



Constructing Regional Advantage in Institutionally Thin and Fragmented Metropolitan Regions: The Role of Higher Education

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CIRCLE (Centre for Innovation, Research and Competence in the Learning Economy)

- New multidisciplinary centre of excellence in innovation system research at Lund University (July 2004)
- CIRCLE is financed by the Swedish Agency for Innovation Systems (VINNOVA), Lund University and Blekinge Technical University 2004-2010, and from 2006 for 10 years by the Swedish Research Council (Linnaeus grant)
- In autumn 2007 co-location of research and teaching in innovation and entrepreneurship together with LUIS (Lund University Innovation System) at LUCIE (Lund University Centre for Innovation and Entrepreneurship)
- Becoming one of the largest centres in Europe
- <http://www.circle.lu.se/>



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What is Constructing Regional Advantage

- New regional development strategy
- Advocating a more pro-active and collaborative approach
- Addressing system failures of weak connectivity within and between (regional) innovation systems
- Promoting innovativeness on individual and systems levels to meet challenges of the globalising knowledge economy



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From competitive to constructed advantage: Regional Policy Challenges in a Globalising Knowledge Economy

- Imitation and adaptation is not any longer a sufficient strategy for regions in the long run (cost-based, low road strategy). Unique advantages have to be actively constructed (innovation-based, high-road strategy). However, innovation can build on cost advantages
- Industrial renewal takes place in-between and beyond existing sectors – need for transcending traditional sector policies (platform policy)
- Innovation through combining existing knowledge, technologies and competencies with new generic technologies (IT, biotech (green and white))
- How to shape conditions for constructing regional advantage?



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From competitive to constructed advantage

- *Competitive* advantage: too strong focus on markets and rivalry as selection mechanisms as well as a too narrow approach to the creation of endogenous capacity of regions to learn and innovate as primarily being based on co-location of firms in clusters and by placing the state in the same peripheral position as 'chance' in Porter's diamond model
- *Constructed* advantage: acknowledges more the important interplay between industrial dynamics (knowledge bases) and institutional dynamics (i.e. different knowledge bases need different kinds of institutional support) as well as private-public complementarities in policy making by a stronger focus on actors, agencies and governance forms (addressing *system failures* – weak *connectivity* within and between RIS).



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What are Regional Innovation Systems (RIS):

- A RIS is constituted by two sub-systems and the systemic interaction between them (and with non-local actors and agencies):
- The *knowledge exploration and diffusing sub-system* (universities, technical colleges, R&D institutes, technology transfer agencies, business associations and finance institutions)
- The *knowledge exploitation sub-system* (firms in regional clusters as well as their support industries (customers and suppliers))



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Policy challenges: Institutionally thin (peripheral) and fragmented metropolitan regions

- *Institutionally thin regions*
- Less innovative in comparison to more agglomerated regions
- Less R&D intensity and innovation
- A less developed knowledge infrastructure (universities and R&D institutions)
- Suffering from institutional thinness
- *Fragmented regions*
- Many and diverse industries/business services
- Lack of dynamic clusters of (local) innovative firms and knowledge spill-overs (unrelated variety of urbanisation economies)
- R&D departments and headquarters of large firms
- Many and high quality universities and public research organisation but weak industry-university links (weak connectivity in RIS)



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Policy responses: The role of HEI in regional development in institutionally thin regions

- Attract and retain innovating firms
- Link firms with technological resources outside the region using e.g. brokers – absorptive capacity key resource both for gatekeepers to access external knowledge and for securing the intra-regional diffusion of this knowledge to local firms
- Attract/retain highly-skilled workers – raise absorptive capacity through mobility schemes
- Promotion of networking between firms and clusters at various geographical scales
- The role of HEI is to provide relevant knowledge for these tasks through dedicated educational programs



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Policy responses: The role of HEI in regional development in fragmented metropolitan regions

- Provide bridges between firms and scientific and technological resources by promoting university-industry interaction and improving connectivity in RIS
- Foster a more collaborative spirit and more strategic orientation in the regions (learning to innovate)
- The role of HEI is:
 1. to link locally produced human capital to the needs of local firms (but not through dedicated educational programs – catering for diversity/related variety),
 2. to improve industry-university relations to advance research cooperation



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How to develop, attract and retain well-educated people (talents) in peripheral and metropolitan regions

- The increasing importance of people climate
- People do not follow jobs, but jobs in high-tech and creative industries follow people
- In the new economy the crux is to improve people climate by creating and cater for diversity, openness and tolerance in addition to more normal factors of urban attractiveness such as a rich cultural scene etc.

