrees) 20 degree July (up to +35 degrees)
- GDP per head 23 310 \$ (63% Service, 30% production and 6% agriculture)
- GDP UK-23.600\$, GER-22.800\$, USA-34.940\$ and Thailand 2.010\$
- 1.600 km highway (highest share per head in Europe) 35.000 km road network total, 5.400 km rail network
- 514 cars per 1000 inhabitants , just 36 motorcycles per 1000 inhabitants

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**Guenter Emberger**  
 some information:

- since 1990 at TUW-IVV
- education MSc Computer science and Business Administration (94), Phd in Social Sciences (system theory-1999)
- guest researcher for 2 years at ITS (2002 -2004)
- back in Vienna since 6/2004

activities:

- data manipulation
- emission monitoring on street
- travel behaviour analyses
- set up 4 stage transport models
- development of strategic transport model sw (starting 1996)
- system dynamics modelling
- strategic LUTI model development

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## Sustainability

**In the terms of the 1987 Brundtland Report, sustainability is:**

**"Meeting the needs of the present generation without compromising the ability of future generations to meet their needs."**

**The Three Pillars of Sustainability**

1. Ecological Integrity
2. Societal Integrity
3. Individual Integrity

➤ All three are needed for short and in the long term survival

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## GDP versus ISEW

GDP

- The Gross Domestic Product (GDP) measures the amount of money being spent in an economy. The higher the GDP the higher is the country's economic well-being.
- GDP reflects only the amount of economic activity, regardless of the effect of that activity on the community's social and environmental health
- E.g. when there is an accident, the GDP goes up because of the money spent on medical fees and repair.
- On the other hand, if people decide not to buy cars and instead walk to work, their health and wealth may increase but the GDP goes down.

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## GDP versus ISEW

ISEW

- The ISEW (Index of Sustainable Economic Welfare) is an alternative indicator to measure economic welfare. It is an attempt to measure the portion of economic activity which delivers genuine increases in quality of life.
- E.g. economic activity causing air pollution is subtracted and unpaid household labour - such as cleaning or child-minding is added. ISEW also covers areas such as income inequality, environmental damage, and depletion of environmental assets.

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## The Ecological Footprint

Carrying capacity is the maximum population of a given species that can be supported indefinitely in a particular habitat without permanently damaging that habitat.

The ecological footprint of a population is an area of land (and water) that would be required to sustainably provide all of a particular population's resources and assimilate all its wastes.

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## The Ecological Footprint

Ecological footprints are stated as the land area in hectares needed by a particular population e.g. a country or community, or as a per capita per annum of that population.

It has been calculated that the ecological footprint of Singapore is 264 times greater than the area of Singapore.

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## The Ecological Footprint 2001

Region	Population (millions)	Global hectares per person
North America	319	~9.0
EU-25	453	~5.0
Rest of Europe	275	~4.0
Latin America and the Caribbean	520	~3.5
Middle East and Central Asia	334	~2.5
Asia-Pacific	3407	~1.6
Africa	810	~1.0

