Network and Spatial Analyses

12. February 2020

Lecture:

Course Introduction

- Who, where, when, why?

Topics in Economic Geography I.

- Uneven spatial distribution of economic activities
- Agglomeration (economies) and clusters
- Related variety

Seminar:

Introduction to R

Course Github page: https://github.com/bokae/anet_course






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Assessment:
Participation in the lectures - 10%
All students must participate in the lectures. If you miss the upcoming class please write an email to toth.gergo@krtk.mta.hu. Missing more than 3 lectures results in a reduction from the participation grade.

Seminar activity - 20%
Students receive points based on their activity during the seminar. They should answer questions,formulate their own inquiries, and actively participate in the discussion.

Homework - 20%
During the semester, students have one homework exercise.

Semester project - 50%
For the project, students have to choose one topic related to the course and write a paper (minimum 1000 - maximum 4000 words) to demonstrate their understanding of the concepts and the data analysis methods acquired during the semester. The project paper must follow the attached guidelines! R script attached to the final paper is welcomed (not included in the word count)!
Deadline: During the exam-period, exact date TBA.

1) Course Introduction and Topics in Economic Geography I.
Seminar: Introduction to R

2) Topics in Economic Geography II.
Seminar: Econometrics reminder

3) Introduction to Networks I.
Seminar: Intro network exercise in R

4) Introduction to Networks II.
Seminar: Network measures and plots in R

5) **No Class (11th of March)**

6) Anatomy of Clusters
Seminar: EconGeo R package and Exponential Random Graph Models

7) Principle of Relatedness
Seminar: Netflix of regions

8) Spatial Equilibrium I.
Seminar: Project proposals (25th of March)

9) Spatial Equilibrium II.
Seminar: Introduction to GIS mapping

10) Zipf's law and Urban scaling
Seminar: Scaling laws of politics and words

11) **Easter (8-14. April)**

12) Social and Communication Networks I.
Seminar: Communication networks on Twitter

13) Project presentations

Economic activities have an uneven spatial distribution.

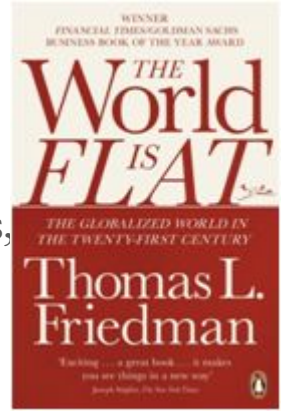
Flat world or spiky world

Flat world

Decreasing transportation cost of production factors, products, people and information.

Increasing global competition.

Deregulation and political-social integration.



Friedman (2005)

Spiky world

International economic landscape with respect to economic output, growth and innovativity is not flat at all.

More and more people clustering in (global) cities.

Florida (2005)

Global competition and the relevance of location

Global competition

Firms competing globally, developing strategies across borders.

Due to mobility, production factors are available for all.

Information, codified knowledge and technologies are diffused globally.

Relevance of location

Lasting differences between the economic performance of locations.

Leading globally competitive companies still have a home base where core competencies are concentrated.

Immaterial goods, skills and tacit knowledge are location-bound.

Sources of enduring competitive advantage are local (Porter 1998a).

Spatial division of labour

Division of labour

The separation of tasks within the production process and their allocation to different groups of workers.

Technical division of labour (Adam Smith and the pin factory).

Social division of labour.