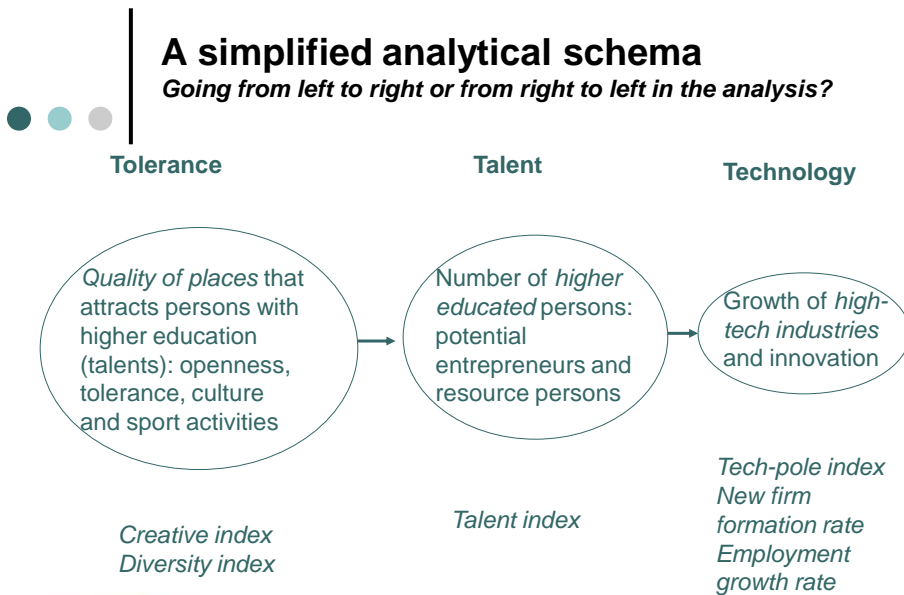
(Florida: *The rise of the creative class*, 2002)



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A simplified analytical schema

Going from left to right or from right to left in the analysis?



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The Urban turn: Creative cities

- Constellations of *talents and creative people* are most commonly found in *large city regions* where the *diversity of urbanization economies* is more abundant. This, together with other factors such as labour markets characterised by high demand for qualified personnel, cultural diversity and tolerance, low entry barriers and high levels of urban service, largely determine the economic geography of talent and of creativity, both of which display concentration to large cities.

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Agglomeration economies and optimal cognitive distance

- *Urbanisation* economies – *diversity* promoting *creativity*? However, can knowledge spillover take place between sectors that are unrelated (portfolio vs. knowledge spillover effects)?
- Trade-off between *cognitive distance*, for the sake of *novelty*, and *cognitive proximity*, for the sake of efficient *absorption*. Information is useless if it is not new, but it is also useless if it is so new that it cannot be understood



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Related variety (spillover effects)

- *Related variety* is defined as sectors that are related in terms of shared or complementary *knowledge bases* and competences
- One of the driving *forces* behind urban and regional growth due to knowledge spillover
- Acknowledge that *generic* technologies have a huge impact on economic development (e.g. green and white biotech)
- *Related variety* combines the strength of the *specialisation* of *localisation* economies and the *diversity* of *urbanisation* economies



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Business Climate vs. People Climate

- **Business climate:**
 - Clusters and Regional Innovation Systems emphasizing *localisation* economies
 - Not discriminating along an urban-rural dimension
- **People climate:**
 - Focusing on *diversity*, *creativity* and *tolerance* emphasizing *urbanization* economies
 - Such an environment attracts *talents* which in turn attracts and generates *innovative*, *knowledge-based* economic activity



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The Urban Turn: What about the 'ordinary region'?

- The *Creative class* (30-40 % of people in the labour market) belongs to *different knowledge bases* (analytical, synthetic and symbolic)
- Different *preferences* and *trade-offs* between *firms*, *occupations* and *places*
- *Synthetic/engineering* knowledge base: people follows jobs (*business climate* still most important)
- *Analytical/science* and *symbolic* knowledge bases: jobs follow people (*people climate* more important, especially for people working in *creative*, *symbolic* based industries)
- Thus, focus on *people climate* should *complement* (not substitute) the traditional focus on business climate



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Differentiated knowledge bases: A typology