Source: www.footprintnetwork.org/download.php?id=6

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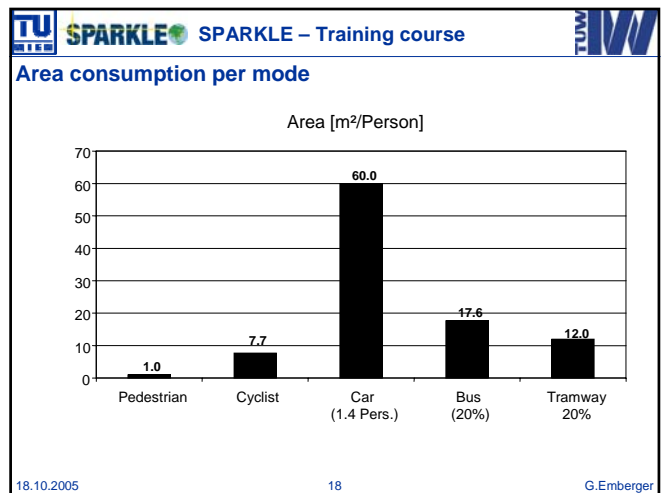
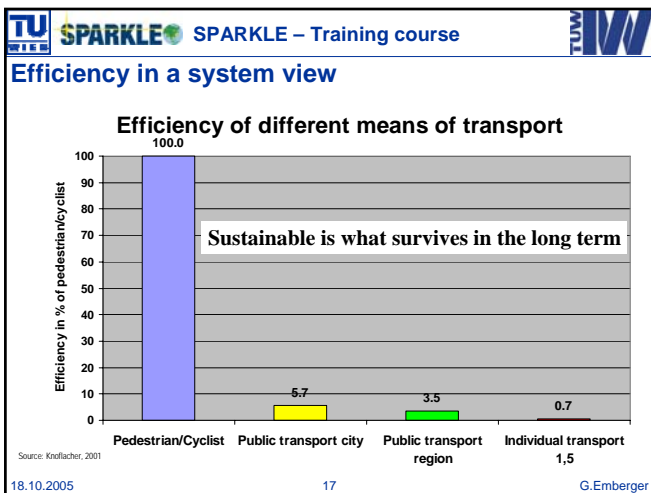
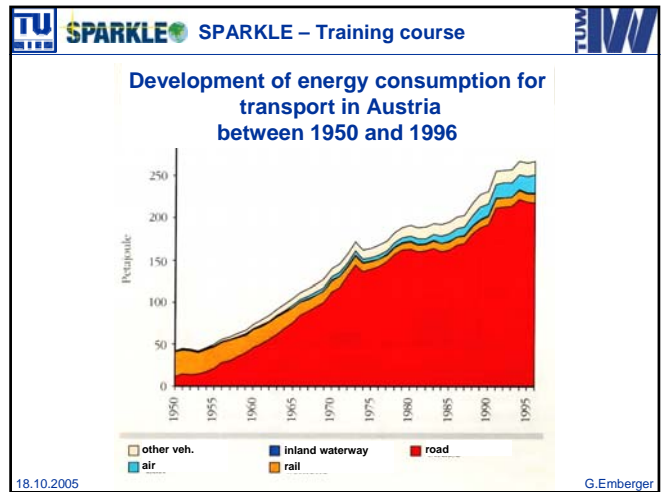
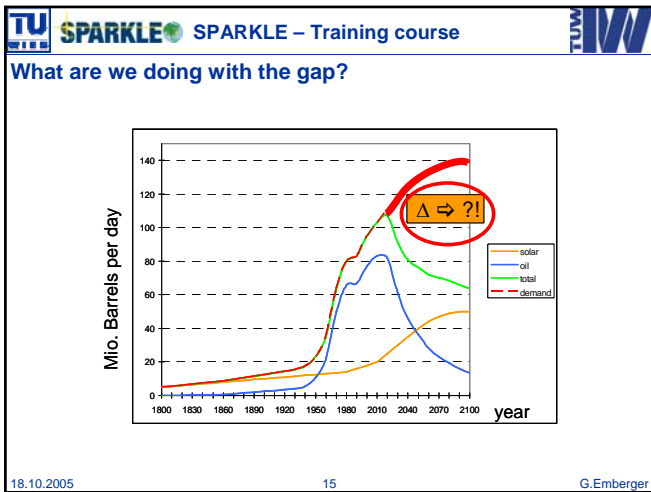
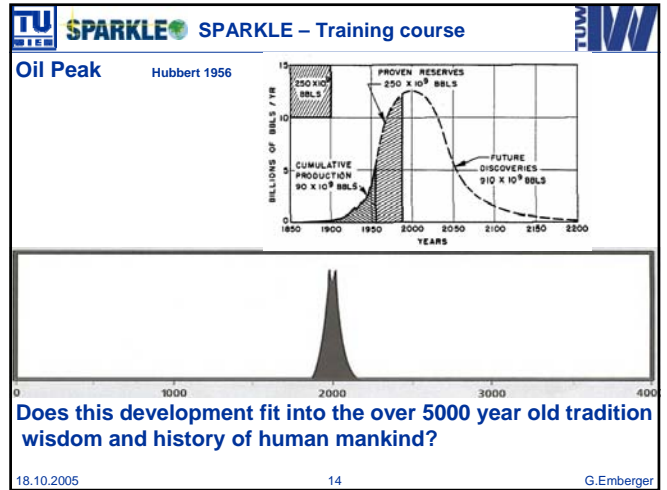
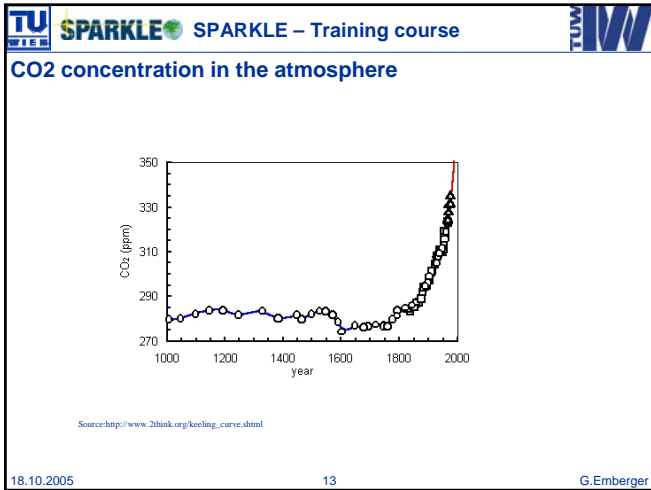
## ECOLOGICAL FOOTPRINT AND BIOCAPACITY

