Bevorzugter Zitierstil

Axhausen, K.W. (2011) Social networks and travel: Current status and expected change, Workshop Behaviour in Networks, University of Seoul, June 2011.

Social networks and travel: Current status and expected change

KW Axhausen

IVT
ETH
Zürich

June 2011

FUTURE CITIES LABORATORY

Institut für Verkehrsplanung und Transportsysteme
Institute for Transport Planning and Systems

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

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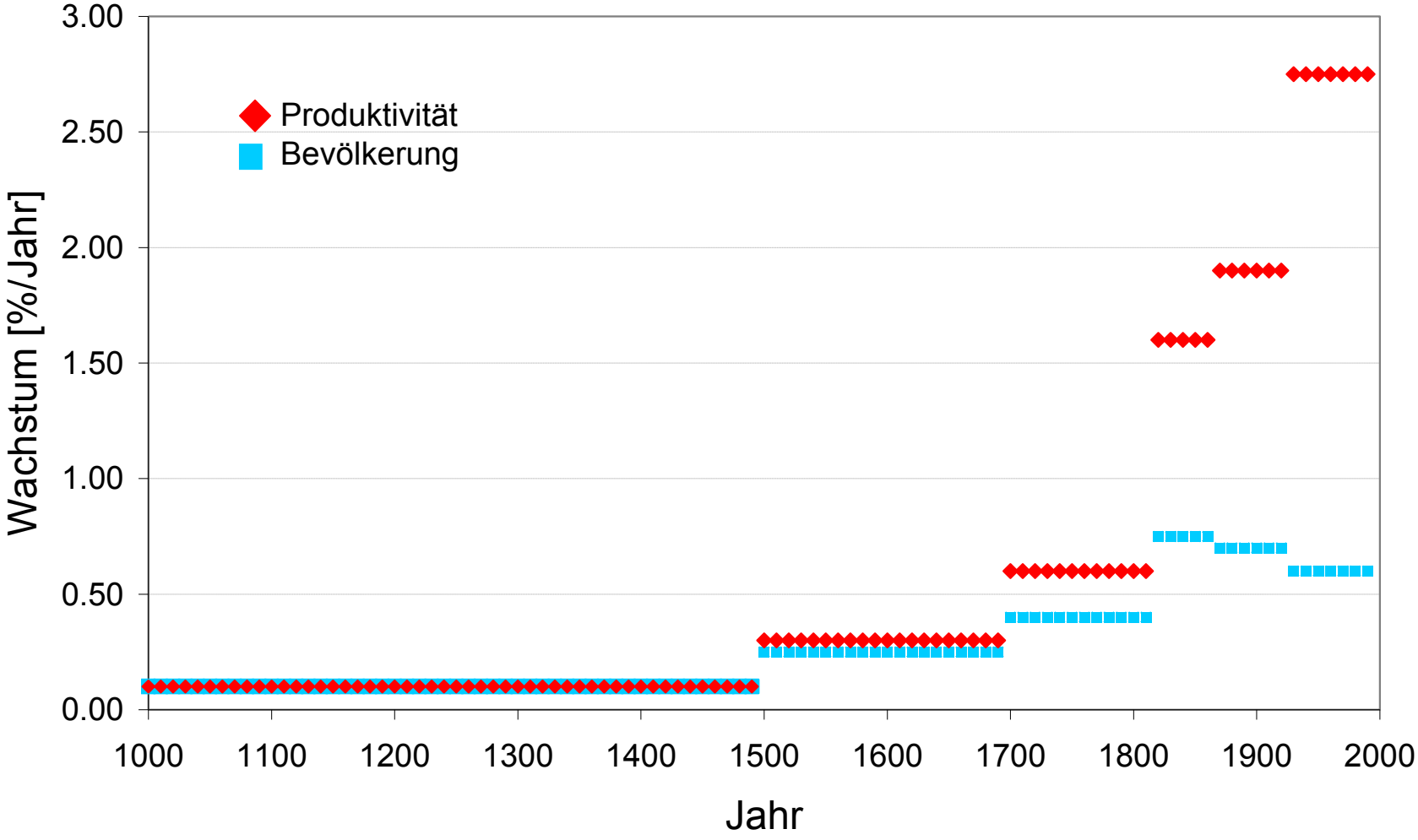
- John Urry

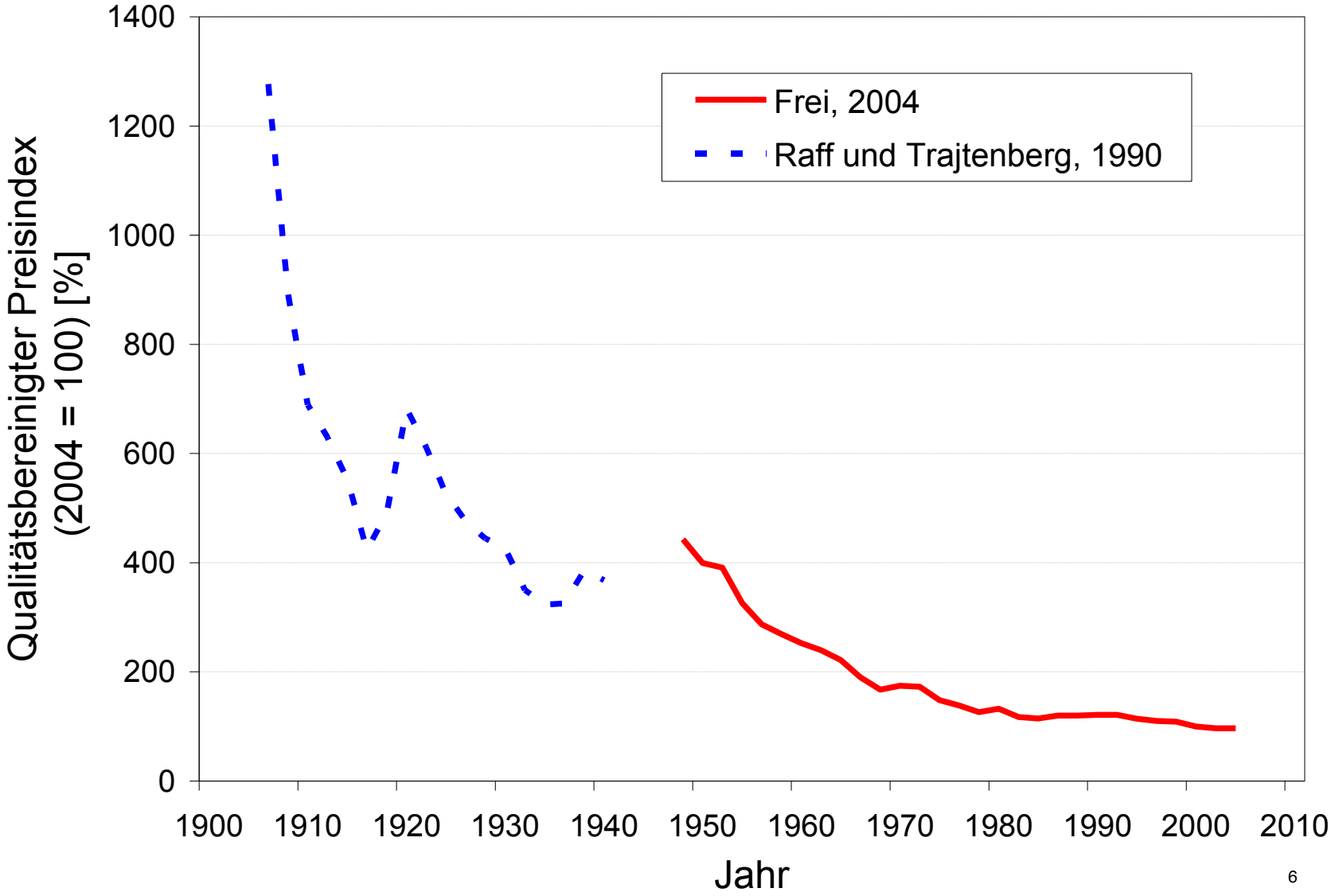
What are the questions ?

