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# Evolutionary Economic Geography

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Economic Evolution of Cities and Regions

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lecture 2

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## structure of lecture

1. Evolutionary Economic Geography
2. spatial clustering of an industry
3. knowledge networks in space
4. related variety and regional growth
5. institutions and regional development
6. relatedness and regional diversification



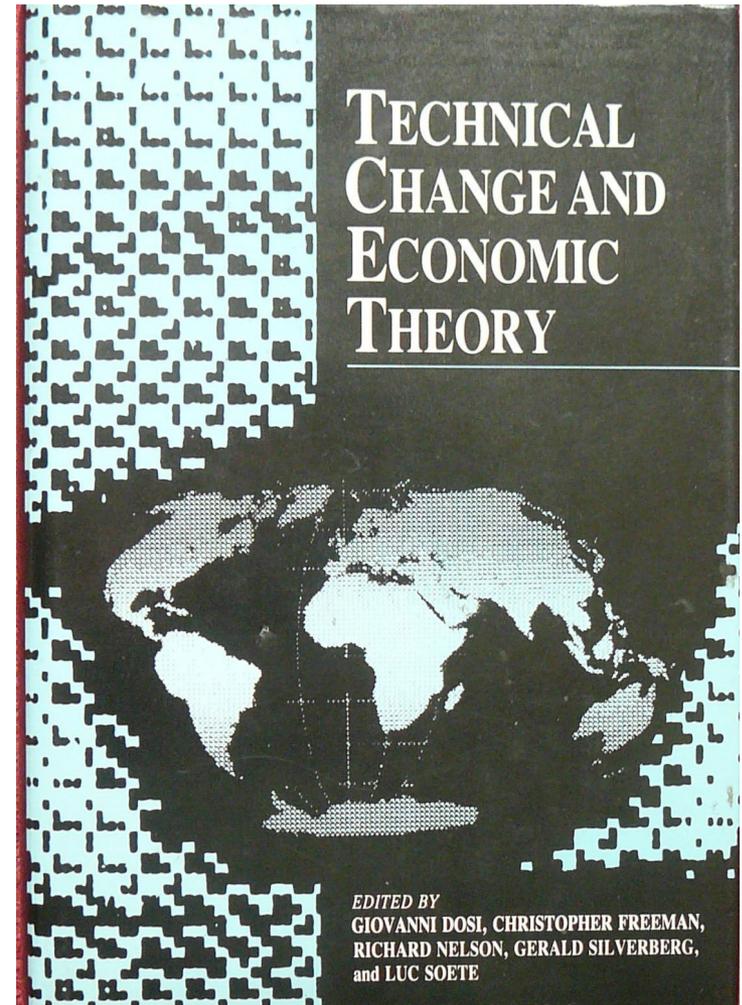
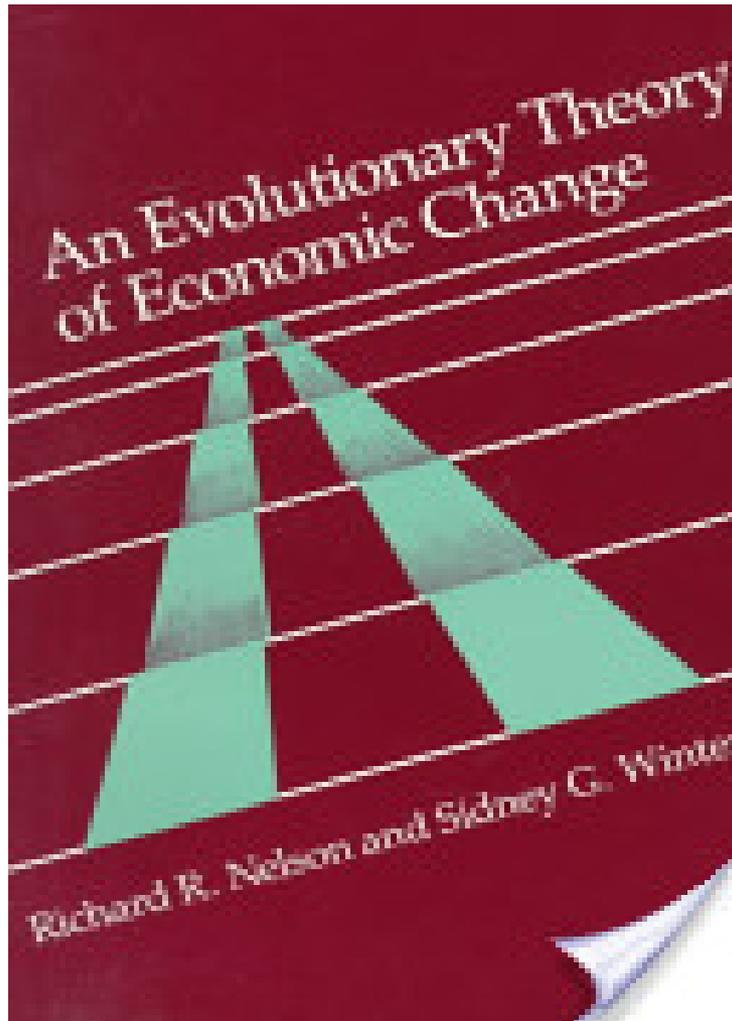
## references