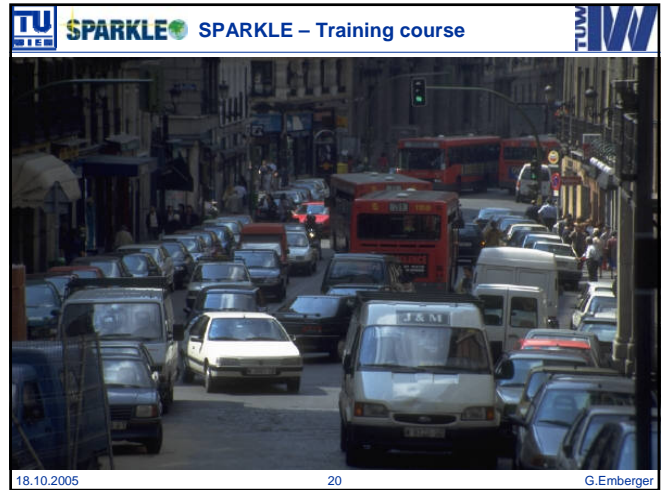
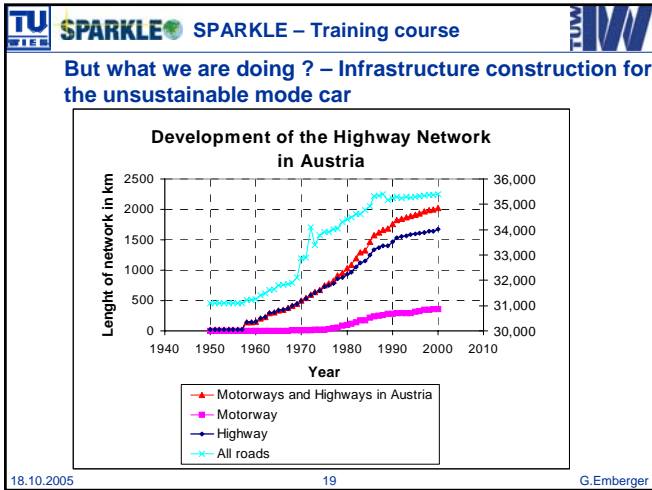
2001 data

