

The Role of Universities in Regional Development

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Innovation in a globalized economy:

On the role of knowledge

dynamics, institutions and innovation policies

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Introduction

Role of universities in regional development has been of central interest and an enduring theme in academic & policy debates over the past years

Universities: Multiple Functions & Outputs (Drucker & Goldstein 2007)

- Creation of knowledge
- Knowledge reservoirs
- Antenna function
- Human capital creation
- Transfer & commercialization of knowledge
- Leadership role in regions
- Influence on image and identity of regions
- Social & societal engagement



Introduction

- Complete picture of universities' contributions to regional development is still missing (Uyarra 2010, Fromhold-Eisebith & Werker 2013)
- Lack of consensus: “nature” of the role of universities
From the “ivory tower model” to ... ?

Aim:

- Role of universities in regional development:
Conceptualizations and policy implications
 - Entrepreneurial university model
 - RIS university model
 - Mode 2 university model
 - Engaged university model
- Empirical insights: Policy institutions in Sweden and Austria



Entrepreneurial University Model

(Etzkowitz 1983, Clark 2001)

- Emergence of an **entrepreneurial paradigm** at universities:
Third mission (‘economic development’) complements traditional missions (research and teaching)
- Internalization of technology transfer capabilities - capitalization of knowledge (Etzkowitz 2004)

Universities’ tasks: production **and** transfer & commercialization of knowledge

Aims: Revenue generation for the university and promotion of regional & national economic development

- **Contributions to regional development:**

Proactive commercialization of academic knowledge by universities themselves (Grimaldi et al. 2011):

- Patenting
- Licensing of inventions / technologies
- Academic spin-offs



Entrepreneurial University Model

- Changes in internal organization of universities and emergence of new governance modes (Goldstein 2010):
 - Institutionalization of interface & seed-bed functions (TTOs, specialists assisting faculty entrepreneurs, etc.)
 - Commercialization as evaluation criterion → new reward & incentive structures for faculty
 - Economic rationality complements cognitive rationality



Entrepreneurial University Model

Critique:

- Lack of solid “micro foundation” (Goldstein et al. 2013, Perkmann et al. 2013):

Research on attitudinal & motivational aspects of commercialization:

- Academic entrepreneurship has not become widely institutionalized in terms of widespread ‘taken-for-grantedness’ and acceptance by faculty
- Financial incentives are not key motive for researchers to establish contacts to industry, but: learning opportunities: field-testing opportunities for own research, obtaining new insights
- Effects from use of IPRs often below expectations (Geuna & Nesta 2006, Breznitz & Feldman 2012)
- No automatic correspondence between third mission and needs of the regional economy (Martinelli et al. 2008)
- Entrepreneurial university as global phenomenon with isomorphic development path? – Ignorance of diversity of universities & regional contexts (Philpott et al. 2011)



RIS University Model

Regional innovation as collective learning process – interplay between various actors and organizations: universities as one player amongst others

Contributions to regional development:

Broad set of mechanisms of knowledge transfer:

