Universities in Regional Systems of Innovation: Has the Rural Research Center in Höfn Enhanced the Interaction Between the University and Local Actors?

Hjalti Nielsen

CIRCLE, Lund University
Masters Programme in Society, Science and Technology, 2008-2010

Specialization: Innovation and Economic Development in the New Europe: Regional, National and Supranational perspectives

15.688 Words
Universities in Regional Systems of Innovation: Has the Rural Research Center in Höfn Enhanced the Interaction Between the University and Local Actors?

by

Hjalti Nielsen

Student: Hjalti Nielsen
Email: hnielsen72@gmail.com
Supervisor: Cristina Chaminade
Specialization: Innovation and Economic Development in the New Europe: Regional, National and Supranational perspectives
Word Count: 15.688
Preface

I am a geographer and have for long been very interested in regional development, which is at the core of economic geography. The original idea to investigate the Institute of Rural Research (IRR) and its satellite centers in the rural regions of Iceland originated through many discussions with professor Karl Benediktsson, at the Department of tourism and geography at the University of Iceland in 2007. At that time these centers had just been established and we agreed that not enough time had passed for me to investigate how they effected their local environment. I finished my bachelor degree in 2007 and was fortunate enough to work as an assistant researcher at the Department of tourism and geography, but one of my projects there was done in participation with the Rural Research Center at Höfn (RRCH). In 2008 I moved to Lund for my master studies at CIRCLE, Lund University. One of the focus in my master studies was on systems on innovation, which includes a focus on the regional level. I developed my research idea regarding the IRR satellite centers further in the context of the literature in my studies at CIRCLE. When I reached the master thesis, at the end of my masters programme, I considered that enough time had passed for me to look at these rural centers, as the oldest center, the RRCH, was established in 2001. This thesis is therefore a final product of a long process which has been influenced by many various factors. I sincerely hope that it is also marks a beginning of a new journey for me, as not much research has been done on such small university centers in the rural periphery.
Abstract

The role of universities in regional systems of innovation (RISs) has become more visible in recent years as they have increasingly undertaken a "third task", which involves them more directly into cooperation with firms and various actors in society in general. The focus of this thesis is on the Rural Research Center at Höfn (RRCH), but it is located in the rural periphery of SE-Iceland. The aim is to investigate if the RRCH had managed to enhance the link between the university (knowledge and research) and local actors. It is also explore if and how this link had stimulated innovative activities within the region. The main results show that these centers had indeed managed to enhance this link and it had stimulated innovative activities, especially within the tourist-, cultural- and food industries. This had mainly been done through informal interactions based on tacit knowledge, where physical proximity between actors was very important. The results also show that the vast interaction of the RRCH with other local support organizations at Nýheimar was pivotal regarding the stimulation of innovative activities.

Key words: IRR, RRCH, Höfn municipality, Nýheimar, regional development, SIs, RISs, Triple Helix, innovation, tacit knowledge, academic knowledge, external links, informal interactions, participation
Acknowledgements

First and foremost I would like to thank my thesis supervisor, Dr. Cristina Chaminade, for her advice and guidance was pivotal for this project, and her positive attitude and presence was also highly inspirational. I would like to use the opportunity to thank professor Karl Benediktsson as he has been highly influential regarding my academic studies and also regarding both the initial and later steps of this project. I am very grateful for the travel grant that I received from the IRR, and I would like to express my sincere thanks to Rannveig Ólafsdóttir and Rögnvaldur Ólafsson, board members of the IRR for their support. At the Hornafjörður municipality I would like to thank all of my interlocutors for participating in my research and for making me feel very welcome. I give very special thanks to Dr. Þorvarður Árnason, but his help regarding my fieldwork was very important and valuable to me. Last, but not least, I would like to thank my lovely wife, Björg Þórdardóttir, for her everlasting support and understanding. I dedicate this thesis to her and our two sons, Axel Emil and Benedikt Flóki.
Table of Contents

Title Page .......................................................................................................................... i
Preface ................................................................................................................................. iii
Abstract ............................................................................................................................... v
Acknowledgements ........................................................................................................... vii
Table of Contents .............................................................................................................. ix
List of Tables ..................................................................................................................... xi
List of Figures .................................................................................................................... xi
List of Acronyms ................................................................................................................ xiii

1 Introduction ......................................................................................................................... 1
  1.1 The context ....................................................................................................................... 1
  1.2 Aim of the research and research questions ................................................................. 3

2 Theoretical framework ...................................................................................................... 5
  2.1 Point of departure ............................................................................................................ 5
  2.2 Different types of knowledge ......................................................................................... 5
  2.3 The wide manifestation of innovation ......................................................................... 7
  2.4 Systems of Innovation .................................................................................................. 9
  2.5 The role of universities in RISs ................................................................................... 12
  2.6 Policies on the regional level ....................................................................................... 15

3 Hornafjörður municipality and the RRCH ................................................................. 19
  3.1 The Hornafjörður Municipality .................................................................................... 19
  3.2 The Rural Research Center in Höfn (RRCH) .............................................................. 20

4 Methodology ...................................................................................................................... 23
  4.1 Methods ......................................................................................................................... 23
  4.2 Interlocutors .................................................................................................................. 24
  4.3 Reflections on the methods used ................................................................................. 26

5 Main conclusions of interviews ..................................................................................... 29
List of Tables

Table 1. Interlocutors ........................................................................................................... 25
Table 2. Examples and nature of projects/activities that the RRCH has participated in with local (and foreign) actors ........................................................................................................... 48