Productivity and population growth in Western Europe



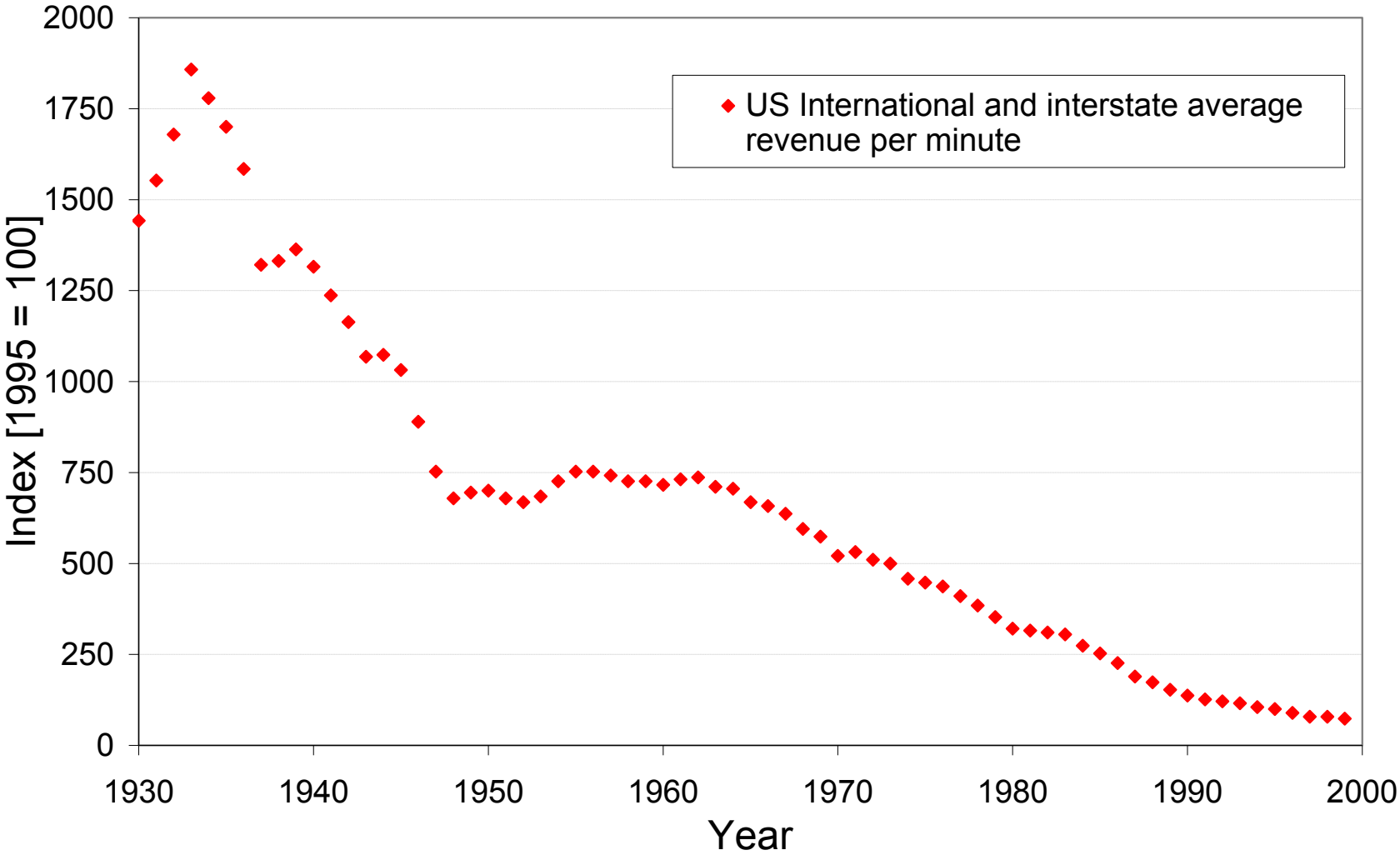
Galor und Weil (2000), Figure 1

Quality-adjusted price of a new car in Switzerland



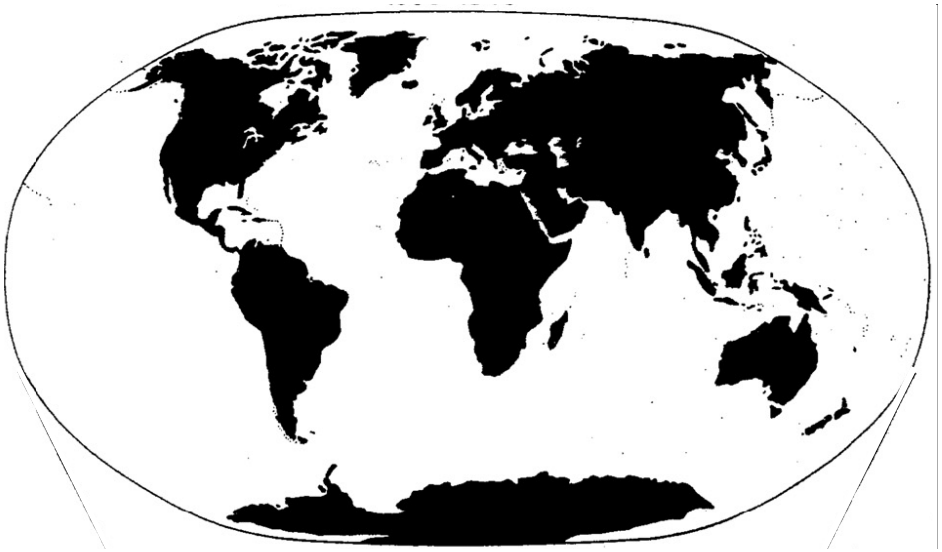
Frei, 2005

Price of telecommunication



Adapted from FCC (2001)

A shrinking world



Coach and sailing boat until 1840

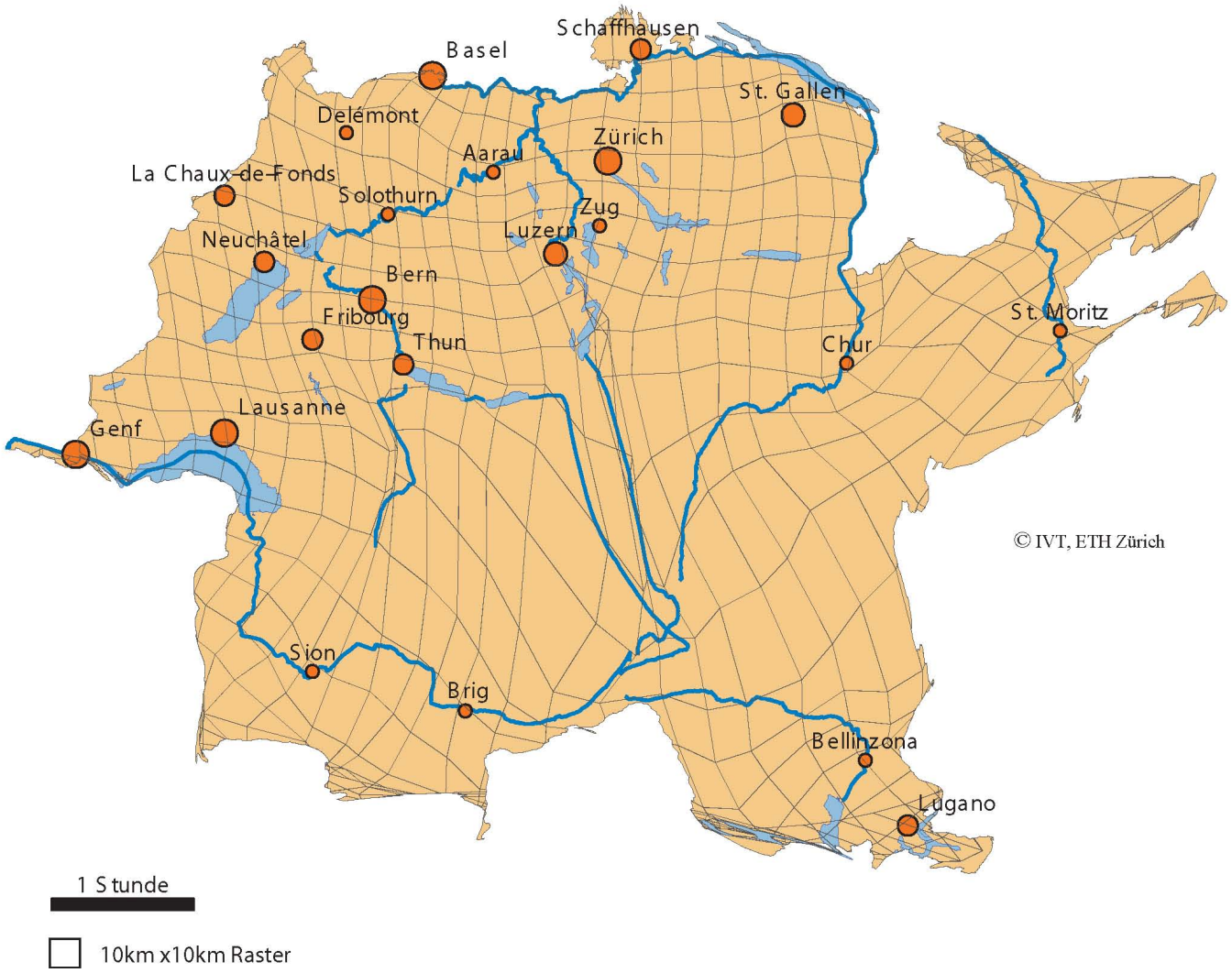
Steam ship and locomotive, 1840 - 1930

Propeller aircraft, 1930-1950

Jets, from 1950

Dicken, 1998

Shrinking “road” – Switzerland (1950)