- Boschma, R.A. and Frenken K. (2006) Why is economic geography not an evolutionary science? Towards an evolutionary economic geography, *Journal of Economic Geography* 6 (3): 273–302.
- Martin R. and Sunley P. (2006) Path dependence and regional economic evolution. *Journal of Economic Geography* 6 (4): 395–437.
- Boschma, R. and K. Frenken (2018) Evolutionary Economic Geography, in G. Clarke, M. Feldman, M. Gertler & D. Wojcik (eds.), *New Oxford Handbook of Economic Geography*, Oxford University Press, 213-229.



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# Evolutionary Economics





## Evolutionary Economics

- **radical departure from mainstream** (neo-classical or orthodox) **economics** in 1980s
  - equilibrium analysis
  - rational agents: unbounded
  - perfect replication: e.g. knowledge is public
  - a-historical approaches
  - etc.



# Evolutionary Economics

- link with **evolutionary biology**
- focus on **population dynamics of firms**
- **variation:** firms have different routines (‘organizational DNA’) due to bounded rationality
- **mutations:** new variations leading to new firms and innovations by incumbent firms: not a ‘blind’ process
- **selection:** market competition and institutional constraints: entry, growth, decline and exits of firms
- **retention:** social learning within and (to some extent) between firms: cumulative nature