List of Figures

Figure 1. Distribution of the IRR university centers and their area of influence .... 2
Figure 2. Different kinds of innovations ............................................................................ 8
Figure 3. Triple Helix characterized by a strong state .................................................... 13
Figure 4. Triple Helix characterized by the independence of each sphere ................. 13
Figure 5. Triple Helix characterized by tri-lateral networks and hybrid organizations ........................................................................................................... 14
Figure 6. Hornafjörður municipality (red) and Höfn ................................................. 19
Figure 7. The logo of Nýheimar which shows its four pillars .................................... 21
Figure 8. The link between various actors in the Hornafjörður RIS ......................... 59
## List of Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRR</td>
<td>Institute of Rural Research</td>
</tr>
<tr>
<td>NEED</td>
<td>Northern Environmental Education Development</td>
</tr>
<tr>
<td>NEST</td>
<td>Northern Environment for Sustainable Tourism</td>
</tr>
<tr>
<td>NPP</td>
<td>Northern Periphery Programme</td>
</tr>
<tr>
<td>OECD</td>
<td>Organization for Economic Co-operation and Development</td>
</tr>
<tr>
<td>SIs</td>
<td>Systems of Innovation</td>
</tr>
<tr>
<td>RRCH</td>
<td>Rural Research Center at Hornafjörður</td>
</tr>
<tr>
<td>RISs</td>
<td>Regional Systems of Innovation</td>
</tr>
<tr>
<td>UI</td>
<td>University of Iceland</td>
</tr>
</tbody>
</table>
1 Introduction

1.1 The context

The role of universities in regional systems of innovation (RISs) has become more visible in recent years as acknowledged by academics, policy makers and international organizations like the OECD (2007). Universities can provide the necessary knowledge, access to new technologies, and link to external knowledge networks, which most regions need when facing the rapid development and rising competition due to globalization. The traditional role of universities is to provide research and education, but they have increasingly undertaken a "third task", which implies a more direct involvement in cooperation with firms and various actors in society in general (e.g. Etzkowitz & Leydesdorff, 2000; OECD, 2007).

This development is slowly occurring in Iceland, although no "third task" is directly mentioned by the Icelandic government or the University of Iceland (UI) ¹. Instruments to stimulate innovative activities and regional development in Iceland have taken various forms. One of them being the establishment of The Institute of Rural Research (IRR) and its build-up of small university centers in the rural regions all around Iceland. The IRR will be the focus of this thesis.

The idea behind the IRR is to facilitate, stimulate and enhance education and research in the rural regions, and also to strengthen the connection between the

¹ Concepts such as the "third task" (e.g. Etzkowitz & Leydesdorff, 2000; OECD, 2007) are not directly mentioned in any official document although the Science and Technology policy for 2006-2009 e.g. proposes that scientists should participate more actively with the society as a whole and make more effort to diffuse knowledge from the university (The Prime Ministers Office, 2006). The regional development scheme, made by Althingi (the Icelandic parliament) for the same period, aims at enhancing education, research, technological development, and innovation in the rural regions of Iceland (The Icelandic Regional Development Institute, 2010).
University of Iceland (UI), i.e. research and knowledge, and the rural communities. These centers are eight today (the ninth is being established in Skagafjörður, in NW-Iceland) and their location and area of influence can be seen in image one below.

![Distribution of the IRR university centers and their area of influence.](source: IRR, 2010)

The establishment of the IRR around the country has sometimes been in parallel with the establishment of other similar organizations, e.g. research- and knowledge centers, innovation centers, and employment affairs centers. The IRR aims at conducting more top quality research, increase its activities and employees, researchers and research projects, collaborating closely with other related organizations in the rural regions (e.g. natural-, innovation- and knowledge centers), and to be a good alternative regarding regional development schemes for the national government. Although the IRR satellite centers are relatively independent units, academically, and each with their own objectives, three main objectives are strongly apparent: environmental research and land usage, marine research, and research in tourism (IRR, 2010).
An important outcome of this university-industry society integration in rural areas is the creation of new firms and new jobs in the lagging regions, especially in knowledge intensive activities. The extent to which the IRR have achieved these goals remains to be researched. This is the aim of this research.

1.2 Aim of the research and research questions

The aim of this thesis is to investigate to which extent university centers have enhanced the link with rural actors and stimulated innovative activities in the rural periphery regions of Iceland. One particular university center, the Rural Research Center at Hornafjörður (RRCH), which is located in Höfn (Hornafjörður municipality’s commercial and administrative center) in SE-Iceland, was chosen for this purpose. The RRCH was established in 2001 and focuses mainly on environmental and cultural issues and the tourist industry. The objective of this research is to find out whether RRCH has enhanced the interaction between the university and local actors, and if and how these interactions have stimulated innovative activities in the Hornafjörður municipality.

More specifically, the research will focus on the three following research questions:

1) Has the RRCH enhanced the link between the university and local actors?

2) Has the RRCH stimulated innovative activities within the Hornafjörður municipality?

3) And if so, How it was it done?
Hitherto, no research regarding the IRR satellite centers and their effect on regional development and innovative activities in the rural regions has been done in Iceland. Most research on the role of universities in regional development has been on large or medium sized universities, and usually in highly populated regions. The IRR satellite centers in Iceland are very small units, with only one to five employees, and they are located in regions where the population is below 5,000 inhabitants. It is therefore interesting to see if and how small university centers can influence innovative activities in low populated peripheral regions. This study therefore contributes to this research gap. To address these questions data was collected through interviews with actors from the IRR and RRCH, local authorities, and local organizations in the Hornafjörður municipality.

The thesis is structured as follows. Following the introduction chapter, the theoretical framework of this thesis will be discussed. Hornafjörður municipality and the RRCH are shortly described in section three. Section four deals with the methodology of this research and its empirical work is introduced in section five. Conclusions and discussions are then presented in the final section.
2 Theoretical framework

2.1 Point of departure

The starting point of this thesis is that innovations are socially constructed (Yearley, 2005) and they do not occur in isolation (Fagerberg, 2005). The core concepts in this paper come from the SIs literature, which includes national, sectoral and regional perspectives (Edquist, 1997), and from the Triple Helix concept (Etzkowitz & Leydesdorff, 2000). The former focuses holistically on the interaction between most factors in society which stimulate innovative activities, while the latter emphasizes especially the entrepreneurial role of universities in RISs. Both concepts are considered feasible analytical tool for regional development, and they will be discussed later in this section. Different types of knowledge and innovations will first be presented, but they are inseparable from the SIs and Triple Helix concepts, and indeed at their core.