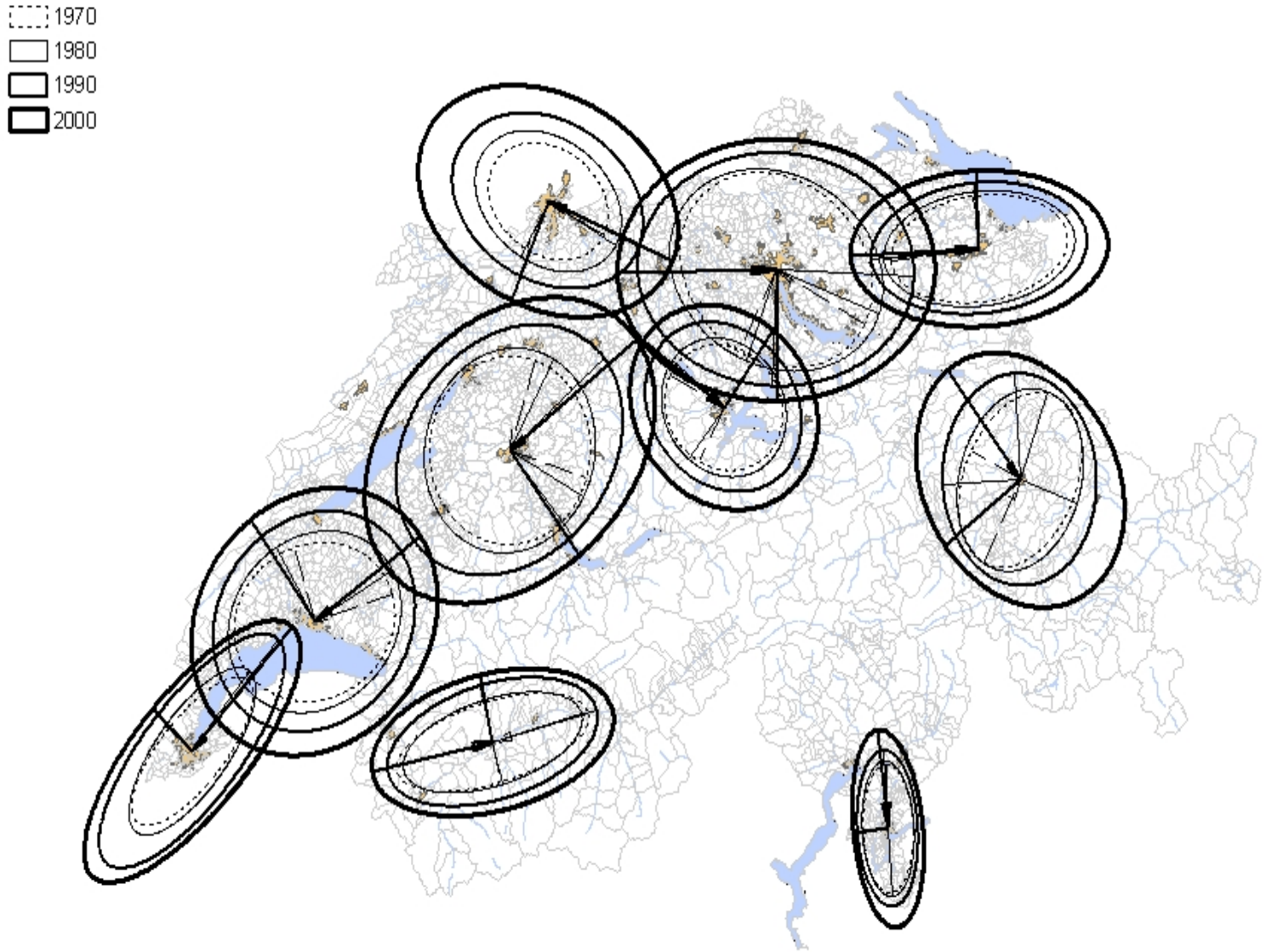
Scherer, 2004

Stunde 1

Shrinking “road” Switzerland (2000)

Scherer, 2004

Swiss commuter catchment areas since 1970

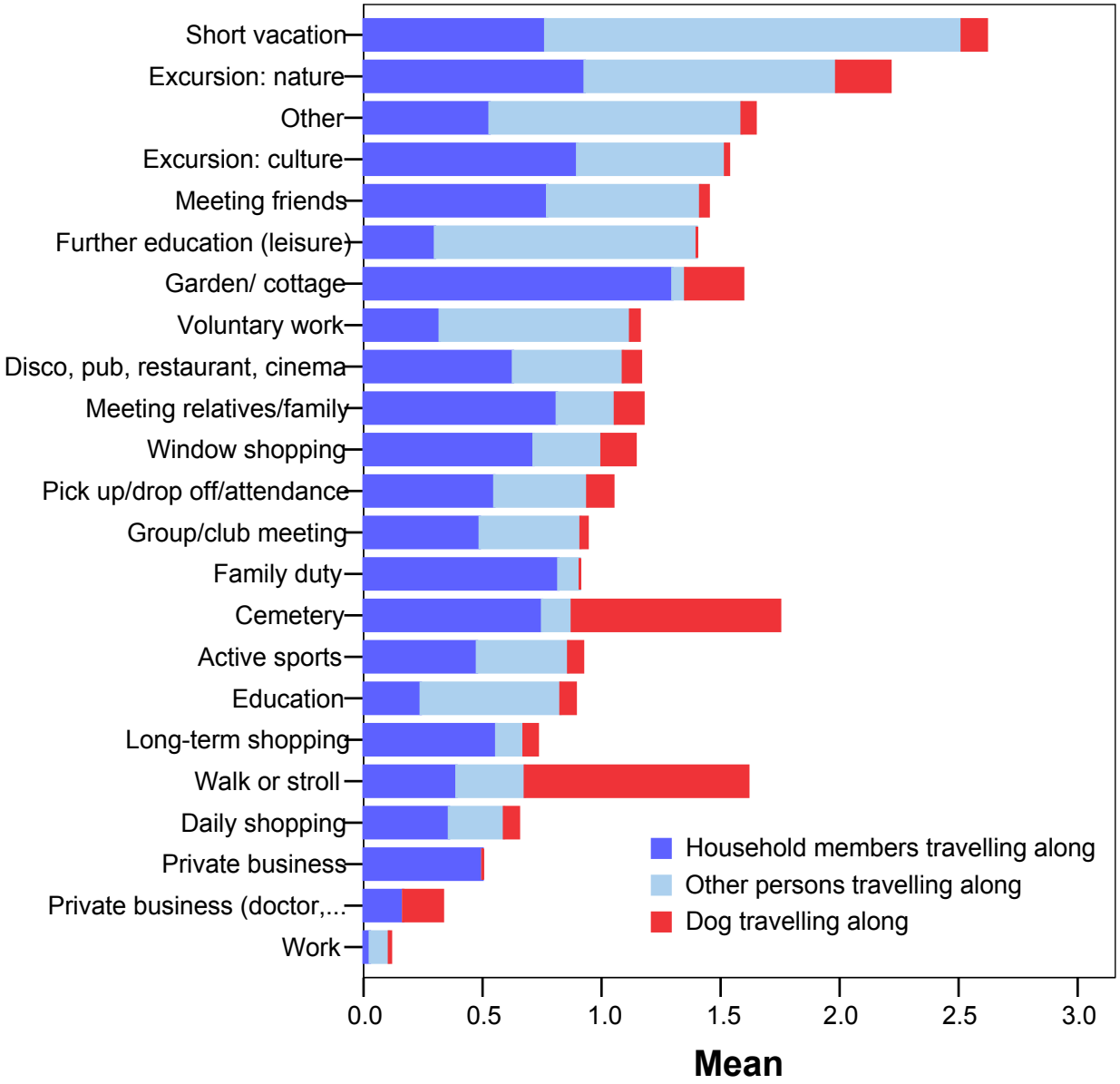


Adapted from Botte, 2003

Trip purpose distributions (ca. 2005)

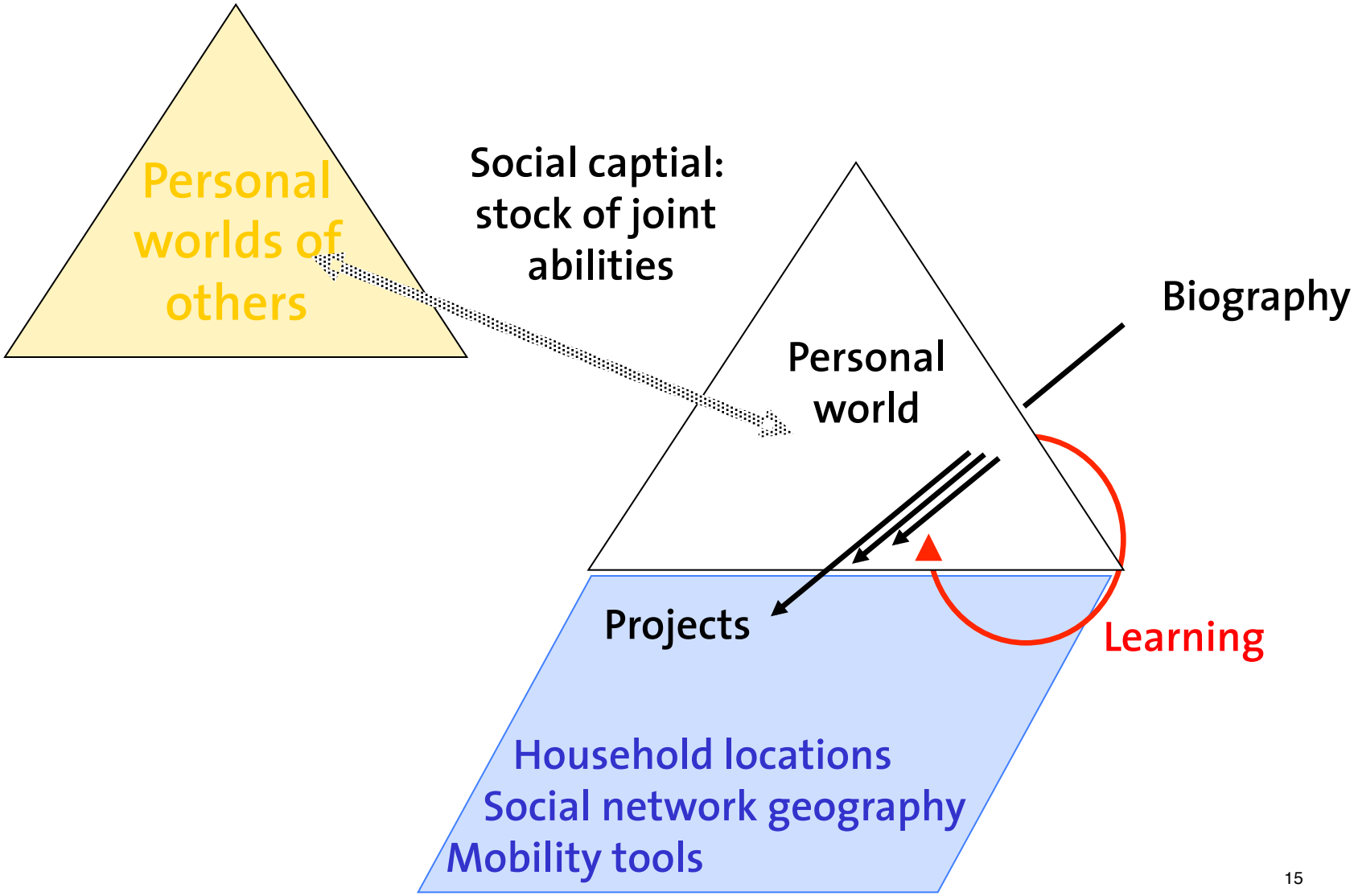
Share of kilometers traveled [%]	Switzer-land	Germany	UK	USA
Leisure	44.8	38.3	33.7	32.2
Work/School	35.0	29.7	32.0	31.3
Shopping/Privat business	11.2	21.7	19.7	27.6
Escort	4.9	4.5	7.6	8.5
Others	1.8	4.8	7.1	0.5
Total	100.0	100.0	100.0	100.0

Social leisure ! (2003 Thurgau 6-week diary)



