Evolutionary Economic Geography: A review

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RRI Summer School
Belfort, August 28-30, 2013
Selected list of publications

- Boschma and Lambooy (1999) *Journal of Evolutionary Economics*
- Boschma and Frenken (2006) *Journal of Economic Geography*
- Martin and Sunley (2006) *Journal of Economic Geography*
- Special issue in *Journal of Economic Geography* (2007)
- Special issue in *Economic Geography* (2009)
- Boschma and Frenken (2011) *Journal of Economic Geography*
- Papers in Evolutionary Economic Geography
  [http://econ.geo.uu.nl/peeg/peeg.html](http://econ.geo.uu.nl/peeg/peeg.html)
Evolutionary Economic Geography

- EEG combines evolutionary economics and economic geography
- Its ambition is to provide a general framework to understand economic processes in both historical and spatial contexts
- It reasons from the past to explain the present: “the explanation to why something exists intimately rests on how it became what it is” (Dosi, 1997, Economic Journal)
- It reasons from firm demography (entry-exit, spinoff, M&A)
- Dynamics stem from the recombination and selective transmission of knowledge and routines among firms in space and time
- EEG explains the uneven spatial distribution of economic activity as the outcome of contingent, yet path-dependent historical processes
- Applications: clusters, networks, regional growth
## Comparison

<table>
<thead>
<tr>
<th></th>
<th>Neoclassical (economics)</th>
<th>Institutional (geography)</th>
<th>Evolutionary (innovation studies)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Methodology</strong></td>
<td>Deductive</td>
<td>Inductive</td>
<td>Both</td>
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<tr>
<td></td>
<td>Formal modelling</td>
<td>Appreciative theorizing</td>
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<tr>
<td><strong>Key assumptions</strong></td>
<td>Optimising agent</td>
<td>Rule-following agent</td>
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<td></td>
<td>A-contextual</td>
<td>Contextual (Macro)</td>
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<tr>
<td><strong>Time</strong></td>
<td>Equilibrium analysis</td>
<td>Static analysis</td>
<td>Out-of-equilibrium analysis</td>
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<td>Micro-to-macro</td>
<td>Macro-to-micro</td>
<td>Recursive</td>
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<tr>
<td><strong>Geography</strong></td>
<td>Neutral space</td>
<td>Real place</td>
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<tr>
<td></td>
<td>Transport costs</td>
<td>Place dependence</td>
<td>Path dependence</td>
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</table>

*Source: Boschma and Frenken (2006)*
Structure of the remainder of the lecture

Three main empirical contributions of EEG thus far:

1. clustering as an evolutionary process
2. structure and evolution of networks in space
3. agglomeration externalities and regional growth

See: Boschma and Frenken (2011) *Journal of Economic Geography*
Clustering as an evolutionary process

• regional entry rates depend on number of existing firms in the industry and related industries (organizational-ecological principle)

• spinoff dynamics: successful firms produce more and more successful spinoffs at the regional level (evolutionary principle)

• WLO: a cluster emerges almost randomly from few successful firms

• little evidence, if any, for localization economies

• location of clusters is largely random, though regions with related industries have a higher probability to create a new industry (Klepper 2007 Management Science, and the famous “Detroit-dummy”)

• industry evidence: cars, tire, semiconductors, publishing, laser, fashion design, video game, plastics, etc. (for a review Frenken et al. 2011 Ecis working paper series, Eindhoven)
questions that remain

• true for each industry?

• what spinoffs really inherit from parent organizations?

• endogeneity: do better organizations attract better employees in the first place?

• what determines the fidelity of transmission?

• what are policy implications for firms and governments?
Structure and evolution of networks

- Firm heterogeneity: some (cluster) firms are strongly connected, while others are not (Giuliani 2007, *Journal of Economic Geography*)

- Network formation (Balland 2012, *Regional Studies*)
  - firm features (e.g. absorptive capacity)
  - proximity (geographical proximity being only one of them)
  - Structural characteristics (preferential attachment, closure)

  - Proximity changes as a consequence of network linkages
  - Effect of proximity may change over the lifecycle
Example of recent work:

- PhD thesis 2013 Sjoerd Hardeman Eindhoven University of Technology

Explaining network relations by (Boschma 2005, *Regional Studies*)

- Cognitive proximity
- Social proximity
- Institutional proximity
- Organizational proximity
- Geographical proximity

Characterizing “mode 1” and “mode 2” knowledge production (Gibbons et al. 1994, *The New Production of Knowledge*, Sage)

Comparative analysis (e.g., Europe – North America)
Questions that remain

• what is going on in networks, anyway?
• directed or undirected networks?
• endogeneity: do networks enhance performance, or do firms want to connect to well-performing firms?
• community structures (Girvan and Newman 2002, *PNAS*)
• what about an evolutionary theory of infrastructure networks (PhD thesis 2013 Sandra Vinciguerra at Utrecht University)
Agglomeration externalities and regional growth

• related variety and spatial externalities

- regional growth: not necessarily a question of “MAR externalities versus Jacobs’ externalities” (Glaeser et al. 1992, *Journal of Political Economy*)

- what matters for regional growth: sectors that are technologically, or otherwise, related in a region

- the higher related variety in a region, the higher regional growth: effective knowledge transfer requires some but not too much cognitive proximity between sectors in a region (Frenken et al. 2007, *Regional Studies*)

- empirical studies on regional growth in the Netherlands, Italy, Finland, Britain, Spain and Germany (for a short review, see Castaldi et al. 2013, *Ecis working paper series*, Eindhoven)
Castaldi, Frenken, Los, 2013. “Related variety, Unrelated Variety and Technological Breakthroughs”

- **Ecis working paper series 2013**

- **Hypotheses:**

  - Related variety facilitates innovation in general,
  - Unrelated variety facilitates technological breakthroughs

### Table 1: DV: NUMPATENTS

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<thead>
<tr>
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<th>Model 1</th>
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### Table 2: DV: SHARESUPER

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Countries and regions tend to diversify into related products, and are more successful if doing so (Hidalgo et al. 2007, Science; Neffke et al. 2011, Economic Geography).

If you are specialised in the more dense parts of the product space, you have more opportunities to diversify and sustain higher growth.
questions that remain

- How to measure relatedness

- need to measure the effect of related variety not only at the regional level but also at the firm level

- need to open the black box of local knowledge spillovers between related industries: through which mechanisms (like labor mobility, spinoffs, networks, KIBS, etc.)

- need to distinguish between different stages of the industry life cycle: e.g. does related variety matter along all stages of the industry life cycle? (Henderson et al., 1995, *Journal of Political Economy*)
Conclusions about Evolutionary Economic Geography

• Outline of some recent empirical advances in EEG

• EEG is still under construction: some successful applications, but many gaps remain

• Promising topics ahead:
  − development studies
  − multinational organizations
  − global value chains
  − demography
  − geography of transitions

• Strong policy implications, but weak policy prescriptions

• Largely consistent with EU’s “Smart Specialisation Strategy”