2.2 Different types of knowledge

SIs are often based up on different types of knowledge bases\(^2\), which depend on different kind of institutional settings. Policies aimed at enhancing industries must

---

\(^2\) Asheim et al. (2007) define three knowledge bases; analytical, synthetic and symbolic. Innovations based on synthetic knowledge base are combined through a novel combination of existing knowledge, innovations based on analytical knowledge base are built on formal and codified scientific models, and symbolic knowledge is based on informal interpersonal interaction, e.g. within arts (Asheim et al., 2007). Governments can e.g. support local industries which are based on synthetic knowledge with research collaboration, and by enhancing localized learning. Governments can support industries based on analytical knowledge by enhancing university-industry cooperation, and by supporting basic research. Cases from Skåne show that when mature, but different industries are brought together for innovation activity, new products can emerge. That was done by establishing and supporting a learning collaboration between firms and actors in academia (Coenen & Moodysson, 2007).
therefore stem from the knowledge base each time and also the knowledge base of the region. A classical definition of knowledge was made by Polanyi (1967), where he discussed the dichotomy between explicit (coded) and tacit knowledge. Tacit knowledge cannot be coded, is difficult to manage and is not easily communicated over distances, i.e. it is embodied in people and requires social interaction and physical proximity. Explicit knowledge can however be coded and is not as sensitive to proximity as tacit knowledge. An example of explicit knowledge is e.g. intellectual property rights and academic publications. It is however important to mention that all knowledge has a tacit dimension (Nightingale, 1998), since although codified knowledge can be transferred over distances, there is usually a need for certain skill or knowledge on the receiving end; a certain tacit knowledge.

For long, most knowledge in universities was considered codified and policies were designed around that idea, e.g. regarding property rights and technology transfer offices (Wright et al., 2008). Today, this assumption is considered naïve since much tacit knowledge is transferred through informal interactions between scientists and actors in industry. Colyvas et al. (2002) argue that this kind of knowledge transfer is much more important than the transfer of explicit knowledge, and even claims that patenting processes, which technology transfer offices often deal with, actually slows down knowledge transfer. Policies that deal with knowledge transfer at universities should therefore consider the importance of tacit knowledge and informal interaction between different actors. The concept of innovation will now be discussed.
2.3 The wide manifestation of innovation

An often used definition of innovation comes from Joseph Schumpeter. According to him innovations are "new combinations of existing resources" (Fagerberg, 2005: 6), and he was one of the first who pointed out that innovations were the driving force of economic development. A modern version of the definition of innovation can e.g. be seen in the Oslo Manual:

"An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations." (OECD, 2005: 46).

Innovations are dependent on external factors and do therefore not happen in isolation (Fagerberg, 2005). They are shaped by their social surroundings, learning processes and knowledge building (Bruland & Møver, 2005; Smith, 2005). Innovations are not a linear process, they depend on many interactions, learning processes, inputs and feedbacks from various actors, and are often based on problem-solving processes rather than the discovery of new principles (Kline & Rosenberg, 1986). According to this, innovations are not just the introduction of something totally new, based on just one initial idea, but also on small scale changes in product- and process performances over time, done by many various actors in various socio-economic settings. Innovations are therefore an evolutionary process rather than a static event.

One approach to define innovations are to divide them into radical and
incremental innovations. Radical innovations are the introduction of something totally new (e.g. machinery) and are more likely to stem from basic research, and strong university-industry links (Asheim & Gertler, 2005). Incremental innovations are however continuous improvements of products and processes. An example of incremental innovations are continuous improvements on automobiles and airplanes (Fagerberg, 2005). It is important to mention that a series of incremental improvements can lead towards radical innovations. It would therefore be foolish to ignore the agglomerative power of incremental innovations (Lundvall, 1992).

The socio-economic impact can differ widely. Innovations can sometimes have huge effect on both technological- and economical development, and sometimes even replace and make older technologies obsolete, a course of events that Schumpeter called ´creative destruction´ (Fagerberg, 2005; OECD, 1996). Accordingly, these innovations are frequently discussed in the context of industrial revolutions (Bruland & Moyer, 2005).

Innovations are classified in many ways to distinguish between their various nature. One is to distinguish between product- and process innovations (OECD, 2005). As the name indicates the formers deals with the development and creation of new or improved products and services, while the latter deals with improvements in technological and organizational factors (Edquist et al., 2001). Technological factors deals with the

![Figure 2. Different kinds of innovations (Source: Edquist et al. 2001: 19)](insert image URL)
improvement of material goods by technical change. Organizational factors deals with changes or reorganization on the industry level, e.g. regarding new ways of production and distribution (Bruland & Moverey 2005; Lam, 2005). This classification between different types of innovations can be seen in image two, above.

The development of the Japanese "just-in-time" system in the Japanese auto-industry which brought the production closer to the demands of customers by focusing on interchangeable parts in the production process, is a good example of a organizational innovation (Fagerberg & Godinho, 2005; Tunzelmann & Acha, 2005). According to Chandler (1990), important organizational innovations have mostly been within the distribution sector and has had huge effected on most industries. It is important to notice that what is considered a product of one firm is often used as a production tool in another firm; the distinction between products and processes can therefore be a bit confusing (Fagerberg, 2005).

Innovations and innovation processes are very difficult to measure, but many scholars have focused on various input and output factors of innovation. Among input factors are R&D expenditures and among output factors are patents and announcements of new products in e.g. trade journals (Smith, 2005; Kleinknecht & Reijnen, 1993).

This thesis deals mainly with incremental innovations, both in products and processes, as it will be discussed later in the empirical results. I will now discuss SIs, with special focus on RISs.

2.4 Systems of Innovation

According to Edquist SIs are “all important economic, social, political, organizational,
institutions and other factors that influence the development, diffusion and use of innovations” (1997: 14), and its main components are institutions (rules of the game), organizations (players or actors) and the linkages among them. According to this, e.g. when the innovative capacity of a region is analyzed, most factors in society must be considered. Edquist (2008) stresses the importance to study the relations between the determinants and also their relation to the main components of SIs, organizations and institutions.

The SIs approach emphasizes innovation and learning processes; it adopts a holistic and interdisciplinary perspectives; it employs historical and evolutionary perspectives, which makes the notion of optimality irrelevant; it emphasizes interdependence and non-lineararity; and it can encompass both product and process innovations, as well as subcategories of these types of innovations; and it emphasizes the role of institutions (Edquist, 2005: 184-186). An understanding of the SI can help policymakers to strengthen innovative performance and competitiveness, which in return should increase economic growth (Edquist, 2005).