Spatial division of labour

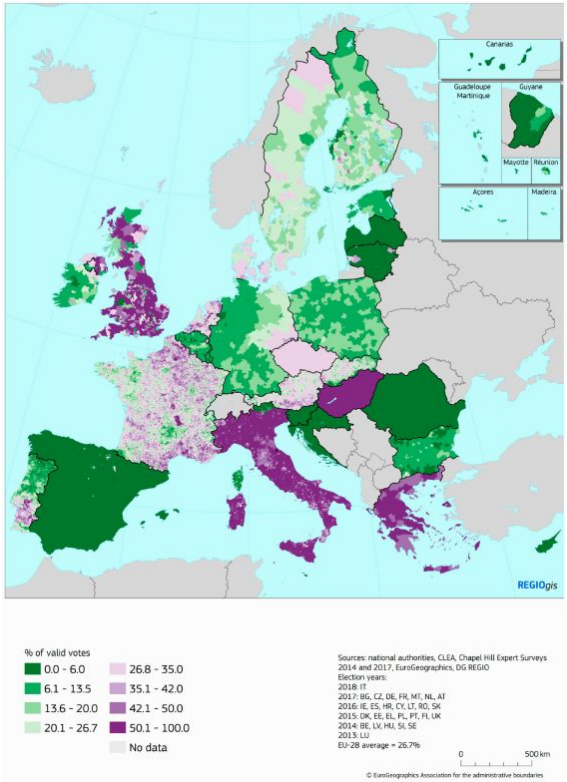
The concentration of particular sectors and/or production tasks in specific geographical areas (Massey 1984).

Contrast of branch plants and headquarters locations with respect to worker skills, innovation and entrepreneurship.

Inequalities and power relations.

Revenge of the places that don't matter

People in an increasing number of regions are experiencing their economic opportunities and welfare provision to be diminishing, which is directly linked to a growing political discontent (Rodríguez-Pose 2018).



Minimum share of the vote for parties somewhat opposed, opposed or strongly opposed to European integration, 2013–18. (Dijkstra et al. 2019, pp. 4.)

What is a location?

Regions

The division of space into subunits is not a priori given.

Besides the national level, supranational (global) and subnational (regional, local) levels structure economic activities.

Region types

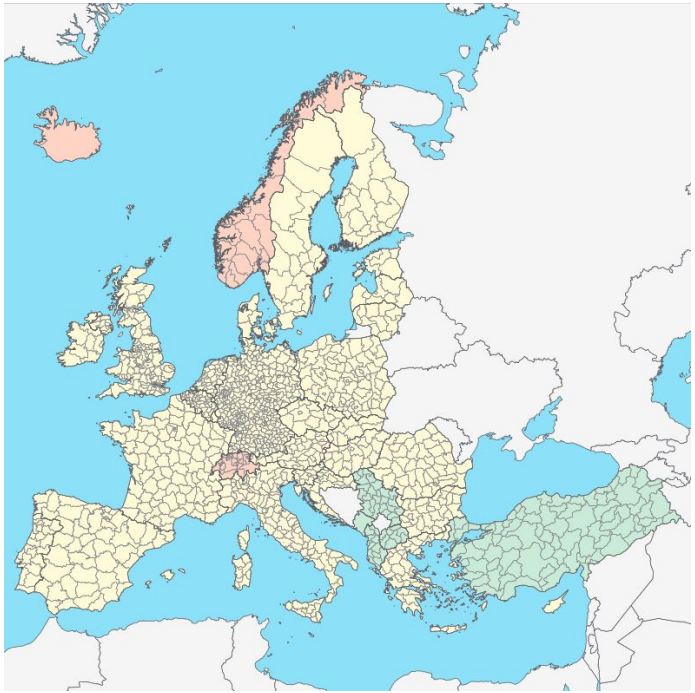
Nodal region: consistent, has more-or-less definable boundaries, and is homogeneous with respect to the socio-economic phenomenon under investigation (e.g. labour market regions).

Planning region: statistical, planning and public governance (e.g. EU NUTS regions).

The NUTS system of the EU

NUTS 2 regions

NUTS 3 regions



https://www.ksh.hu/regionalatlas_eu_nuts

The spatial concentration of economic activities gives rise to externalities.

Perspectives on spatial concentration

New Economic Geography

Spatial concentration as a source of positive externalities.

Centrum-periphery model: the emergence of a C-P structure depends on transportation costs, returns to scale and the share of manufacturing activities (Krugman 1991, Fujita et al. 1999).

Business Studies

Spatial concentration as competitive advantage.

Clusters: to increase productivity, factor inputs must improve in efficiency, quality and ultimately specialization to particular cluster areas (Porter 1998b).

Agglomeration economies (externalities)

Agglomeration is the spatial concentration of economic activities.

Localisation economies (MAR): specialised local labour market, specialised local suppliers, local knowledge spillovers within industries.

