

Dissertation Research Proposal at the Leuphana University Lüneburg

**Universities as Key Agents for Innovation and
Knowledge-based Regional Development –
A Triple Helix Study of the Lüneburg NUTS 2 Region**

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Background

Ever since its institutionalization throughout the middle age, the university has played a fundamental role in the conservation and transmission of knowledge. During the 19th century the university started an ongoing transition from a teaching to a research institution (Graham and Diamond, 1997). The 20th century witnessed a massification and specialization of higher education institutions, with an increase of its influence on the economic and social development domains. Nowadays, according to Youtie and Shapira (2008), the societal role of the university is not anymore that of conventional research and education functions, but increasingly more to serve as an “innovation-promoting knowledge hub” for regional development.

In today’s global economy, knowledge is widely recognized as an essential element for the competitiveness of countries, regions and companies. Huggins and Izushi define the knowledge-base of an economy as “the capacity and capability to create and innovate new ideas, thoughts, processes and products, and to translate these into economic value and wealth”. Henry Etzkowitz, (1998) has noted that recently a growing important contributor of economic expansion, and more specifically of regional development, has come to be the knowledge and research developed within or in conjunction with universities.

The transition to a knowledge-based society is the “basic premise” of the triple helix model (Etzkowitz & Klofsten, 2005). The Triple Helix model as defined by Professor Henry Etzkowitz (2002) is "a spiral model of innovation that captures multiple reciprocal relationships in the process of knowledge capitalization". The three helices that make up the spiral are university, industry, and government (Figure 1). While industry and government were the primary institutions of the industrial societies, university, industry and government comprise the key institutional skeleton of the knowledge-based societies (Etzkowitz, 2008).

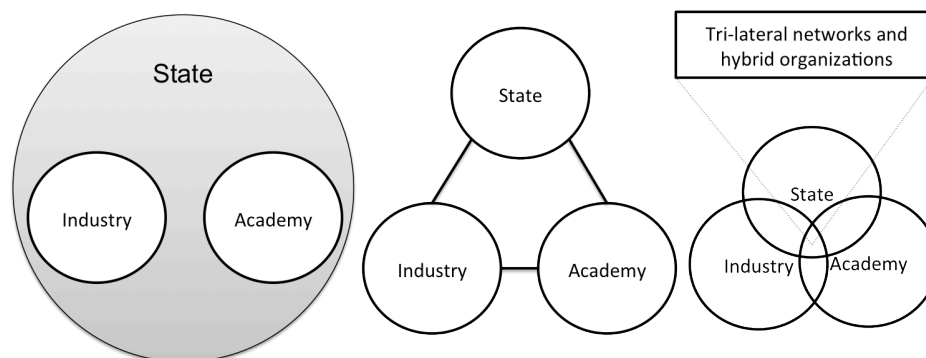


Figure 1: From the statesman, Laissez-faire to the Triple Helix. Source: Etzkowitz & Leydesdorff 2000.

Relevance

The globalized economy of the 21st century increases the competitive pressures on the economic factors. As commerce and industries become global and trade barriers continue to diminish, innovation and knowledge turn out to be crucial factors for nations and regions that need to gain competitive advantages, which are essential for economic growth and social development. Consequently Etzkowitz and Klofsten (2005) argue that in most successful cases, knowledge-based economic progress derives from the creation of what they call an “Innovating Region”.

Etzkowitz (2008) outlines that a knowledge-based region “is a consciously constructed entity undertaken by a variety of actors, typically including a triple helix of government, industry and university”. Sometimes other spheres such as labor and social NGOs may be represented as well. Once such a region has been effectively established, it should have the capability to generate and navigate throughout technological paradigms. The academic and knowledge-base of an innovating region is key for the generation of new technologies and firms that would be capable of successfully competing in the new global economy (Dolfsma & Soete 2006).

Lüneburg Region

The Lüneburg Regierungsbezirk (administrative district) is located in northeastern Lower Saxony Land (state), north-central Germany. The Lüneburg administrative region is categorized as a NUTS 2 region, according to the European Union’s ‘Nomenclature of Territorial Units for Statistics’ (NUTS), which refers to states (Länder) as NUTS 1; sub-regions or district (Regierungsbezirke etc.) as NUTS 2; and district/county (Landkreis) as NUTS 3.

The Lüneburg Regierungsbezirk’s population is 1.702.179 (30. September 2004), with a relatively low density, averaging 110 persons per km (Encyclopedia Britannica, 2006). The economy is mainly dependent on primary sector activities such as sheep and cattle farming, forestry, and beekeeping. More recently the production of potatoes and rye has expanded with the introduction of artificial fertilizers to the sandy soils. Natural gas fields are found west of Uelzen. Tourism is growing, as the Lüneburger Heide becomes an increasingly popular holiday resort, especially among the people of Hamburg.