SIs can be analyzed at national, sectoral and regional level. The emergence of regional systems of innovation (RISs) goes hand in hand with the success of regional clusters and industrial districts, such as Silicon Valley (Saxenian, 1994) and ‘Third-Italy’ (Piore & Sabel, 1984). In terms of economic development, RISs are a good alternative as an analytical framework and a tool for policy making (Asheim &

---

3 It is very similar to OECD’s definition on innovative activities but according to the Oslo Manual they are “all scientific, technological, organisational, financial and commercial steps which actually, or are intended to, lead to the implementation of innovations. Some innovation activities are themselves innovative, others are not novel activities but are necessary for the implementation of innovations. Innovation activities also include R&D that is not directly related to the development of a specific innovation” (OECD, 2005: 47).
RISs are characterized by innovation collaborations between the production structure or the knowledge exploitation subsystem (e.g. firms) on one hand, and the supportive infrastructure or the knowledge creating and diffusion subsystem (e.g. universities and R&D institutes) on the other (Coenen & Asheim, 2006).

In RISs literature the focus has for long been on endogenous growth of regions, but has recently turned more towards the importance of external factors, such as foreign capital and external knowledge sources, e.g. through universities and multinational corporations (Moodysson & Jonsson, 2007; Asheim & Vang, 2006; Amin, 2004). If local governments only focus on local factors and mature industries there is a certain danger of industry ’lock-in´ situation, where these industries can go obsolete and eventually die. Asheim (2007) emphasizes that, in order to avoid lock-ins, a multi-level approach is needed and that RISs are both built on local- and non-local knowledge flows and interactions, and the focus should not the least be put on emerging industries based on new technologies and/or processes.

What makes regional approaches valuable is the importance of personal relations, local networking and the cultural and social context of knowledge creation (Granovetter, 1985). Firms are dependent on their economic and industrial environment and the interaction with customers, subcontractors, suppliers and support institutions in the region. The argument of RISs is that those interactions...
take place mainly at the regional level, given the "sticky" nature of knowledge and interactions (Asheim & Gertler, 2005).

What characterizes mature RISs is when the interactions between their building blocks are strong, and innovations are more likely to occur when the necessary human capital and social capital are available (Chaminade & Vang, 2008). Human capital is e.g. provided by the education system and social capital are "those characteristics of social structures or social relations that facilitate collaborative action and, as a result, enhance economic performance" (Johnston et al., 2000: 746).

If human capital is one of the key factors in regional development, it follows that Universities are one of the key actors in RISs. The increased role of universities in RISs will now be discussed.

2.5 The role of universities in RISs

Although universities have always been considered paramount for regional development there is currently a renewed interest to their role. The nature of university-industry relations has been evolving through time and the role of universities in innovation systems have been developing towards more importance and interactivities with other actors. An entrepreneurial role of universities has been proposed by some scholars (e.g. Etzkowitz, 2002) and the increased pressure of the applicability of research bare witness of that development (Pavitt, 2005). According to Etzkowitz & Leydesdorff (2000) the Triple Helix model is an approach which suggests that universities should play more important role in contemporary societies. They describe three configurations and the evolution of university-industry-government relation. The first two versions of the Triple Helix models can
be seen in figures three and four. The state is very strong in the former (e.g. as it was in the former Soviet Union), while in the latter, each individual spheres are very independent and have clear borders regarding the other two (e.g. typical where ‘laissez-faire’ approaches were prominent). Etzkowitz and Leydesdorff (2000) introduce a Triple Helix where the borders between the spheres are not as clear (see figure five, below). According to Etzkowitz & Klofsten the model not only denotes the university-industry-government link, but also "[D]ifferent possible resolutions of the relations among the institutional spheres of university, industry, and government can help to generate alternative strategies for economic growth and social transformation" (2005: 245). The model does not only focus on how the three spheres evolves individually, it also states that each "institutional sphere also ‘takes the role of the other’ operating on a y-axis of their new role as well as an x-axis of their traditional function" (ibid, 2005: 245). According to this, the university assumes, at least partially, the role of the industry (e.g.
regarding incubating activities) and the industry partially assumes the role of the university (e.g. regarding knowledge diffusion).

Governments have increasingly focused their attention towards enhancing university-based initiatives, i.e. to stimulate university-industry interactions and enhance technological diffusion to stimulate economic activities. All the Nordic countries have for example promoted a "third task" for universities, where the scientists are to be more involved with the needs of society, e.g. innovative activities in various industries (Hedin (ed), 2009). According to the OECD (2007), the three tasks of universities are knowledge transfer (education), knowledge creation (research) and cultural and community development (the third task). These three tasks are the same as Pavitt (2005) discusses, but he defines three different characters of university-industry link that emerge from the literature: informal
networks between industry and academic actors, which would be the "third task" discussed above, research interests, and human capital (graduates and researchers).

This development and increased investments in strengthening university-based initiatives has raised many questions, both from academics and policy makers, regarding the impact of these activities. This thesis contributes to that literature, i.e. regarding the stimulation of innovative activities by small university centers in low populated peripheral regions. The importance of policy making at the regional level will now shortly be discussed.

2.6 Policies on the regional level

The interest of policy makers has increasingly turned towards the regional level as the globalization increased and the various regions in the developed world are and have been facing different and more difficult and complex competition than before (e.g. Pike et al., 2006). Whole industries have even sometimes been re-localized (e.g. textiles) to other regions/nations with cheaper labour costs (e.g. in E&S Asia), and the lagging regions increasingly face socio-economic stagnation and the migration of young and talented people. Highly populated or urban regions can face this external competition better, e.g. because of strong local demand and economies of scale, but dispersed rural areas are more vulnerable, for the opposite reason (European Commission, 2006). This development has led to strong socio-economic inequalities and disparities between various regions.