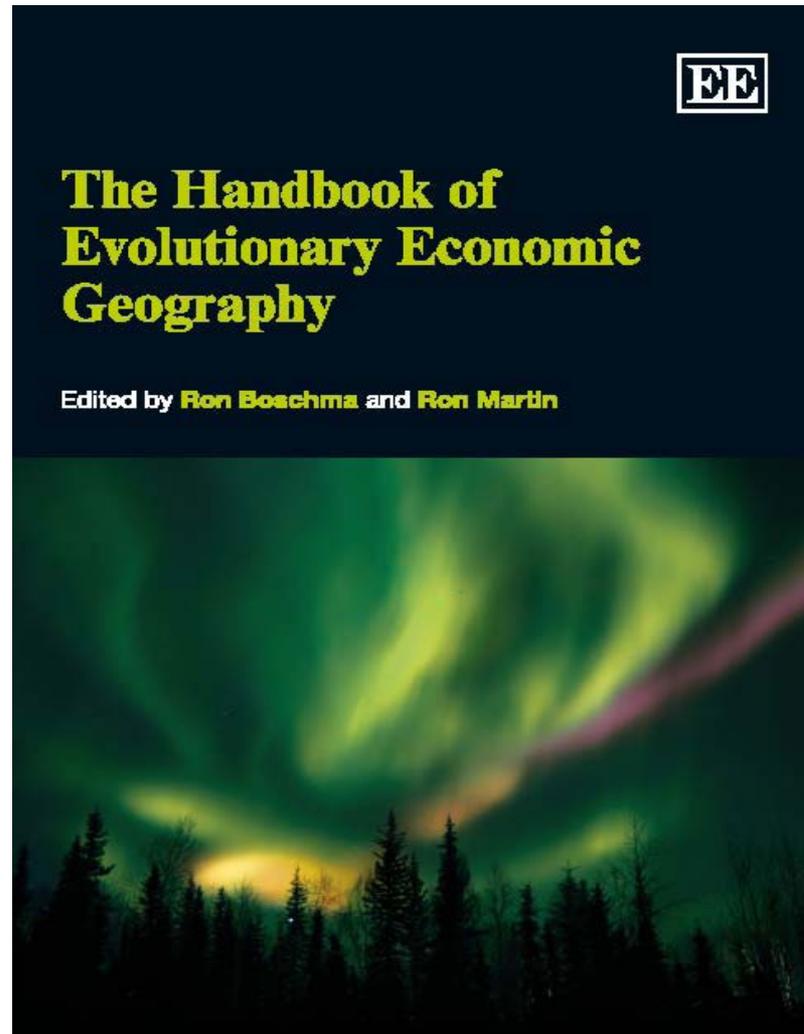
## Evolutionary Economic Geography

- but, Evolutionary Economics is basically **a-spatial**
- **EEG** emerged in the late 1990s
- evolutionary thinking in economic geography was ‘all over the place’ in the 1990s, but applied in a very fragmented way
- **critique on equilibrium-based perspectives** common in New Economic Geography (Krugman et al.) and large parts of Regional Science
- **critique on dominant EG ‘proper’** (‘cultural and institutional turn’): critique on their deterministic, static and case-study approaches



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# Evolutionary Economic Geography