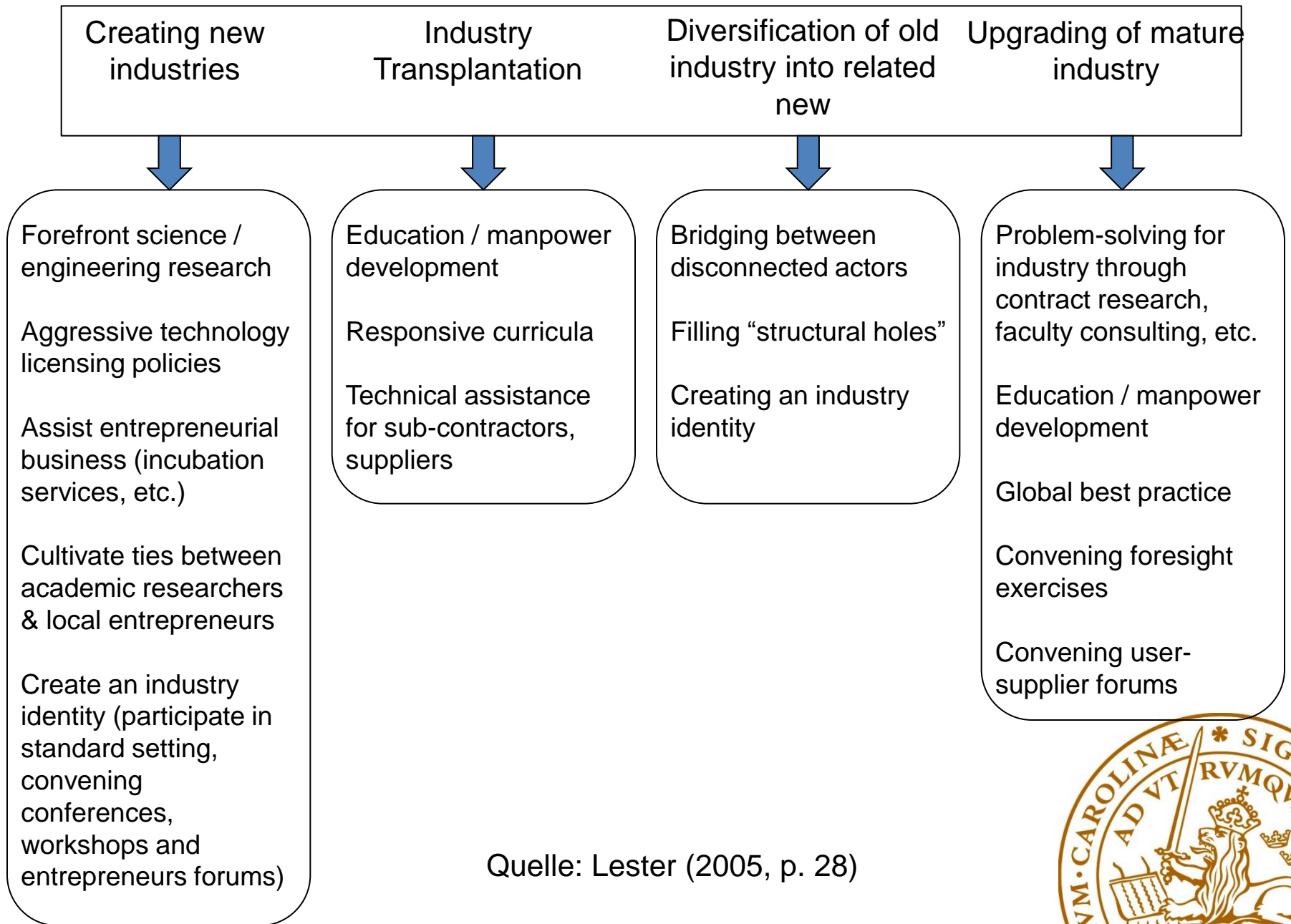
- Commercialization
- Collaborative research, contract research, consulting
- Providing ad hoc advice, networking with practitioners
- Knowledge transfer through skilled graduates
- Universities as actors in cluster initiatives & regional innovation strategies

→ emergence of the “connected university” (Kitson et al. 2009)

Role of universities differs, depending on

- RIS configurations (Tödtling & Trippel 2005)
- prevailing knowledge bases (Asheim & Gertler 2005)
- regional growth paths (Lester 2005)





Quelle: Lester (2005, p. 28)



RIS University Model

Critique:

- Early contributions to the RIS literature: Over-emphasis of regional knowledge circulation (Faggian & McCann 2009)

More recent work: universities as attractors of talent to the regional economy; enabling firms to access global knowledge (Lawton Smith 2003, Bramwell & Wolfe 2008)