Theoretical starting point

(Moving) actors in social/physical networks



Impact of co-ordination, e.g. Location choice

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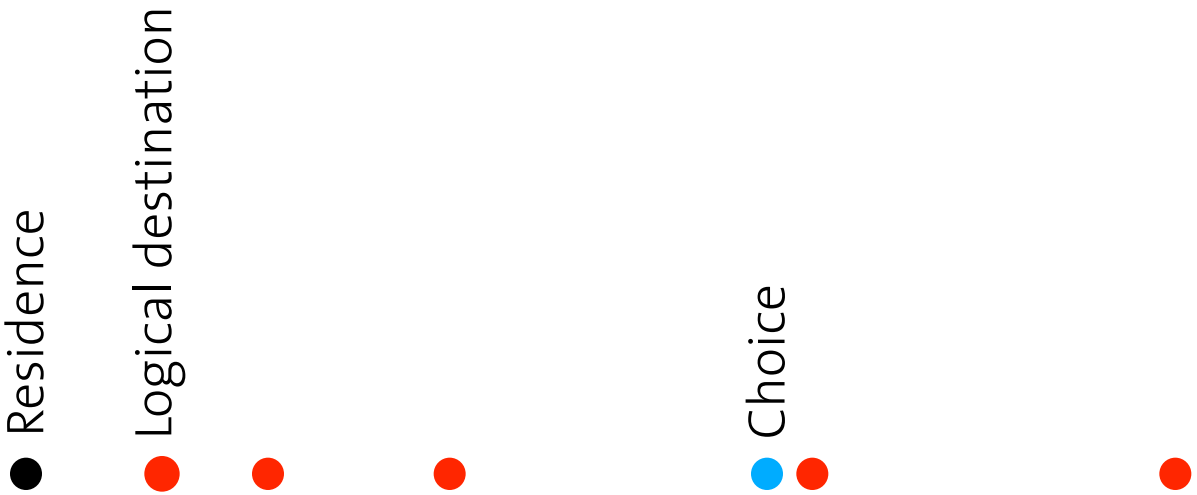
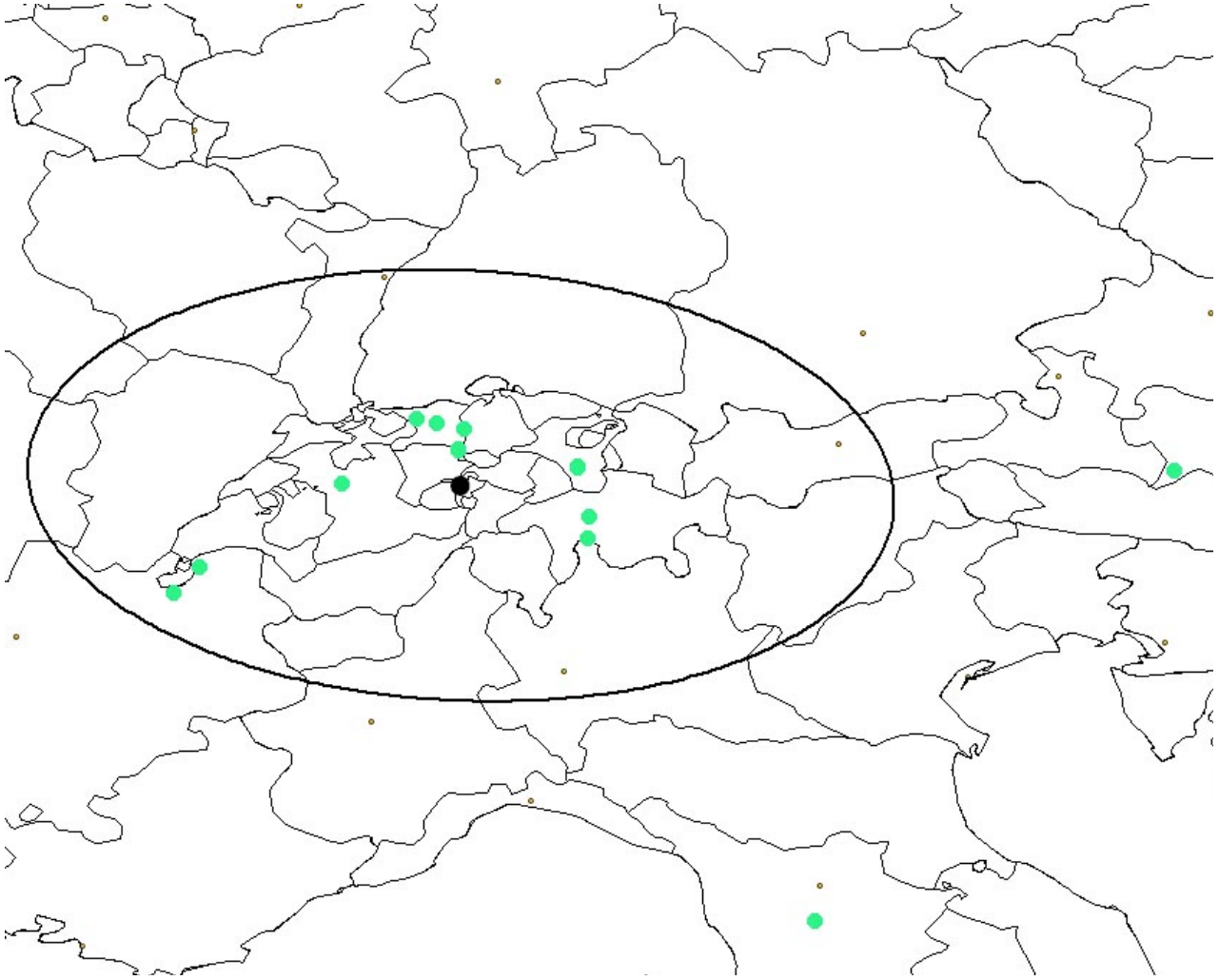