Analytical (science based)	Synthetic (engineering based)	Symbolic (artistic based)
Developing new knowledge about natural systems by applying scientific laws; <i>know why</i>	Applying or combining existing knowledge in new ways; <i>know how</i>	Creating meaning, desire, aesthetic qualities, affect, symbols, images; <i>know who</i>
Scientific knowledge, models, deductive	Problem-solving, custom production, inductive	Creative process
Collaboration within and between research units	Interactive learning with customers and suppliers	Learning-by-doing, in studio, project teams
Strong codified knowledge content, highly abstract, universal	Partially codified knowledge, strong tacit component, more context-specific	Importance of interpretation, creativity, cultural knowledge, implies strong context specificity
Meaning relatively constant between places	Meaning varies substantially between places	Meaning highly variable between place, class and gender
Drug development	Mechanical engineering	Cultural production, design, brands

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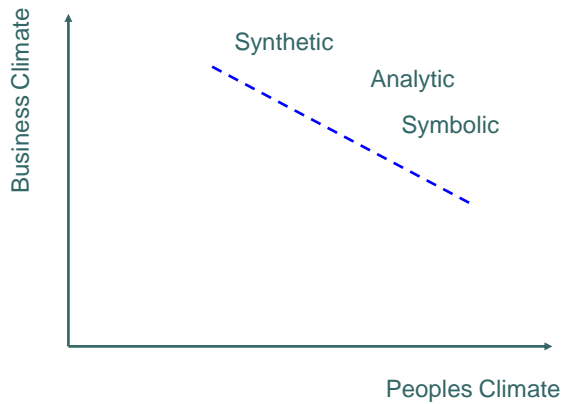
Differentiated knowledge bases

- Characterise the nature of the *critical knowledge* which the innovation activity cannot do without (hence the term 'knowledge base' understood as an ideal type)
- Makes it wrong to classify some types of knowledge as more advanced, complex, and sophisticated than other knowledge (e.g. to consider science based (*analytical* knowledge) as more important for innovation and competitiveness of firms and regions than engineering based (*synthetic*) knowledge or artistic based (*symbolic*) knowledge). Different knowledge bases should rather be looked upon as complementary assets

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Theoretical relation



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Occupational classes of knowledge bases

Synthetic knowledge base	Analytic knowledge base	Symbolic knowledge base
<ul style="list-style-type: none"> Architects, engineers and related professionals Physical and engineering science technicians Computer associate professionals Optical and electronic equipment operators Ship and aircraft controllers and technicians Safety and quality inspectors Life Science technicians 	<ul style="list-style-type: none"> Physicists, chemists and related professionals Mathematicians and statisticians Computing professionals Life science professionals College, university and higher education teaching professionals 	<ul style="list-style-type: none"> Writers and creative or performing artists (includes designers)

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Indicators

- People Climate:
 - Bohemians pr. 1000 inhabitants
 - Openness Index – share of non-western population
 - Integration Index– difference between Swedish and foreign born population on the labour market (18-64)
- Business Climate
 - TechPole Index
 - Patents pr. 1000 in employment



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Results from Sweden

- The three types of knowledge bases represented here are ideal types and only includes a small share of the overall economic activity – app. 11%
- Some regions have it all and consequently gets high scores on both BC and PC indicators
- A tendency for places with the highest concentrations of synthetic knowledge base workers to get lower PC scores than places with the highest concentrations of *analytical* knowledge bases (in the largest city regions)



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Results from Sweden

- The empirical difference between PC and BC for respectively analytic and symbolic dominated places is not as explicit as the theoretical relation
- The highest concentrations of *symbolic* knowledge base workers tend to co-exist with high concentrations of synthetic or analytical knowledge base workers (in the largest city regions)
- Improving the results of the trade-off between PC and BC by:
 - having both occupation (ISCO) and industry (NACE) information in the same dataset
 - splitting up regions into small units, e.g. inner city, core city, suburban etc.



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Conclusions: Institutionally thin regions – the role of HE(I) in regional development

- Higher education and higher educational institutions play a key role in regional development
- Development of human capital through dedicated educational programs to cater for local needs and to initiate positive lock-in and improve absorptive capacity
- Talents with synthetic knowledge base (engineering) occupations can be attracted and retained
- Use HEI as technology transfer agencies to access external knowledge. HEI often have higher absorptive capacity and are better externally connected than local firms



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Conclusions: Fragmented metropolitan regions – the role of HE(I) in regional development

- Main challenge for HEI with respect to regional development is to become the strategic node in the knowledge exploration and diffusing subsystem of the RIS – improve the connectivity in the RIS
- Another challenge is to provide high class education to attract global talents both as teachers and students
- Offer relevant educational programs for the diversity of demands in metropolitan regions with an eye on promoting related variety
- Key resource in attracting R&D divisions of TNCs



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