- Narrow perspective: focus on forms of engagement that target economic dimension of regional development



Mode 2 University Model

- Fundamental transformation of the science system: generation of „relevant” knowledge’ & redefinition of the relation between universities and society: increase of interactions & interfaces:
 - strategic research (Irvine & Martin 1984)
 - strategic science (Rip 2004)
 - post-normal science (Funtowicz & Ravetz 1993)
 - post-academic science (Ziman 2000)
- New production of knowledge (NKP) theory: Gibbons et al. (1994), Nowotny et al. (2001): discusses the role of universities in relation to new forms of knowledge production

New forms of knowledge production (mode 2) complement traditional ones (mode 1):

- Mode 1: academic, disciplinary, homogenous, autonomous
- Mode 2: applied, transdisciplinary, heterogeneous, reflexive, social accountability, new forms of quality control (economic, political, social, cultural criteria)



Mode 2 University Model

Contributions to (regional) development:

- Focus on knowledge that is produced in the context of application → production of knowledge that is highly relevant and connected to its environment
- Orientation on practical applications and societal needs
- Universities as co-producers of knowledge relevant to the regional industrial context; complex practice-based knowledge production
- Engagement in research projects to solve regional problems such as urban planning, transportation, environmental and health issues

Critique:

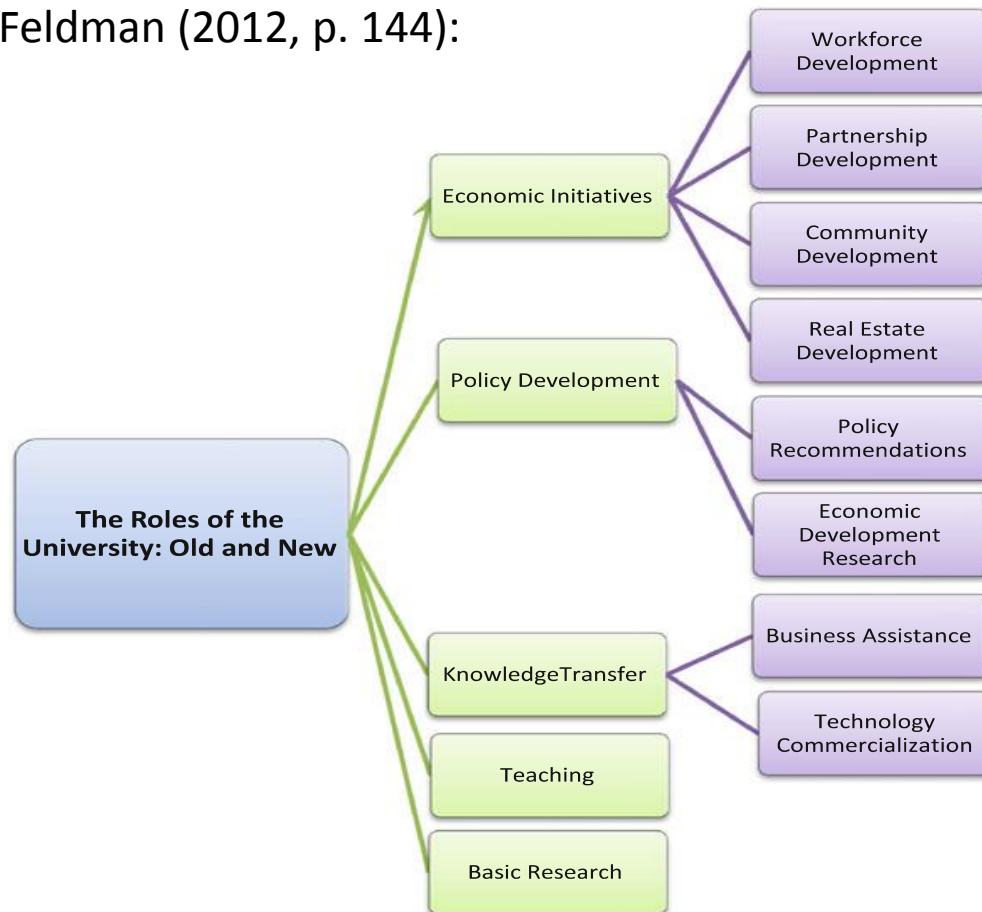
- Mode 2 is limited to a small sector of the entire science system: technology assessment, risk research, environmental and climate research (Hessels & van Lente 2008)
- Lack of inclusion of institutions, systems; neglect of natural eco-system and environment (Carayannis & Campbell 2012)