	Population (millions)	Total Ecological Footprint (global ha/person)	Ecological Deficit (*) (global ha/person)
World	6,148.1	2.2	0.4
High Income Countries	920.1	6.4	3.1
Middle Income Countries	2,970.8	1.9	-0.1
Low Income Countries	2,226.2	0.8	0.1
<b>Africa</b>	810.2	1.2	-0.13
<b>Asia-Pacific</b>	3,406.8	1.3	0.6
Cambodia	13.5	1.1	0.1
China	1,292.6	1.5	0.8
India	1,033.4	0.8	0.4
Indonesia	214.4	1.2	0.2
Japan	127.3	4.3	3.6
Lao PDR	5.4	1.0	-0.4
Malaysia	23.5	3.0	1.1
Thailand	61.6	1.6	0.6
Viet Nam	79.2	0.8	0.0
<b>Central and Eastern Europe</b>	336.6	3.8	-0.4
<b>Latin America and the Caribbean</b>	520.3	3.1	-2.4
<b>Middle East and Central Asia</b>	334.3	2.1	1.1
<b>North America</b>	319.1	9.2	3.9
Canada	31.0	6.4	-9.0
United States of America	288.0	9.5	4.7
<b>Western Europe</b>	390.1	5.1	3.0
Austria	8.1	4.6	1.1