Impact of co-ordination, e.g. Location choice

Example social network geography

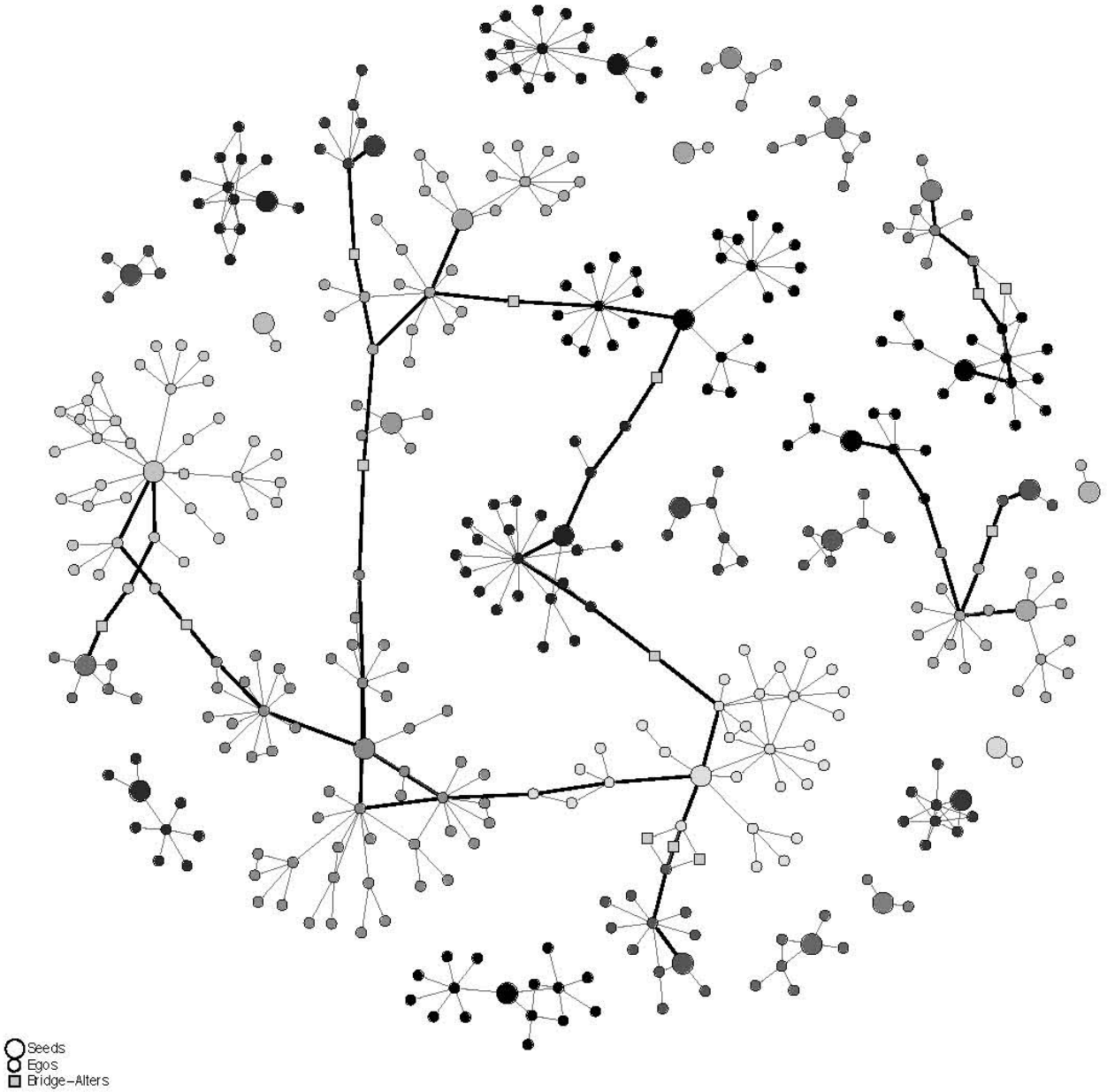


Female, 28,

4 residential moves

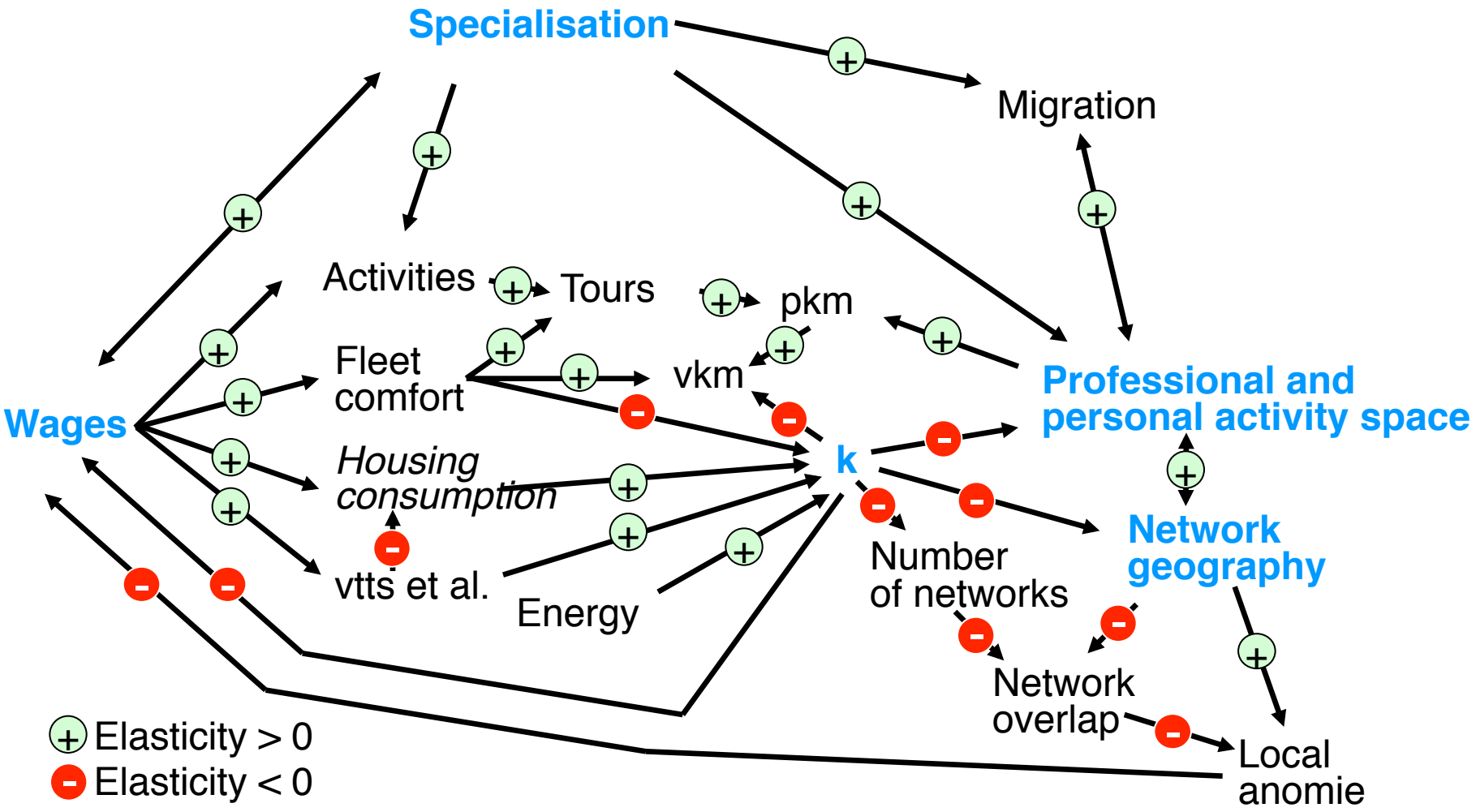
Ohnmacht, 2004

Network structures



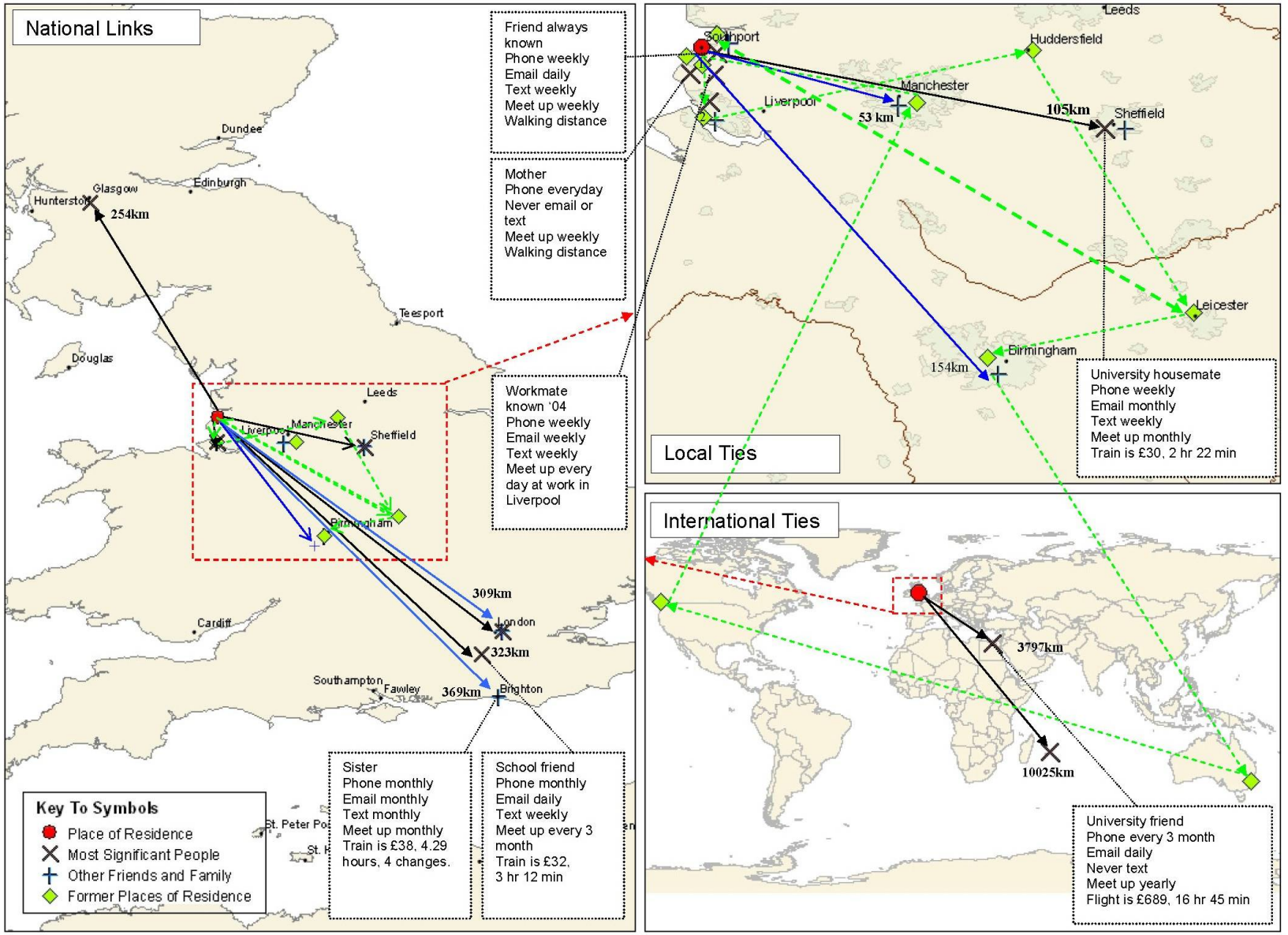
Illenberger, Kowald, Axhausen and Nagel, 2011

Dynamics of personal space use and speed



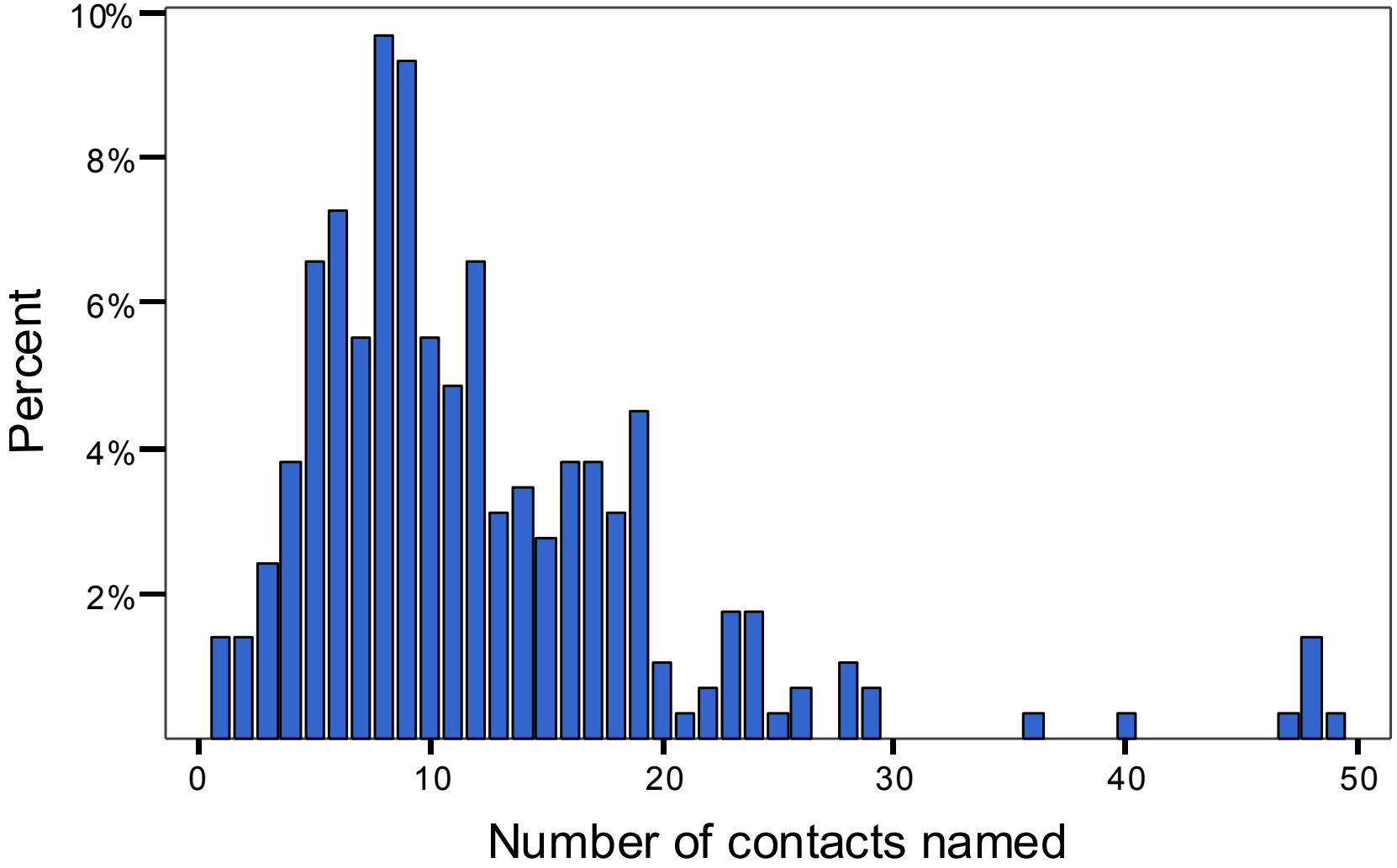
Empirical results from Switzerland and the UK