Engaged University Model

Many different versions:

- Goldstein (2010): land-grant universities (US); ‘scholarship of application’ (Boyer 1990)
- Breznitz & Feldman (2012, p. 144):



Engaged University Model

(Chatterton & Goddard 2003, OECD 2007)

- Comprehensive & adaptive role of universities in regional development (adaptation of university functions to regional needs)
- Integration of regional focus in all key functions of universities

Contributions to regional development:

Economic, social, political & civic roles:

- Skills enhancement
- Contributions to social, cultural and environmental development
- Participation in governance
- integrative nodes in globally-regionally configured innovation systems



Engaged University Model

Empirical work (Boucher et al. 2003, OECD 2007):

- Scope and depth of regional engagement is weak
- Engagement depends on age and location of HEIs:
 - low: older HEIs and HEIs located in metropolitan regions
 - higher: younger universities located outside larger cities

Critique (Uyarra 2010):

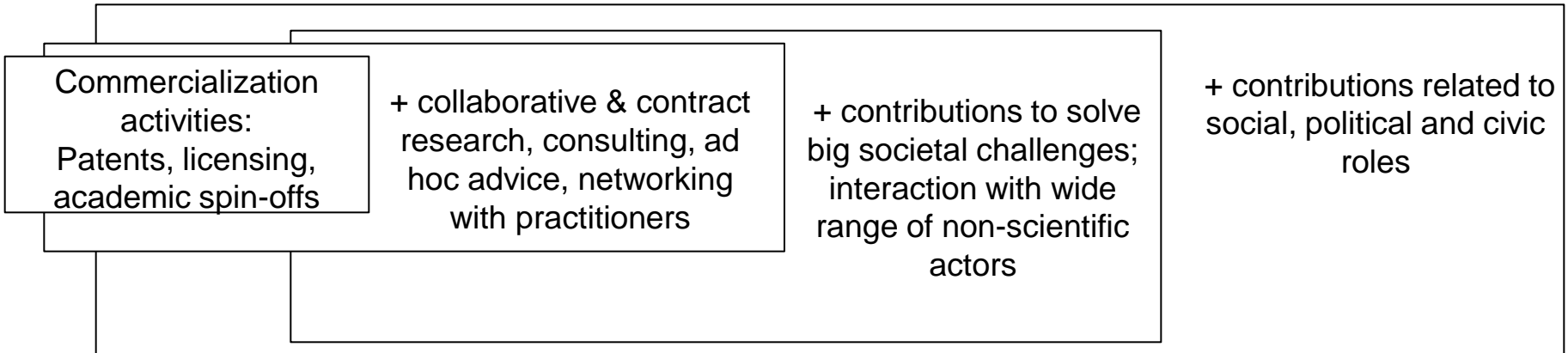
- Little systematic evidence of benefits, mechanisms, effects (May & Perry 2006)
- Overestimation of capabilities and propensity of HEIs to realign their activities in response to regional needs (Gunasekara 2006)



Role of universities in regional development

Narrow view (economic / technological dimension)		Broad view (social, cultural, societal dimension)	
Entrepreneurial university	Regional Innovation Systems (RIS university)	NPK (Mode 2 university)	Engaged University