Germany	82.3	4.8	2.9
United Kingdom	59.1	5.4	3.9

Source: www.footprintnetwork.org/download.php?id=2

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**Amstetten**

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**Klagenfurt**

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**Klagenfurt**

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**Eisenstadt before:**  
10 000 cars, 6000 pedestrians per day

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**Eisenstadt after:**  
30 000 pedestrians per day plus .....

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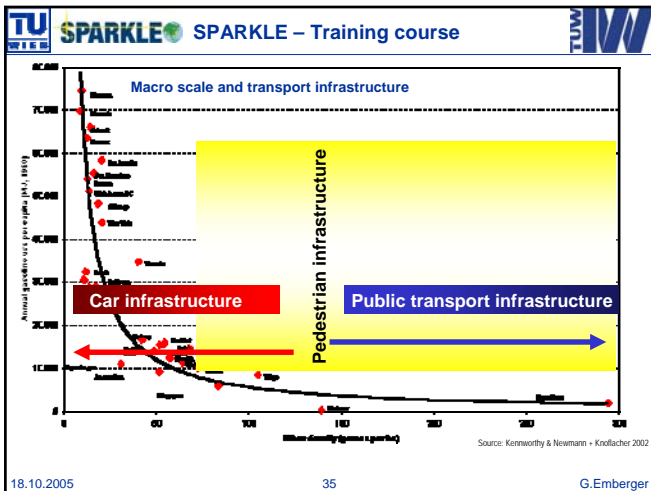
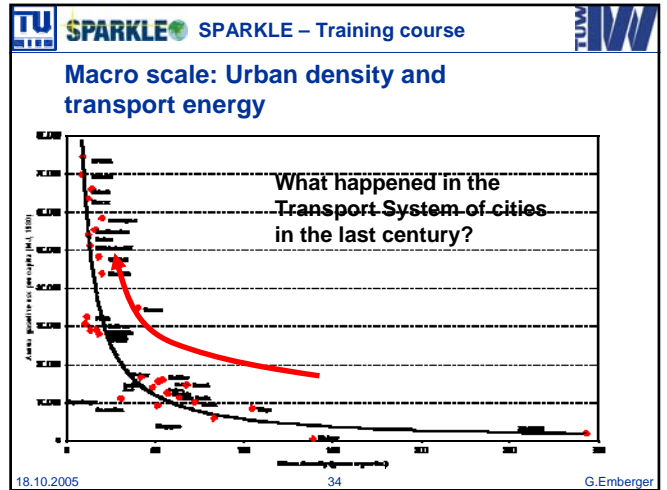
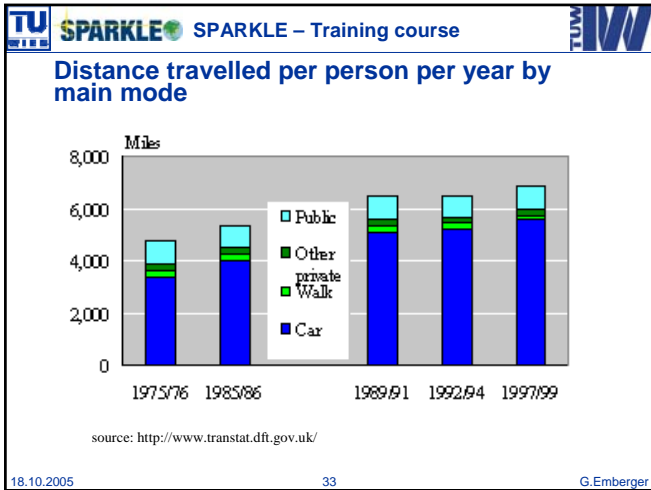
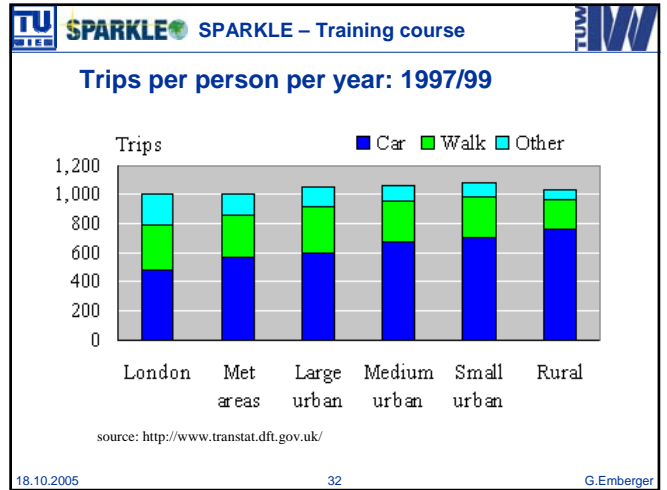
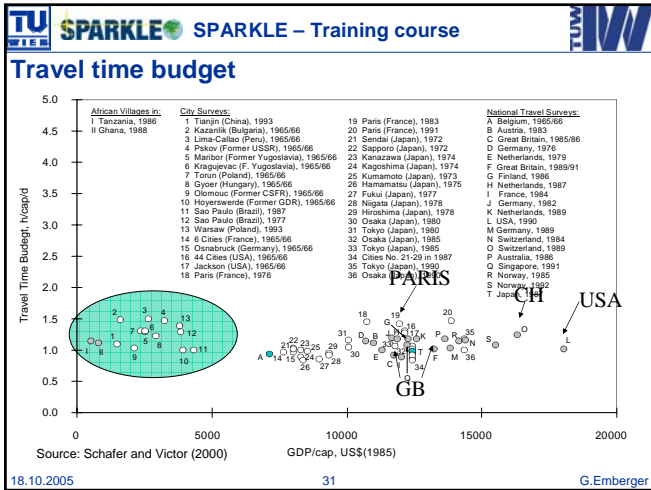
**No growth of mobility**