Lüneburg NUTS 2 region classifies, under the EU’s regional policy, as a convergence phasing-out region, namely regions with a GDP per head of more than 75 % of the EU-25 average but less than 75 % of the EU-15 average. There are 16 convergence ‘phasing-out’ regions for the 2007-2013 period, which qualify for EU funding aimed at strengthening regional economic development, employment and competitiveness. The European Union regional policy website (EU Regional Operational Programme for Lüneburg – ROPL, 2007) outlines the purpose and aim of the funding assistance for the Lüneburg NUTS 2 region. The primary goal of the assistance is to “improve and strengthen regional development and to create and secure permanent jobs through economic growth”. Likewise as one of four “priority axes” of the governmental assistance program, the administration intends to expand the region’s “capacity for innovation and knowledge society potential” (ROPL, 2007). Moreover the operational program seeks to expand the competitiveness of regional SMEs and foster innovation in universities, business and society.

The Leuphana University in Lüneburg is the major higher education institution in the region. In 2007 the university has been renamed and reorganized into a four transdisciplinary entities academic model, embedding three schools with research practices: College, Graduate School and Professional School, within the framework of a Research Unit (Remdisch, 2009). Among these three schools, the Professional School is particularly intended to foster knowledge transfer and strengthen the links between the university and the regional industry. Furthermore an Innovation Incubator has been established in 2010 with the purpose of supporting regional economy-linked research and transfer projects, assists local business and start-ups and promote cooperation among university, regional institutions and industry (Müller-Rommel).

Problem Statement and Research Question

The aforementioned governmental and institutional policy projects and the restructuring of the Leuphana University, in addition to the previously described economic challenges that face the

Lüneburg NUTS 2 region, fit altogether within a triple helix model for economic development. Hence, it presents us with a suitable case for studying the interactions among the three elements with the aim to determine whether or not, and to what extent the Leuphana University Lüneburg is playing a key role in the knowledge-based economic development of the region and in the transfer of knowledge and innovation to existing and new local enterprises.

According to the theory of knowledge-based regional development of Etzkowitz and Klofsten (2005) it is necessary to ensure the transit through the a) Incipient and b) Early stages of the transition towards a knowledge-based economy in order to ensure that the following stages of c) Consolidation and Adjustment and d) Self-sustaining Growth can be reached. Since the transformation plans and processes of the Lüneburg NUTS 2 region towards a knowledge-based regional economy are still in their incipient and early stages, a need to assess the nature and degree of the model's realizations arises, in accordance with the existing theoretical knowledge of the field, accepted literature and benchmark regions already studied in academia. In consequence, there is a necessity to evaluate what the makeup of the current and potentially desired interactions is and how they are shaped between the regional government, industry and academia towards achieving economic development in the region.

This investigation will be based on the hypothesis that universities operate as key agents for innovation and knowledge-based regional development, and will intend to accordingly prove this validity in the case of the Lüneburg NUTS 2 region.

The proposed study will aim to answer the following research questions: How do alliances and relations between university, industry and government promote innovation and knowledge-based regional development in the Lüneburg NUTS 2 region? More specifically, how extensive are these interactions and how they fit within a Triple Helix Model for economic development? This dissertation will use the triple helix model as a framework to study the economic development in the region and will further have the objective of recommending best strategies to foster knowledge-based economic growth through innovation and technology in the Lüneburg convergence region, given its advantages and limitations.

The suggestions deriving from this study could serve the different factors involved in the region to either acknowledge the correct implementation of their strategies, or to revise and improve their interactions and collaboration, specially since the development plans to transform the regional economy are still in their incipient and early stages. Moreover certain observations and conclusions from the case analysis may perhaps contribute to the knowledge in the field of study and serve as best practices for other regions facing similar challenges.

Methods and Research Material

A long dated debate has been going on in social sciences about the suitability of different research approaches and methods. While quantitative research inclines towards facts, figures and measurements and is objective rather than subjective in approach; qualitative research emphasizes interpretive perspectives where the enquiries are described as learning how to employ and apply knowledge and views from other disciplines (Bryman, 2004). It is also important to note that some level of objectivity may be intended in qualitative research, although there is a tendency for the researcher to be more involved with the subject, tending to a lack of objectivity when compared to quantitative research. As it will be subsequently exposed, the proposed research methodology will consist of two segments, arguing for a central quantitative scheme, complemented by supplementary qualitative measures.

The choice of research scheme will be concentrated on the form of the research question. At this point, the working title “Universities as key agents for innovation and knowledge-based regional development - A Triple Helix Study of the Lüneburg NUTS 2 Region” is not in the form of a question. Nevertheless the previously defined research questions recognize the scope of what will be studied and provide enough information to identify an applicable strategy. These questions ask for answers to the “how” form of questioning. Yin (2003) postulates an approach of different research strategies available to several relevant situations. There are three leading strategies that correspond to ‘how and why’ questions. They are experiment, history and case study (Table 1).