Activities by universities



Policy implications

Regulation IPRs Support for TTOs, science parks, incubators Promotion of academic spin-offs	Strengthening of the role of universities as actors in RIS Integration of universities in regional cluster initiatives & innovation strategies	Public funding of inter-, transdisciplinary research Funding of research that considers societal challenges	Broad mix of policies (various levels) Integration of universities in innovation & governance networks
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The role of universities in regional development

Policy institutions in Sweden and Austria



Sweden

Characteristics of the university sector:

- Spatial decentralization and expansion of the HEI system in the 1970s and 1980s (Andersson et al. 2004)
- Today: 50 HEIs, 13 public sector universities (Högskoleverket 2011)
- Swedish universities play an active role in regional development processes (Pålsson et al. 2009, Lindqvist et al. 2012)
- Strategies and activities depend on type HEI type:
 - New universities: Focus on education & regional needs
 - Traditional universities: research-related knowledge transfer



Sweden

Policy institutions (national – laws & IPR regulation)

- National government has responsibility for HEIs concerning a wide range of areas (legislation, regulation, funding, granting of degree awarding powers and university status)
- Higher Education Act (1992): “The institutions of higher education shall ... cooperate with the surrounding community and give information about their activities”
- Higher Education Ordinance (2009:45): “The mandate of higher education institutions shall also include third stream activities and the provision of information about their activities, as well as ensuring that benefit is derived from their research findings”
- IPR: „Professors‘ Privilege“



Sweden

Policy institutions (national – incentives):

- Since 1990s: promotion of Mode 2 research activities (Edqvist 2003): little evidence of major changes in structure and content of universities' research activities (Benner & Sörlin 2007)
- **VINNOVA:** funding for needs-driven research; promotion of cooperation between firms, universities and public sector in the Swedish innovation system

Support of establishment of Centres of Excellence (VINN Excellence), promotion of collaboration between HEIs, firms and policy actors and need-oriented research in RIS (VINNVÄXT)

- **Tillväxtverket:** Regional cluster programs and “Innovationsbron” (promotion of commercialization and use of publicly funded R&D: seed investor in early growth phase of new business)
- **Knowledge Foundation (KK-stiftelsen):** Focus on new universities: promotion of collaboration between HEIs and companies (programs: HÖG and KK environments)

→ Promotion of RIS university model



Austria

Characteristics of the university sector:

Co-existence of 21 universities and several “universities of applied sciences” (UAS)

- Universities: Humboldtian idea of unity of research and teaching;
 - „full-scale“ universities (with a full range of faculties)
 - „specialized“ universities (technical, medical and arts universities)
- UAS: practice-oriented professional education at university level

Policy institutions (national – laws & IPR regulation):

HEI sector is regulated by Federal Ministry of Science and Research at the national level

- New university act (2002):
 - Universities’ tasks include “promotion of the use and practical application of their research findings, and of community involvement in efforts to promote the advancement and appreciation of the arts”
 - changes in regulation of IPR: granting IPR emanating from publicly funded research to universities



Austria

Policy institutions (national – incentives):

- Many different national policy programs to stimulate collaboration between universities and industry since the 1990s: COMET (competence centers), BRIDGE, COIN, Christian-Doppler Labors
- More recently: stimulation of academic spin-off processes (AplusB program)
- Initiatives to promote university engagement in social development are rare

→ Promotion of RIS university model

Regional policy level (regional – incentives):

- Formal competences to develop their own regional innovation policies – integration of universities varies between regions:
 - Rather low in Vienna
 - Strong in traditional regions (Upper Austria and Styria)



Conclusions

Role of universities in regional development → competing conceptual models:

- Entrepreneurial university model
- RIS university model
- Mode 2 university model
- Engaged university model

→ different strategies & roles of universities and different potential impacts

Role of university in regional development depends on:

- Type of university
- Regional characteristics

→ context-sensitive policy approaches



**Many thanks for your
attention!**