To prosper, regions need to have strong external networks, since innovation can also depend highly on the quality of collaboration with external actors (Giuliani et al, 2005). Although regional sources of knowledge are paramount for regional
development, external actors can sometimes bring in necessary complementaries to the whole innovation process, which cannot be provided within the region itself (see e.g. Moodysson & Jonsson, 2007; European Commission, 2006). Neuwelaers and Wintjes underline the importance of participations between actors regarding innovation policies and say that when “trying to create learning firms within learning regions there is a need for learning governments” (2002: 213). That is very important since the world is constantly changing and developing.

In an open economy, geographical advantages (e.g. abundance of natural resources) are not enough for the weaker and less populated regions to prosper. They also need to have the capacity to create, develop and market goods in competition with stronger regions, as well as other nations. This means they have to be strong in factors such as market research and to be qualified to organize production, distribution, marketing and training, in an ever changing environment of global demand and competition (European Commission, 2006). This ability requires certain ´critical mass´ of qualified actors, and the appropriate infrastructure and networking within and outside the region. Simple factors we usually take for granted, such as education, health care, personal services and administration must also be in place.

The aim of regional policies is to reduce these socio-economic disparities discussed above, but the main argument is that regions that are characterized by a strong socio-economical equality, are better equipt to face the growing external competition than regions that are characterized by a strong socio-economical inequality (European Commission, 2010a).
Innovation policies at the regional level are obviously very important. Among possible policy tools to stimulate innovation and regional development are building clusters and strategic alliances (Asheim, 2004; Lundequist & Power, 2002), especially in the transitional phase of industry life cycle (Audtretsch & Feldman, 1996) and enhancing the interaction between universities, industries and authorities, as discussed above (Etzkowitz & Leydesdorff, 2000). For doing so, governments have often changed or developed institutions (laws and rules) or created new ones. They have also established various organizations, e.g. various knowledge-, technological transfer-, and R&D centers, for that purpose (Link & Siegel, 2005). Authorities can “support innovation organization whose principle aim and mission is to stimulate knowledge transfer, entrepreneurship and networking between industry and university.” (Coenen & Moodysson, 2009: 21-22). Universities can act as knowledge intermediaries (both tacit and codified) in RISs through various channels, e.g. through their traditional role as an educational and research organizations, through university technology licensing offices, as financial intermediaries, or as institutional intermediaries through public agencies which stimulate interactions among universities and industries (Yusuf, 2008). When trying to stimulate regional development it is important to focus on small and medium sized enterprizes

---

4 An example of such organization can be seen in one of many project in the Operational programme of the European Union, the “Virtual University for the Scottish Highlands and Islands” (European Commission, 2010b). The project was designed to enhance the knowledge base of dispersed populated [rural] regions. This was mainly done by building a network of quality communication centers where students and researchers could access and share information with the outer world, and these centers also offered facilities for video conferencing and distant learning. This project e.g. enhanced the possibility for R&D and technological information transfer, especially for the indigenous economic sectors (e.g. food-, drink- and cultural/tourism sectors). It has not just created over 800 high quality permanent jobs and boosted the short term building-up jobs; it has also stemmed the negative migration of young talented people from the region (European Commission, 2010b).
(Asheim, 2004; Coenen & Asheim, 2006; Nauwelaers & Wintjes, 2002), because of their limited resources, special organizational culture, and their low ability to shape the environment; and the emphasis on a mixture of both local- and external knowledge and networking because of its importance in sustaining innovation (Asheim & Gertler, 2005; Moodysson & Johnson, 2007). It must however be kept in mind that a success story from one region can only partially be replicated elsewhere (Scott, 2006; Hudson, 1999), and that all possible government support must be based on the regional character and resources each time (Asheim et al., 2007; Coenen, 2007; Coenen & Asheim, 2006; Fagerberg & Godinho, 2005; Nauwelaers & Wintjes, 2002). The Hornafjörður municipality and the RRCH, which is an example of such a knowledge intermediary in the periphery, will now shortly be presented.
3 Hornafjörður municipality and the RRCH

3.1 The Hornafjörður Municipality

Hornafjörður municipality is located in SE-Iceland and Höfn (where the RRCH is located) is its commercial and administrative center (see figure six below). The main industries in the region have been traditional agriculture and fisheries, but the tourist industry is growing very fast and is becoming a major economic sector in the region, where the recently established Vatnajökull National Park, which is the largest national park in Europe, is the main attraction (Hornafjörður municipality, 2010). Migration patterns in the municipality have been negative for some time, as they have been in most rural regions in Iceland, but roughly two thirds of the nation lives now in the capital, Reykjavík, and its adjacent municipalities in SW-Iceland. In December 2009, the population in the Hornafjörður municipality was 2.089, but it was 2.370 in December 2000 (Statice Iceland, 2010a). In the same period the population in Höfn dropped from 1.769 to 1.614 (Statistic Iceland, 2010b).
3.2 The Rural Research Center in Höfn (RRCH)

The RRCH was established in November 2001 with only one staff member. Today it has five staff members and has in the last years had up to nine part-time employees. Its main object is to enhance research and studies on the environment, the nature, cultural activities, and sustainable tourism in the region. It also provides visiting scholars and students facilities in their fieldwork there. In 2008, four PhD students and twelve Masters students participated with the RRCH on their projects (IRR, 2010). Among projects that the RRCH has participated in, both with other national organizations and with actors in its local environment, are e.g. "The Vatnajökull national park monitoring project", which deals with the regional effects of the recently established national park, and "The Management plan for Vatnajökull national park", which deals with the development of preservation strategies for the Vatnajökull national park, and "The Icelandic landscape classification and evaluation project", which deals with landscape classification and its values (for land-use planning and framework programme). Among international projects that the RRCH has participated in are the "Northern Environment for Sustainable Tourism" (NEST) and "Northern Environmental Education Development" (NEED) projects. These projects are both part of the European Unions´ Northern Periphery Programme (NPP), which focuses on regional development in remote communities in the Nordic periphery (NPP, 2010). The NEST project focused on the possibilities to use national parks and preserved areas to stimulate regional development in the rural periphery (RRCH, 2010). The ongoing NEED project focuses on the development on new and original methods to mediate knowledge regarding natural- and environmental issues to students, tourists and also local inhabitants (NEED, 2010). The RRCH is located in
Nýheimar, where many various knowledge-, cultural- and research organizations are located. The regional college (secondary level), the local library, and conference-, meeting-, and distant learning facilities are also located in the building. Nýheimar were built to enhance research, education, and economic- and cultural activites in the region. A café/restaurant is located in an open space in the middle of the building, where people meet and various events take place. The broad idea with the establishment of Nýheimar was to bring together different actors to stimulate innovative activities in the region. The Nýheimar logo, which is designed around its four pillars, can be seen in figure seven. The RRCH participates actively, both formally and informally in various innovation projects and knowledge interactions with these other organizations at Nýheimar. The methodology of this research will now be discussed.