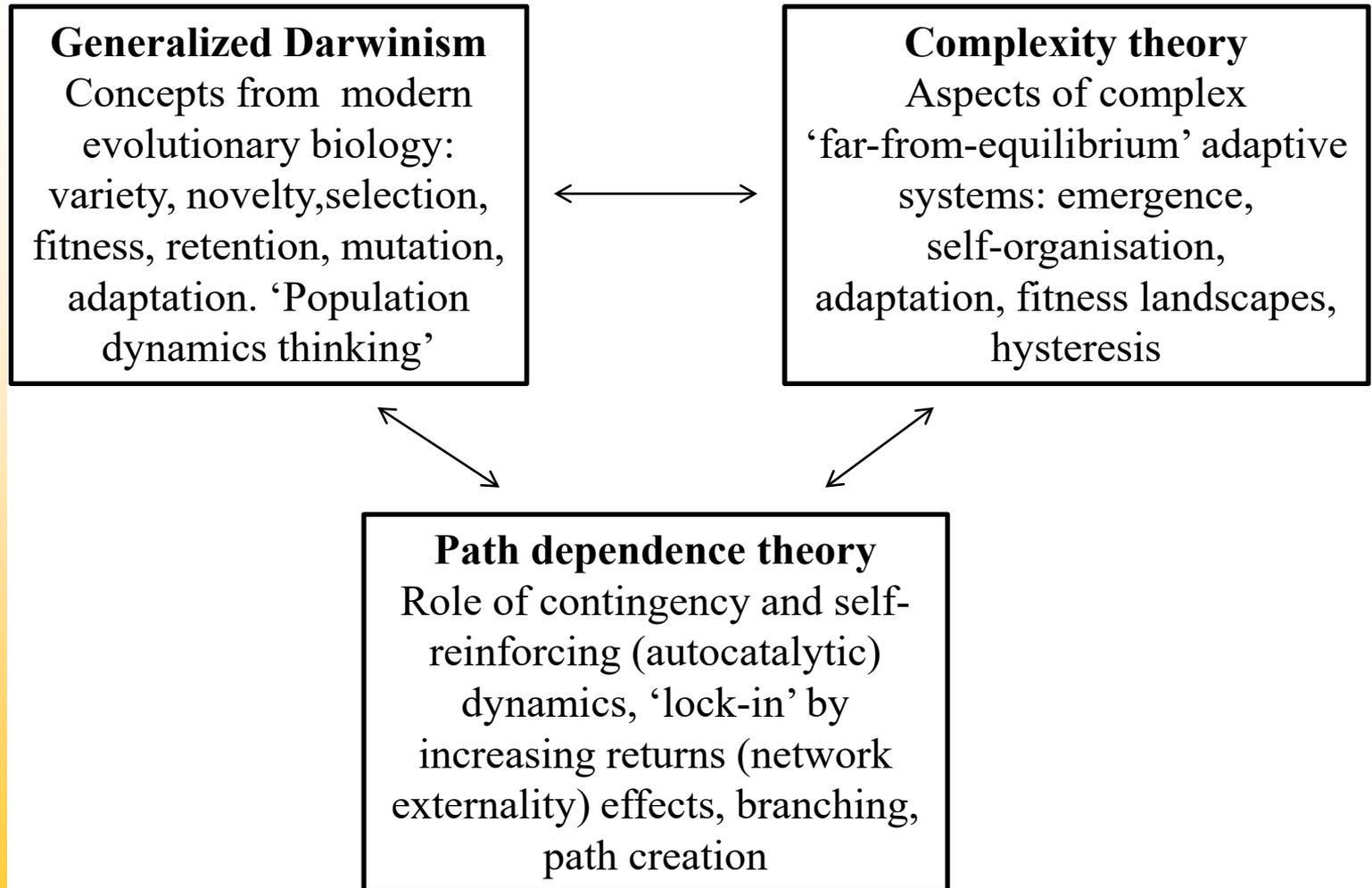


## Evolutionary Economic Geography

- focus on **conventional topics** in EG: e.g. where do firms locate, why do some industries concentrate in space, why do some regions grow more than other regions, etc.
- but theorized, conceptualized and analyzed from an **evolutionary perspective**
- but EEG also covered **new topics**, like regional resilience, spatial network dynamics, and sustainable development
- main focus on change and stability: evolution of uneven spatial distribution of economic activity: **place- and path-dependence**: history and space matters



## three theoretical frameworks for EEG





## 5 empirical applications

1. why does an industry concentrate in space?
2. how are knowledge networks structured and formed in space, and how do they evolve over time?
3. what type of economic structure enhances regional growth?: related variety
4. institutions and regional development
5. how do regions diversify over time?: relatedness



## spatial clustering of an industry

- why and where do industries concentrate?
- **conventional approach** (Marshall): localization economies (knowledge spillovers, labour pooling, input-output linkages)
- **evolutionary approach:**
  - clusters can emerge **despite the absence of Marshallian externalities**
  - clusters can emerge because of a **self-reinforcing process of local entry** (Arthur), in particular the entry of successful spinoffs (Klepper)



## spatial clustering of an industry

- knowledge externalities are not in the air in clusters (as Marshall made us believe): **firms are heterogeneous** in their capabilities to exploit Marshallian externalities
- **not all firms perform equally in clusters**: firms differ in their ability to exploit positive and cope with negative externalities in clusters
- **related-industry externalities** crucial during emergence stage of an industry
- **negative Marshallian externalities** during growth and mature stage of an industry
- emergent clusters produce **new institutions** or adapt existing ones by (collective) action of agents



## knowledge networks in space

- **firms** not only compete but also **interact** and **collaborate**: focus on **knowledge networks**
- heterogeneity of agents: **knowledge networks** are not randomly structured but **skewed**: additional insights to the cluster literature
  - knowledge is not in the air in cluster, but flows in networks that are **uneven** and **selective** (Giuliani)
  - **networks are selective** because firms and other agents have different capabilities and routines
  - **various proximities** are drivers of knowledge networks formation (Boschma 2005): geographical proximity neither necessary nor sufficient condition



## knowledge networks in space

- proximities do **not necessarily increase firm performance**: lock-in (proximity paradox)
- networks show a tendency to become **inward-looking** over time (especially in specialized regions)
- success of network linkages depends on **optimal levels of proximity**, such as a mixture of partners with a low and high cognitive proximity, low and high geographical proximity, etc.
- what drives the **dynamics** of knowledge networks in space: firm features (e.g. absorptive capacity), forms of proximity (e.g. geographical proximity) and network characteristics (e.g. preferential attachment)



## related variety and regional growth

- EEG enriched agglomeration externalities literature
- conventional approach: do regions need a specialized or diversified industrial structure? **MAR externalities versus Jacobs' externalities**
- evolutionary approach to Jacobs' externalities: regional growth is enhanced by a variety of sectors in a region that are **related**
- **related variety** (Frenken et al. 2007): the higher the number of related industries in region, the more opportunities to learn (knowledge spillovers) and to make new recombinations: higher regional growth
- **unrelated variety** might enhance radical breakthroughs (Castaldi et al. 2015)



## institutions and regional development

- EEG **criticized** the way EG has treated institutions in the past
  - **neglect of firms and routines** that may impact on the behaviour and performance of firms
  - institutions were depicted as **determinants**, rather than **conditioning** factors of regional development
  - institutions would **always matter**: no serious testing
  - institutions were presented as **pre-given** and **fixed**
  - emphasis on **qualitative case study** approaches