Biography of an architect in his early thirties



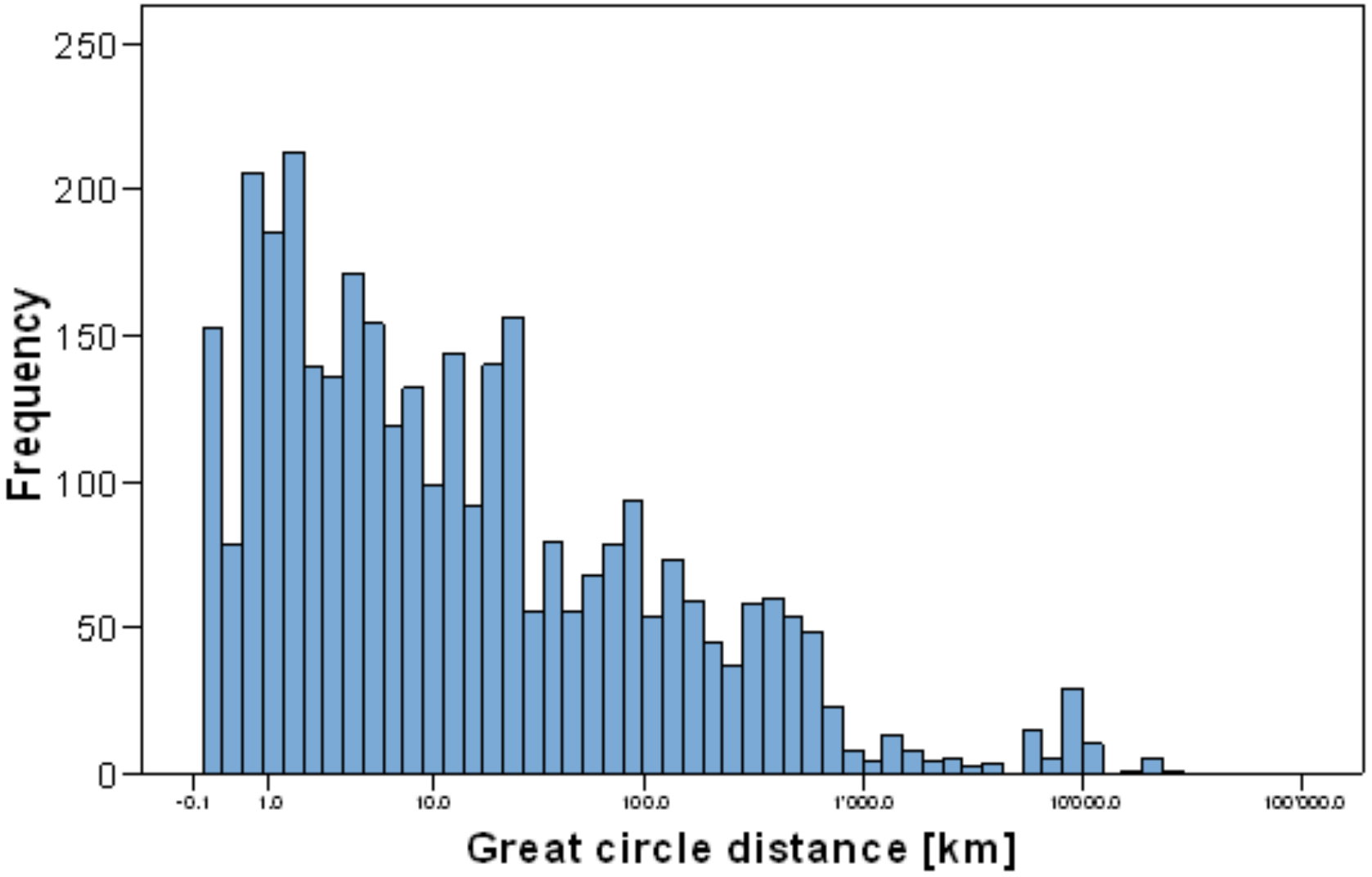
Larsen, Axhausen and Urry, 2006

Number of contacts reported



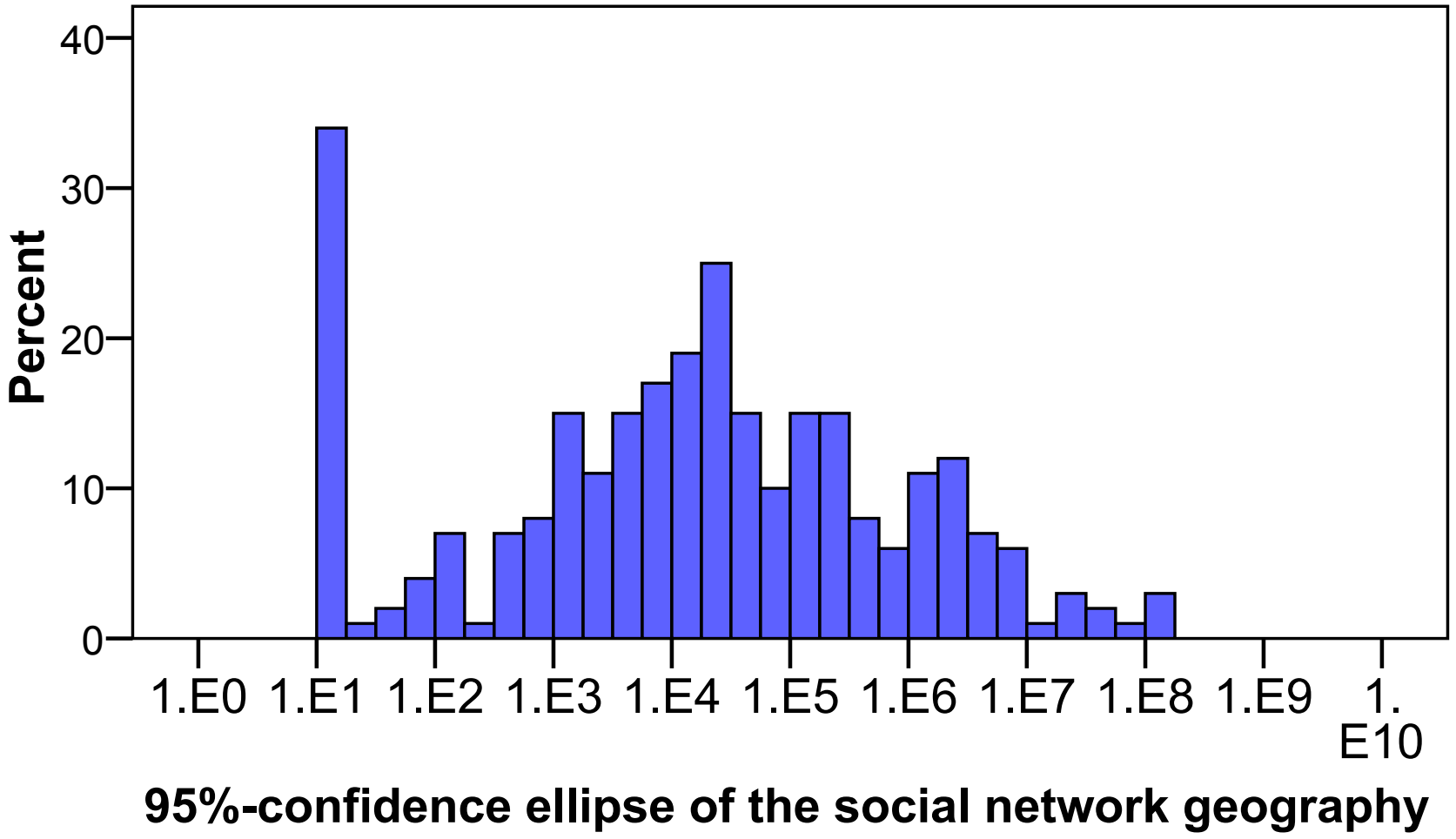
Frei and Axhausen, 2005

Distances between home locations



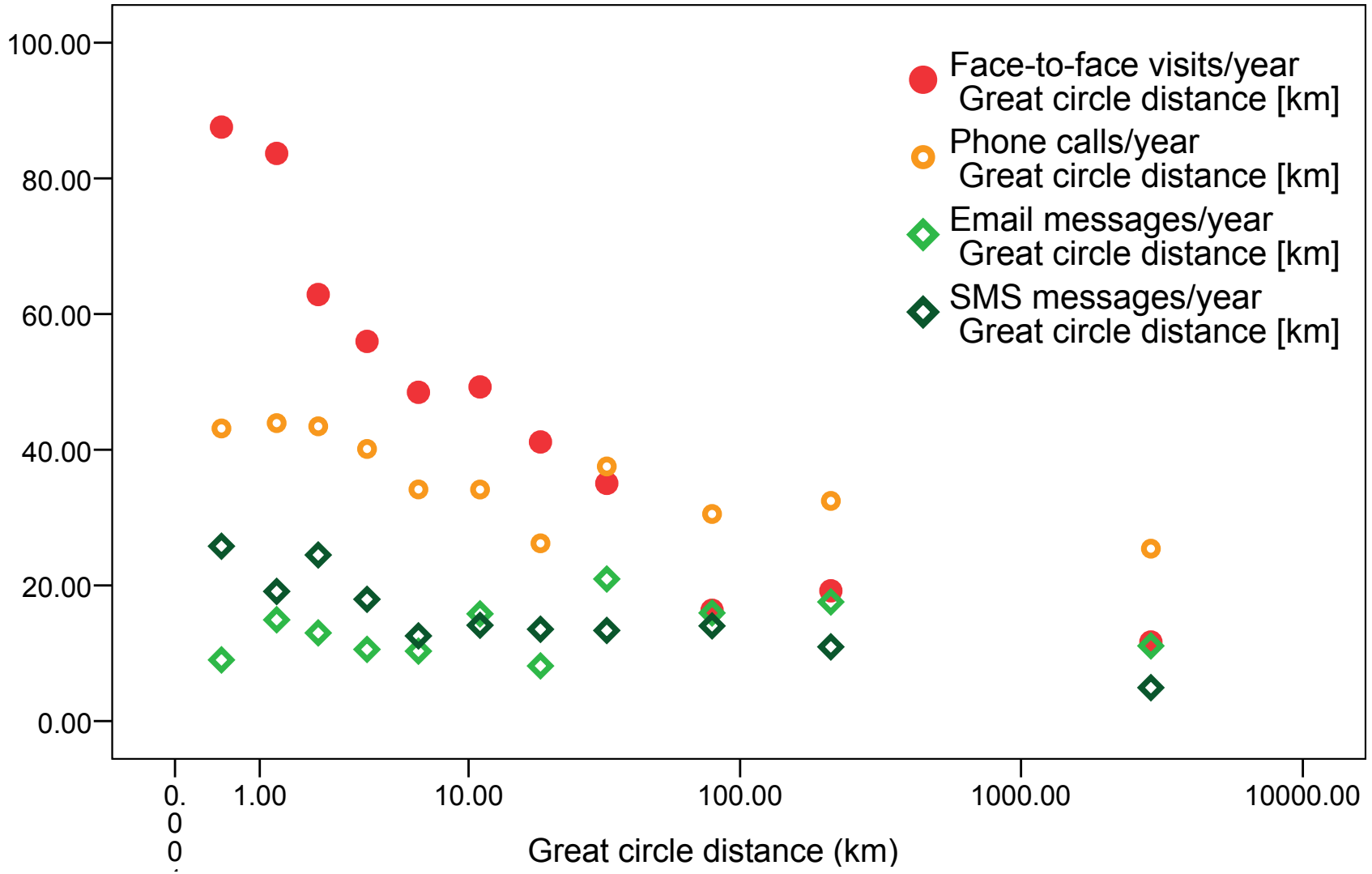
Frei and Axhausen, 2005

Size of network geometries