Jacobs-externalities: advantages from the diversity of economic activities and knowledge spillovers between them.

Urbanisation economies: advantages of region size and size-efficient public services.

"After all, intellectual breakthroughs must cross hallways and streets more easily than oceans and continents." (Glaeser et al. 1992, pp. 1127.).

Micro-Foundations of Urban Agglomeration Economies (Duranton-Puga 2004)

Sharing

Matching

Learning

Industrial districts

Marshallian district

An industrial district is a sizeable and spatially delimited area of trade-oriented economic activity with a distinctive economic specialisation (Markusen 1996).

Marshallian New Industrial District and Third Italy.

Other variants

Hub-and-spoke district: few major companies and suppliers.

Satellite industrial platform: branch plants of absent multinational corporations.

State-centered district: major government tenant anchors the local economy.

Clusters

Clusters

A cluster is a critical mass of companies in a particular location (Porter 1998b).

A cluster allows each member to benefit as if it had greater scale or as if it had joined with others without sacrificing its flexibility.

Competitive advantage

Factor conditions.

Demand conditions.

Firm strategy, structure and rivalry.

Related and supporting industries.

Specialisation and diversity

Specialisation

Knowledge spillovers within industries.

Incremental, process innovation.

Diversity

Knowledge spillovers between industries.

Radical, product innovation.

Related activities tend to co-agglomerate in space.

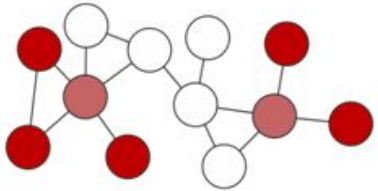
~~Love~~ Nothing is in the air

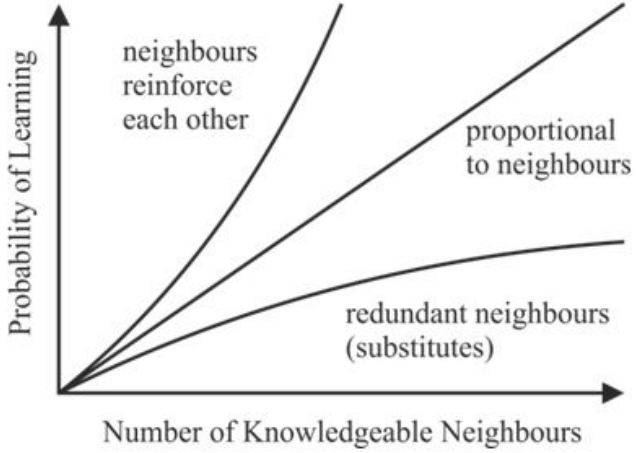
"When an industry has thus chosen a locality for itself, it is likely to stay there long [...]. The mysteries of the trade become no mysteries; but are as it were in the air, and children learn many of them unconsciously" (Alfred Marshall 1890, pp. 198.).

Being there is not enough when it comes to innovative activities of co-located firms in cities or clusters (Fitjar - Rodríguez-Pose 2017).

Knowledge does not behave as a public good at the micro-level.

Collective learning





Hidalgo (2018)

But who are these neighbours?

Nearby locations.

Related activities.

https://atlas.media.mit.edu/

Proximity

Proximity (Boschma 2005)

Geographical proximity.

Institutional proximity.

Social proximity.

Organisational proximity.

Cognitive proximity.

Not too much, not too little

Optimal proximity to be conducive of learning and innovation.

Proximity-paradox (Broekel - Boschma 2012): proximity is a key driver for agents to connect and exchange knowledge, but too much proximity harms innovative performance.

Co-agglomeration, related activities and related variety

Co-agglomeration of industries

Manufacturing industries tend to co-agglomerate when there is a high degree of sharing of goods, labour and ideas (Ellison et al. 2010).

Related activities in clusters

Related and supporting industries as sources of competitive advantage.

Related variety (Frenken et al. 2007)

Knowledge spillovers between industries may be realised when there is not much, nor not too little cognitive proximity.

Decomposition of overall industrial variety to related and unrelated components.

Jacobs-externalities arise when there is related variety among local economic activities.

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