<i>Strategy</i>	<i>Form of research question</i>	<i>Requires control of behavioral events?</i>	<i>Focuses on contemporary events?</i>
Experiment	How, why?	Yes	Yes
Survey	Who, what, where, how many, how much?	No	Yes
Archival analysis	Who, what, where, how many, how much?	No	Yes/no
History	How, why?	No	No
Case study	How, why?	No	Yes

Source: Yin (2003)

Table 1: Relevant situations for different research strategies. (Source: Yin, 2003, p.5)

Yin (2003) affirms that “the distinctive need for case studies arises out of the desire to understand complex social phenomena” because “the case study method allows investigators to retain the holistic and meaningful characteristic of real-life events”, such as institutional interactions for example. In fact, case studies appear to be the favored scheme to attempt to answer “how” questions, in which the researcher has limited control over occurrences, or when the emphasis is on a contemporary phenomenon within an actual context (Yin 2003).

The planned research will therefore be based on a central case study methodology from which qualitative data for interpretation and analysis will be gathered. The research issues will emerge from the literature and will be interpreted through a focus of inquiry during observation, questionnaires and interviews.

Nonetheless, whereas the case study analysis informs us about “how” institutions and institutional arrangements carry certain functions, the analytical model focuses on the functions of selection environments in terms of outputs (Leydesdorff & Meyer, 2006). “At the research level and given a project, one is able to reduce the complexity by ‘black-boxing’ one uncertainty or the other” (Leydesdorff & Meyer, 2006). The Triple Helix framework provides an opportunity to relate the various perspectives.

In their “application of the triple helix model as heuristics”, Leydesdorff and Meyer (2006) propose an analytical model for studies based on the triple helix, in which the different perspectives of government, industry, and academia are traversed along orthogonal axes, then “simplified observables” can be valued as interaction effects among the functions. For instance, Figure 2 shows how observable units of analysis can be used for qualitative studies based on the triple helix analytical model. Leydesdorff and Meyer (2006) select the example of patents, which can be appreciated from the three different perspectives. According to them, “patents are codified from the perspective of patent legislation—since patents need to be upheld in courts when litigated—but they are supposed to function both institutionally to secure revenues for the knowledge production process and also economically as investments in the value of intellectual property on relevant markets”.

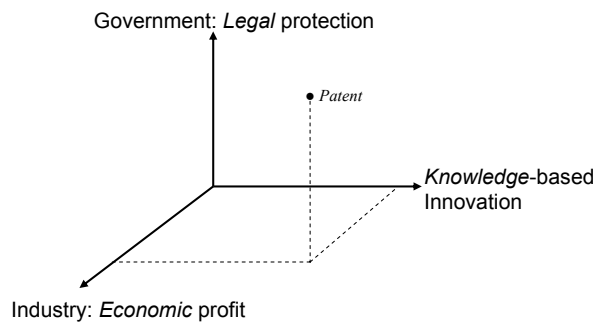


Figure 2: Analytical scheme for studying the Triple Helix. Source: Leydesdorff and Meyer 2006

In this study, “simplified observables” will be defined from a local triple helix perspective that will allow us to measure in quantitative terms the research questions, specifically related to the extend of contribution of the Leuphana University in the Lüneburg region to innovation and knowledge-based development. For instance some of the “simplified observables” to be defined and measure in the study could be: number and type of filed patents; number and nature of new enterprises registered (classified by industry and sector); and number of research projects, published papers, symposia or conferences; among others. The definition of these quantitative observables will be based on relevant acknowledged academic literature and on previous similar research studies.

Case study data can come from a variety of sources. Stake (1995) identified six sources from which qualitative research data are collected for case studies. “First, the nature of the case, particularly its activity and functioning; second, its historical background; third, its physical setting; fourth, other contexts, such as economic, political, legal, and aesthetic; fifth, other cases through which the case is recognized; and sixth, those informants through whom the case can be known”.

In the present study the methods of extracting data from the pertinent sources will comprise of: 1) in-depth interviews, focus groups and observations for the quantitative case study; and 2) secondary data sources as governmental or regional public databases, as well as previous similar studies for the quantitative segment of the investigation. Moreover an extensive literature review of the relevant knowledge in the field will include books, academic journals and articles, as well as institutional documents, specialized newspapers, presentations and other secondary data sources.

Timeline

Activity	Duration (months)	Words (approx.)
Final research proposal	2	4.000
Literature Review	5	12.000
Methodology	3	12.000
Data Gathering	10 (overlap previous)	
Data Analysis	8	20.000
Conclusions and implications	6	12.000
Introduction and summary	2	8.000
Final amendments and revisions	3	
Total	36 months (3 years)	70.000 (180 pages)

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