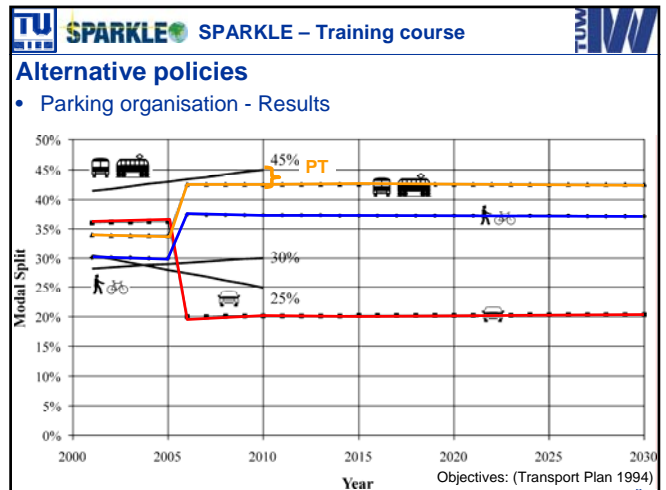
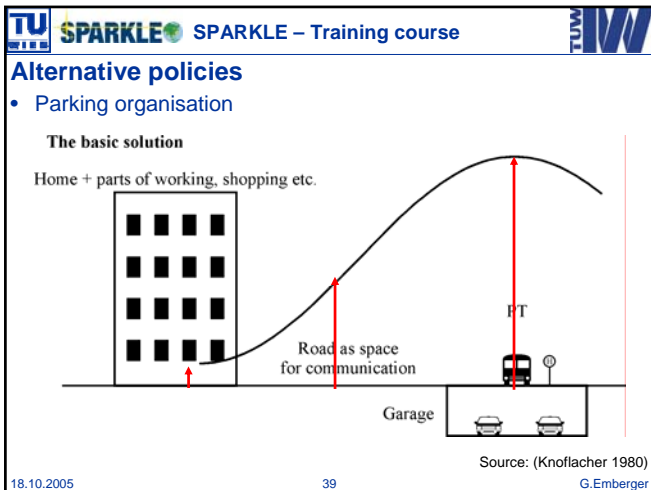
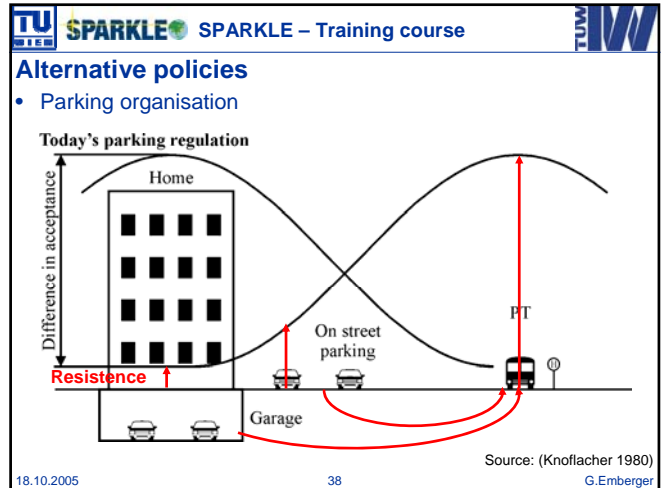
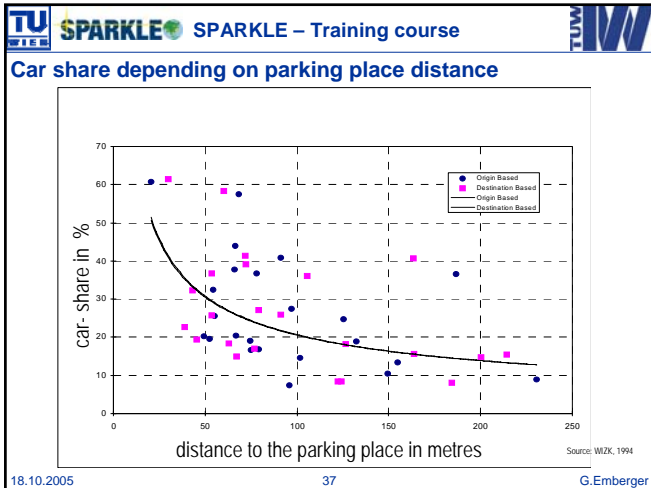
Trips per Person per day

**Reality**

All provisions were made for the new mode, the car which destroys the cities!

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- ### Conclusions part 1
- GDP is not the right indicator when talking about sustainability
  - car traffic is the "wrong" mode – Oil Peak, CO2 emissions, etc
  - car (motorised individual transport) infrastructure destroys settlement structures
  - trip number is constant – purposes of trips are constant
  - avg. daily travel time is constant - no time savings possible
  - there is no growth in mobility – only a growth in the usage of motorised means of transport
  - increase in speed only destroys settlement structures – there are no time benefits only increases of travel distance
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- ### Conclusions part 2
- solution cannot be found in traffic management
  - faster car (motorised) transport increases the attractiveness
  - solution for transport problems can be found in parking organisation
  - responsible transport planers have to provide infrastructure for sustainable means of transport – pedestrians, cyclists and public transport – not for car traffic
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**Thank you very much for your  
attention!**

**[Guenter.Emberger@tuwien.ac.at](mailto:Guenter.Emberger@tuwien.ac.at)  
[www.ivv.tuwien.ac.at](http://www.ivv.tuwien.ac.at)**