Frei and Axhausen, 2005

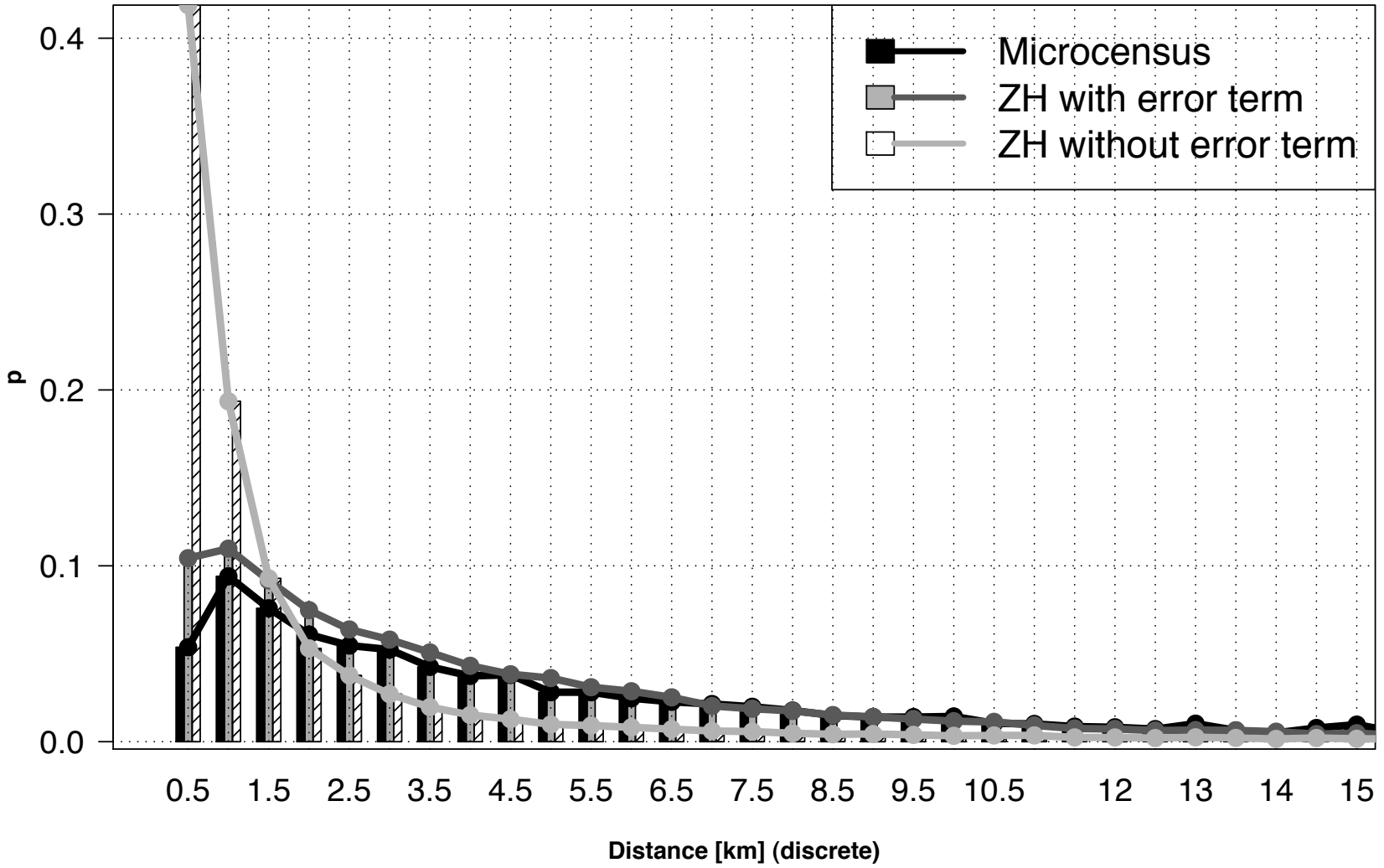
Interactions by mode and distance between homes



Frei and Axhausen, 2005

First computational experiments

Horni: Agent and facility specific error terms



Hoirni , 2011

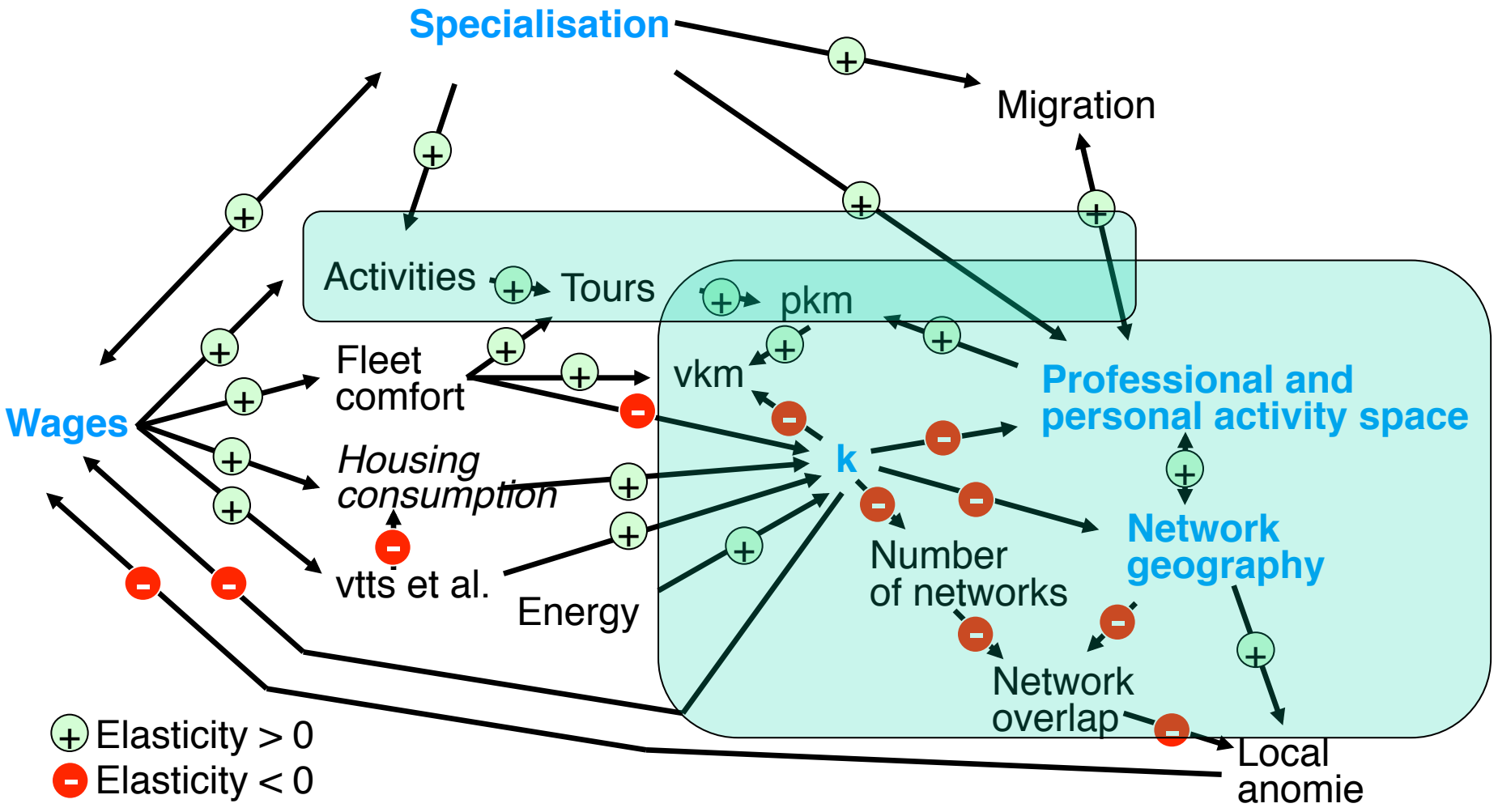
Frei: Geocoded network of friends on a random plane