Figure 7. The logo of Nýheimar which shows its four pillars
(Source: Nýheimar Þekkingarsetur, 2010)
4 Methodology

4.1 Methods

The research in Hornafjörður municipality was a case study and the main focus was on the link between the RRCH and various actors in the region. The main objective was to try to understand if and how that link stimulated innovative activities.

It is difficult to measure what goes on between various actors in society, especially when the knowledge involved is based on tacit knowledge. Sometimes, various input and output factors are measured, e.g. R&D, intellectual property rights and publications (Smith, 2005), but the flow of tacit knowledge between actors is almost impossible to measure. It would be possible to measure the volume of connections between the various actors in Hornafjörður municipality but such approaches would hardly describe the quality of that link, the dialogue between actors, or which and how knowledge is diffused.

To gain better understanding of what actually goes on between actors it is important to look deeper into their interactions and the dialogue between them. For that reason qualitative methods were considered appropriate for this research and semi-structured interviews were conducted (Longhurst, 2003). By doing that, a rather good understanding about the link between the RRCH and local actors in the region, could be acquired. This was also considered an appropriate methods since Höfn region is a small community of ~2.200 people and the economy is based on traditional industries, e.g. traditional agriculture, fisheries, and the growing tourist industry, for which tacit knowledge is crucial (Tunzelmann & Acha, 2005). None of these are considered highly advanced- or technologically minded industries. High-
tech industries would probably leave more "paper trail" (e.g. patents and publications), which could actually be measured, while linkages between actors in traditional industries and the tourist industry in such a small community as Höfn are often informal and based on personal relations.

The interviews focused especially on linkages between various actors and on innovative activities in the Höfn region. Special focus was set on the link between the RRCH, local authorities, and local firms and organizations. Each of the three groups of interlocutors got a special set of questions, given their different role in the region, but the focus was always on the University center in Höfn, its linkages to various actors, and on its impact on innovative activities of other actors in the region. The focus was also on the RRCH pros and cons, but by doing that some advice on what could be done better regarding the RRCH and its linkages to various actors in the Hornafjörður municipality, could possibly be provided.

4.2 Interlocutors

Interviews with three main groups of actors were conducted. The first group was the RRCH´s staff in Höfn and also board members of the IRR, based in Reykjavík. The second group was actors from the local authority in the Hornafjörður municipality, and the third group was local organizations in the Höfn region. The selection of the three main groups of interlocutors stems from the systems of innovation literature (e.g. Edquist, 2005) and the Triple Helix concept (Etzkowitz & Leydesdorff, 2000). When searching for possible interlocutors for this research, consultation was sought from many various actors in Iceland, e.g. actors from the UI, actors from the IRR and RRCH, and other acquaintances of the researcher which have good local knowledge.
about the Hornafjörður municipality or have personal relation or family ties in the region. A list of interlocutors can be seen in table one below.

### Table 1. Interlocutors

<table>
<thead>
<tr>
<th>Interlocuter</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>University Center</td>
<td></td>
</tr>
<tr>
<td>Rögnvaldur Ölaufsson</td>
<td>Chairman of The Institute of Rural Research</td>
</tr>
<tr>
<td>Rannveig Ölafsdóttir</td>
<td>Board member of The Institute of Rural Research and the first manager of the RRCH</td>
</tr>
<tr>
<td>Þorvarður Árnason</td>
<td>Manager of the RRCH</td>
</tr>
<tr>
<td>Sandra Björg Stefnadsdóttir</td>
<td>Project leader at the RRCH</td>
</tr>
<tr>
<td>Sigrún Inga Sigurgeirs dóttir</td>
<td>Project leader at the RRCH</td>
</tr>
</tbody>
</table>

**Local Authority at the Hornafjörður municipality**

<table>
<thead>
<tr>
<th>Interlocuter</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hjalti bór Vignisson</td>
<td>Mayor of Hornafjörður</td>
</tr>
<tr>
<td>Stefán Ólaufsson</td>
<td>Manager, educational matters and social issues</td>
</tr>
<tr>
<td>Haukur Ingi Einarsson</td>
<td>Manager, technological- and environmental issues</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interlocuter</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sigurlaug Gissurardóttir</td>
<td>Manager, farmhouse accommodation, Brunnhóll</td>
</tr>
<tr>
<td>Magnús Guðjónsson and Guðrún Guðmundsdóttir</td>
<td>Managers, farmhouse accommodation, Hólmur</td>
</tr>
<tr>
<td>Þorbjörg Arnórsdóttir</td>
<td>Manager, Þórbergssetur (cultural center) and farmhouse accommodation, Hali</td>
</tr>
<tr>
<td>Ingibjörg and Düddi</td>
<td>Managers, farmhouse accommodation, Hoffell</td>
</tr>
<tr>
<td>Ari Þorsteinsson</td>
<td>Manager, The Innovation Center in Höfn</td>
</tr>
<tr>
<td>Eyjólfur Guðmundsson</td>
<td>Schoolmaster, FAS in Höfn, secondary level education</td>
</tr>
<tr>
<td>Guðmundur Heiðar Gunnarsson</td>
<td>Project leader, MATÍS in Höfn (food research organization)</td>
</tr>
<tr>
<td>Rósa Björk Hallðórsdóttir</td>
<td>Manager, Í ríki Vatnajökuls WOW (an organiz. of local tourist-, culture-, and food industries)</td>
</tr>
<tr>
<td>Helga Davids</td>
<td>Expert, Vatnajökull National Park</td>
</tr>
<tr>
<td>Björg Erlingsdóttir</td>
<td>Manager, The Hornafjörður Cultural center</td>
</tr>
</tbody>
</table>

Possible interlocutors were also searched on the internet. The main requirement was that each interlocuter belonged to one of the main group discussed above and had worked with or participated with the RRCH in any way. All received a letter of introduction by e-mail asking them if they would like to participate and if they would allow being interviewed. Everyone responded very positively and all but two, who were not in Höfn during the fieldwork there, agreed to participate. Everyone in Höfn
was very interested and positive regarding the research initiative and I felt very welcome. This kind of evaluation on the RRCH had never been done before, so the local people welcomed the research initiative. In the last two weeks before the fieldtrip to Hornafjörður municipality the interlocutors were regularly contacted regarding organization of interviews.