## **institutions and regional development**

- EEG provides a **different view on institutions**:
  - influence of (local) institutions is **contingent** given the existence and persistence of **heterogeneity of firms** within the same institutional context
  - institutions affect intensity and nature of interactions between agents in **knowledge networks** and **innovation systems**
  - **territorial institutions** have an impact on intensity and direction of **regional diversification**

national institutions: liberal vs coordinated market economies (Boschma and Capone 2015)

regional institutions: bridging vs bonding social capital (Cortinovis, Xiao, Boschma & Van Oort 2017)



## **institutions and regional development**

- **institutional change**: new industry formation is depicted as co-evolving with the establishment of new or adaption of existing institutions
- local agents engage in **collective action** to create or adapt institutions (institutional entrepreneurship), and to challenge **vested interests**
- regions tend to differ in their **ability to induce institutional change**



## relatedness and regional diversification

- EEG: creation of **novelty in space**
- regional development depicted as a **branching process** in which new recombinations stem from local related activities that share similar capabilities
- new activities do **not start from scratch**
- **local capabilities** condition which new activities are feasible to develop in a region
- local capabilities provide **opportunities** but also set **limits** to the diversification process in a region
- region is more likely to diversify into new activities **related to existing activities in region** that provide local capabilities on which new activities can draw

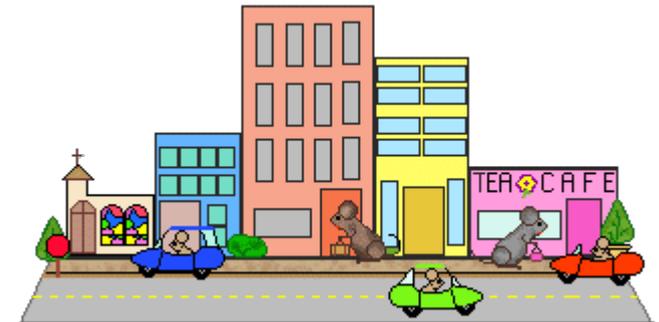
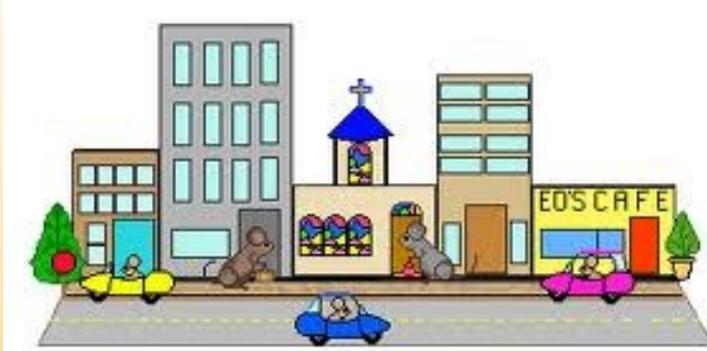


## related diversification

## unrelated diversification

### region A

### region B



studies: **related diversification is rule**, unrelated diversification the exception (Hidalgo et al 2018)



## relatedness and regional diversification

- Hidalgo, Klinger, Barabasi & Hausmann (2007)  
how countries build CA in new export products
- **national capabilities** condition which new export products will be feasible to develop
- countries develop new export products that are **closely related** to existing export products
- countries with higher **related variety** have more opportunities to diversify and sustain higher economic growth rates
- studies on **regional capabilities** and diversification in regions (Neffke et al. 2011)





## relatedness and regional diversification

- **micro-perspective:** novelty creation is a classic Schumpeterian question: new or incumbent firms?
- EEG focuses on **agents of structural change in regions:** firms from the outside (Neffke et al. 2018) and individuals/groups from outside, like migrants
- **economic impact of unrelated diversification** seems to be substantial at some stages of development of countries (Pinheiro et al. 2019)
- **Smart Specialization policy** in the EU



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**thank you for your attention!**



# Economic geography

<b>Key issues</b>	<b>Neoclassical</b>	<b>Institutional</b>	<b>Evolutionary</b>
<b>Methodology</b>	Deductive Formal modelling	Inductive Appreciative theorizing	Both Both
<b>Key assumptions</b>	Optimising agent A-contextual	Rule-following agent Contextual (Macro)	Satisficing agent Contextual (micro)
<b>Conceptualization of time</b>	Equilibrium analysis Micro-to-macro	Static analysis Macro-to-micro	Out-of-equilibrium analysis Recursive
<b>Geography</b>	Neutral space Transport costs	Real place Place dependence	Real space Path dependence

Source: Boschma and Frenken (2006)