[km]	Criteria for network generation					
	Degree		Closeness		Betweenness	
b2/b3	Mean	Median	Mean	Median	Mean	Median
4	10.4	6.2	12.6	6.3	11.1	6.1
3	8.6	5.8	9.8	5.9	9.0	5.8
2	7.0	5.4	7.6	5.5	7.2	5.3
1	5.6	5.3	6.4	5.3	6.1	5.2
0.5	4.6	4.3	5.1	4.4	4.9	4.3
0.33	4.4	4.3	4.6	4.3	4.5	4.2

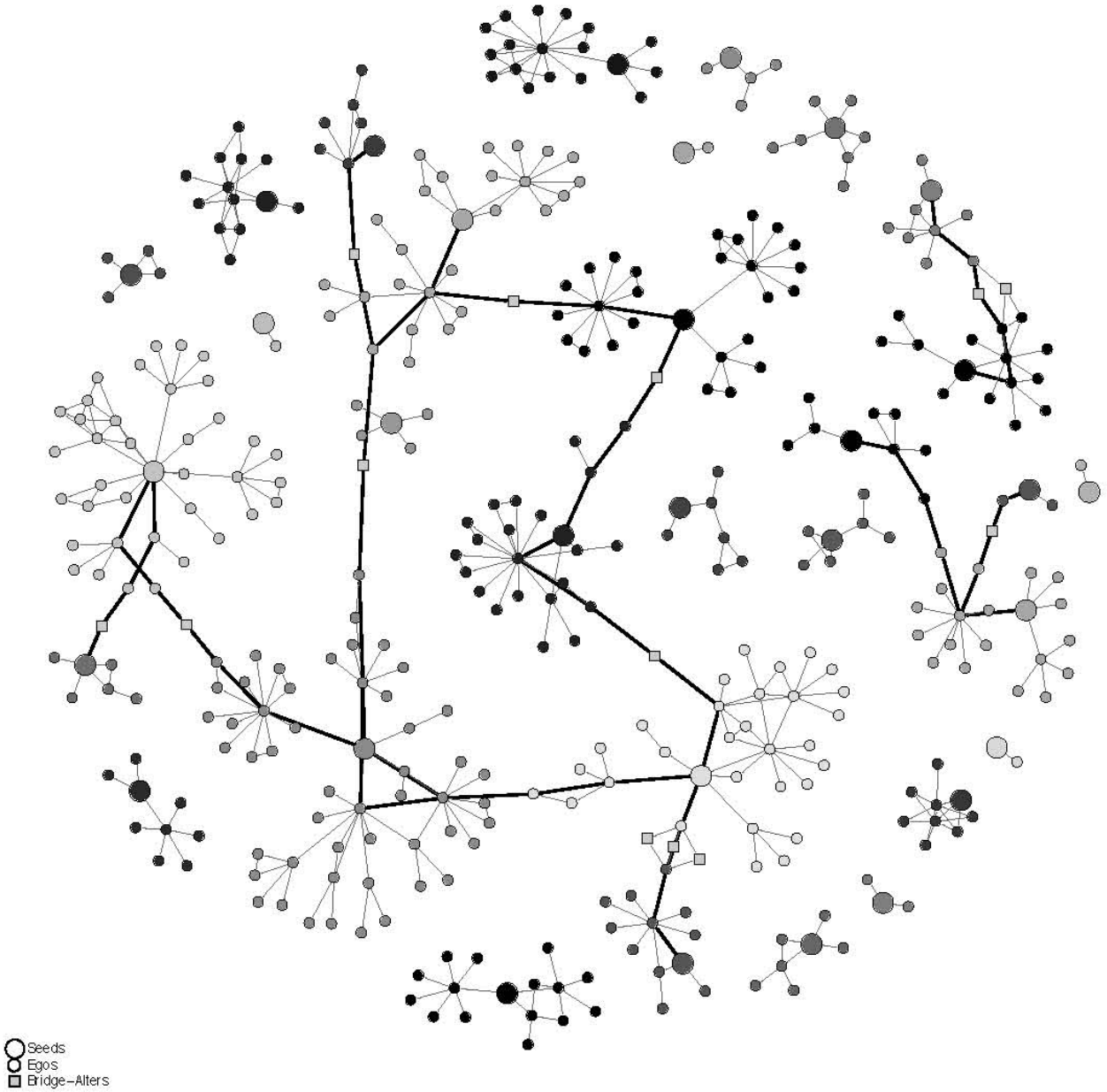
Frei , 2011

What do we want to look at ?

Range of future modelling

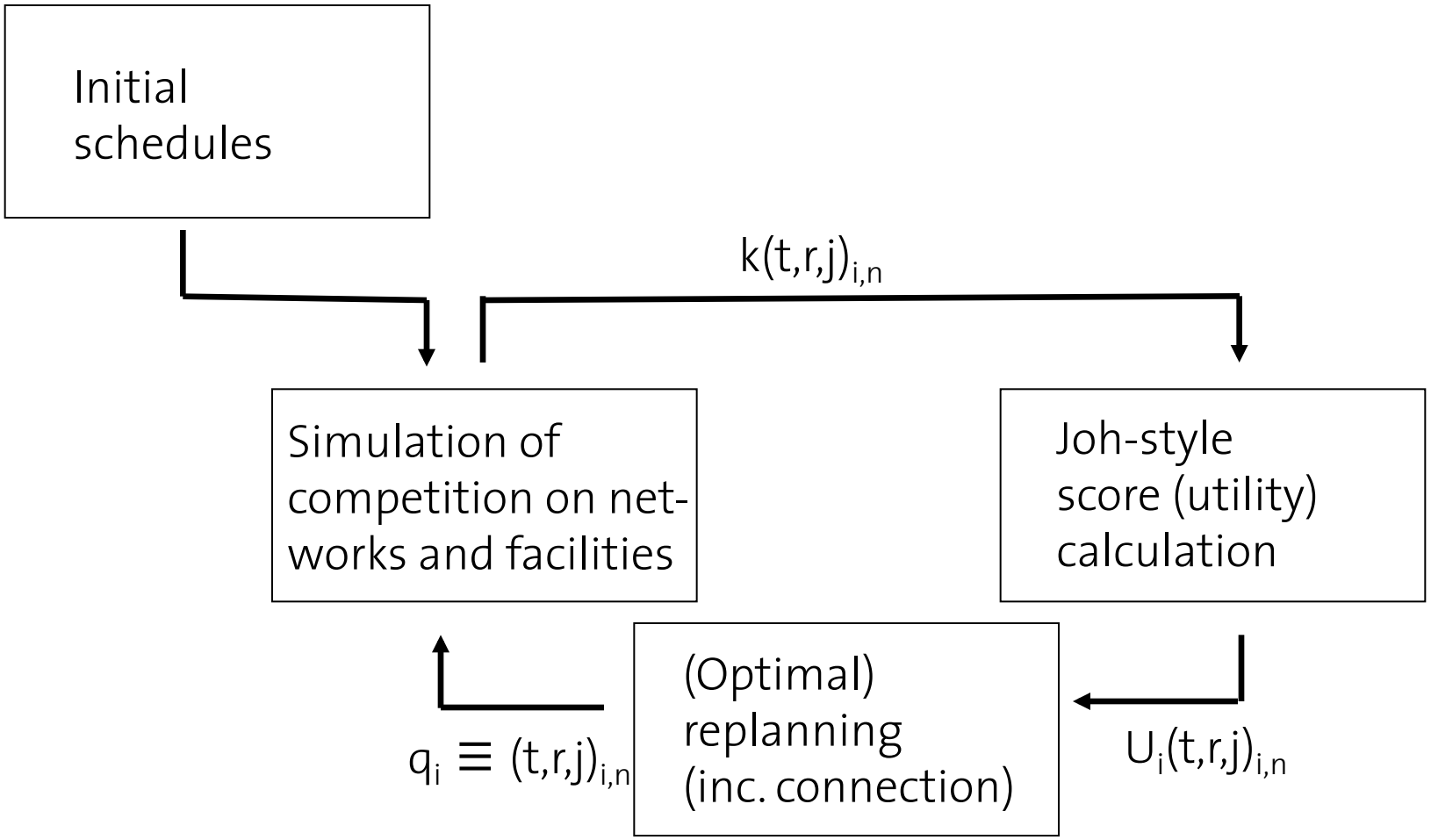


Create degree, clustering and distances !



Illenberger, Kowald, Axhausen and Nagel, 2011

New equilibrium search in MATSim



Activity scheduling with best response & random modules

- Number and type of activities
- Sequence of activities
  - Start and duration of activity
  - Composition of the group undertaking the activity
  - Expenditure division
  - Location of the activity (including all participants' generalised costs)
    - Movement between sequential locations
      - Location of access and egress from the mean of transport
        - Parking type and location
      - Vehicle/means of transport
      - Route/service
      - Group travelling together
      - Expenditure division

More information at

www.ivt.ethz.ch

www.matsim.org