Before the fieldtrip to Hornafjörður municipality, various actors in the UI in Reykjavík were visited. The purpose was to gain knowledge regarding the establishment of the university centers in the rural regions of Iceland. Two board members of the RRI, Rögnvaldur Ólafsson and Rannveig Ólafsdóttir, were interviewed. Few staff members from the Geography department at the UI were visited, but most of them have some experience and knowledge of the University centers. These meetings and interviews deepened the researchers knowledge and understanding of the organization before the fieldtrip to Hornafjörður municipality. During the visit to the UI I also had the opportunity to talk with students that come from the rural regions of Iceland and had some experience and knowledge of the University centers.

The two interviews and discussions with various actors in UI in Reykjavík took place in the period 17.-19. of March, and the sixteen interviews in Hornafjörður municipality were conducted in the period of 22.-26. of March. All interviews were transcribed and analyzed.

4.3 Reflections on the methods used

Few thoughts regarding the methods and study population should be mentioned here. Firstly, the research mainly focused on the link between various actors in the
Hornafjörður municipality, i.e. the RRCH, the local government, and local firms and organizations, but it also focused on if the RRCH had managed to enhance the link with the common public in the Hornafjörður region. Interviewing the three main groups, mention above, presented a good image of the link between them and the RRCH, but by only doing that it was not possible to provide a good answer regarding the link between the RRCH and the common public in the Höfn region. Surely, the interlocutors are also part of the common public in the region and interviewing them presented a certain image of that link, but to gain better understanding of that link it would be possible to conduct a survey among the public. That would hence provide some answers regarding the link between the RRCH and the common public in the Hornafjörður municipality. Secondly, in my research I only interviewed actors who had actively participated with the RRCH in the past. It would also have been interesting to interview local actors who have no experience of the RRCH or have never participated with it on projects. That could also shed some light on the link between the RRCH and the common public and also explain if and why some actors did not want to work with the center. The main conclusions of the interviews will now be presented. The research questions will be answered in the discussion chapter and conclusions will be drawn in the context of the theoretical part of this thesis.
5 Main conclusions of interviews

5.1 Introduction

Five themes where prominent in my interviews, the RRCH’s first years, the important link with the other organizations at Nýheimar, the link between the RRCH and local actors, the stimulation of innovative activities by the RRCH, and the pros and cons of the RRCH. I will now discuss these themes in this order.

5.2 The first years of the RRCH

The RRCH was established in 2001 and its first manager was Rannveig Ólafsdóttir. According to her, the first years were difficult, mainly because of three things. Firstly, many local actors did not fully understand or appreciate the RRCH and the work that was done there. These small communities in the rural regions of Iceland are based on traditional agriculture and fisheries and are not used to knowledge intensive activities such as the RRCH. Secondly, in the beginning she was the only staff member of the RRCH and since most other organizations at Nýheimar were established one by one in the few years period following the establishment of the RRCH, she had no local peers to rely on initially. That was very difficult for her academic work. Thirdly, there was very little budget to conduct research and operate the RRCH in the beginning although conducting research was one of the RRCH main purpose. Rannveig said that much of her time in the first years was used to change the attitude towards universities in the rural regions of Iceland, but she said that although many actors as the local authorities welcomed the RRCH, many locals actors were quite skeptical regarding it in its first years and did not see the
opportunities it could offer to the region. With time and with hard work this attitude has however changed and the RRCH is very active in its local environment today. Þorvarður Árnason, current manager of the RRCH, said that "with ours- and the others related organizations arrival, new worlds opens up and you can see the development opportunities for, both for the IRR satellite centers as such, but also for the communities which we are now becoming a part of. We do that by becoming an organic part of the community we operate in". He said that very soon after his arrival at Höfn he saw that the RRCH had to focus on pure academic research in fields that would actually benefit the municipality. That could be their way to enhance the region. Rósa Björk Halldórsdóttir, manager of the cluster organization Í ríki Vatnajökuls WOW, said that "before there was a wall between these organizations here in Nýheimar and local actors, but these walls are collapsing very fast and the locals are not intimidated by them anymore". According to Ari Þorsteinsson, manager of the Innovation center, "the RRCH has become some part of peoples’ life". He said that its staff members had participated actively in the local social activities and "that is enormously important, they are a part of this community, that link is really important". Hjalti Þór Vignisson, mayor of the Hornafjörður municipality, said that this link came not least through the interaction between the RRCH and local organizations. He compares this process to the take off of an airplane: "a small runway was what was needed to take off, but now this is working very well". It was obvious from my interviews that the RRCH had become an active actor in the municipality and its initial growth pains due to incomprehension and an invisible wall between the RRCH and many local actors, can now mainly be seen in the rear-mirror.
5.3 The strong link with other organizations at Nýheimar.

It is very difficult to discuss the RRCH without looking at its interactivities with the other organizations at Nýheimar. In all my interviews it was clear that Nýheimar presented a strong image as a whole, both outwards to the local community (and even to actors outside the region), and also inwards among the organizations located there. Those of my interlocutors that participated in the build-up of Nýheimar and the RCCH, all told me that the idea behind both Nýheimar, and each of the single organizations within it, was to build a practical unit that could enhance the region and e.g. stimulate innovative activities. Hjalti Þór Vignisson, mayor of Hornafjörður municipality, said that it was very important to "provide people the means to help themselves, but with the support that Nýheimar provides. When we have focused on building a community in this way, quality of life and diversity in general, increased the educational level, increased occupational rewards, the opportunities for people to do things themselves and having their own business etc, then we have created an exciting community for people to come in and participate in it with us". He said that Nýheimar is a premise for this to become real.

Everyone realized that each organization in Nýheimar would be very weak without all the others, both because of their different specialization which are all necessary within the region, and also because that since each organization had so few staff members. The physical proximity between the staff members of the organizations at Nýheimar meant that there was a certain critical mass of people with similar educational background and dealing with related issues. According to my interviews with actors who work in various organizations at Nýheimar, this was pivotal, both for their projects with various actors in the region, and also inwards for
their organizational [knowledge] dynamism. It is very valuable for the staff members of these organizations to have such good access to different kind of knowledge and information which is outside their own knowledge base. According to Ari Þorsteinsson (from the Innovation center), it would be very difficult for his organization to stand alone regarding the stimulation of local innovative activities. He said that this could not be done by a single organization, "if someone wants to gain success then he needs the others with him". All the organizations at Nýheimar had the same role, to service the local community. Sigurlaug Gissurardóttir, which operates the tourist accommodation at Brunnhóll, said that Nýheimar as a whole supported innovative activities in the region. According to her "the activities in Nýheimar, what ever it is called, the RRCH, the Innovation center, Matís (insert by author: a food research organization), the Cultural center, and all this supports innovation".

The environment at Nýheimar is very open and the organizations there try very actively to be an active part of its community. There is an open door policy which means that both staff members of each organization at Nýheimar and people outside Nýheimar can almost always drop by to discuss openly their ideas and get the appropriate response and estimation. There is also a daily morning coffee break meeting at the mutual cafeteria at Nýheimar, which actors from all the organizations there meet up for 15-20 minutes and discuss openly their projects and ideas on new projects. These informal interactions often spur various projects, which sometimes end up being a new product or service, an economic activity if you like. Guðmundur Gunnarsson, project leader at Matís, discussed the importance for his organization to have access to basic research from the RRCH, but his organization was mainly in
applied research. He said that "if you put these actors together, these functions, and then all have enormous leverage in the creation of an end product. If you remove one actor this can fall apart. The RRCH is perhaps furthest away from the outputs, but they have no less input in trying to incubate them, if you look at this as a certain channel".

The interaction between the various organizations at Nýheimar are both formal and informal. Funding for projects are often applied mutually and part of the facilities at Nýheimar are co-used and managed, and there are often mutual conferences and symposiums, which are often co-funded. These activities would be considered formal, but according to my interviews most interactions in Nýheimar are informal where people e.g. discuss each others' projects and ask for advice regarding each other specialities. Þorvaldur Árnason (manager of the RRCH), said that these informal activities are the platform for everything else, and that this link was based on their similar visions. He said that "Nýheimar are our support and a certain sanctuary for us. Nýheimar function as a one big family".

In my interviews with actors outside Nýheimar, their perception of Nýheimar as a unit or a whole was very strong. Most of them had participated in some way with all of the organizations at Nýheimar and were very aware of the fact that these organizations enhanced each other and presented a strong and active unit to stimulate economic activities in the region, although they also realized their different skills.

To summarize, the strong link between the various organizations in Nýheimar was obvious. They have managed to generate a strong and united image towards other local actors, and also towards actors outside the region. The organizations at
Nýheimar have participated with each other on formal projects, but most interactions are informal and based on mutual objectives and physical proximity between staff members at Nýheimum. These informal interactions have often turned into various projects and innovative activities in the Hornafjörður municipality.

5.4 The link between the RRCH and local actors.

The thesis focuses especially on the link between the RRCH and three main groups of actors, the local authorities, local organizations and also the common public in the Hornafjörður municipality. It also focused on the link between the local authorities and other local actors. I will now shortly discuss these links.

5.4.1 The link between the RRCH and local authorities

It was clear from my interviews that the RRCH had managed to enhance the link with local authorities and that link was in fact quite strong. The establishment of the RRCH and Nýheimar as a whole, was proactively managed and lead by local authorities. It was they who asked UI to bring their activities to the region and not vice versa. They have supported the RRCH and the other organizations at Nýheimar very strongly ever since, both financially and morally. Local authorities provide the RRCH some annual fundings and they also participate very actively in providing them funding from the national government. The RRCH has also participated in various projects for the municipality, e.g. regarding environmental valuation for land use planning. According to my interviews with local authorities, they often discuss
various local issues with the staff members of the RRCH and seek their guidance, i.e. concerning projects that are within the realm of the RRCH (e.g. environmental issues and tourism). This guidance is also often reciprocal. According to Hjalti Þór Vignisson (mayor of Hornafjörður municipality), there was no doubt in his mind that the RRCH had managed to enhance the link between the university and local actors. He also stressed the importance of the personal qualities of the people that were chosen to do the job as a key factor for success. He said that "it is extremely important for us to have the RRCH and its staff members. Naturally this depends highly on who ends up being hired to do the job". This view was prominent in most of my interviews.

5.4.2 The link between the RRCH and other local organizations
My interviews revealed a strong link between the RRCH and other local organizations, both inside and outside Nýheimar. The staff members of the RRCH have been able to provide strong personal link with local actors, at least partially because of their personal qualities and how they approach the locals as equals. Þorvarður Árnason (manager of the RRCH) said that "it matters that we gain their trust, and that they sense that we are participating on the same level, and that it is not that the PhD is talking to the farmer, but only two actors discussing an idea where the other is sharing his dream vision or ideals and the other brings in his academic knowledge and his interests. Together these actors participate in trying to find possible ways for these ideas to become real". All my interlocutors agreed that this link was strong and had gained much strength in the last few years, especially through various formal and informal projects. Sigurlaug Gissurardóttir (from
Brunnhóll tourist accommodation), said that the RRCH has managed to participate on various projects with the locals. She said that "the key behind the success of the RRCH here is that they have managed to work with the people on the grass-root level" and that it has been able to participate with local interest parties on various projects instead of being stuck in an "academic tower". When asked if the RRCH had managed to enhance the link between the university and local actors her response was that: "There is no question in my mind that it has done that. It has drawn here various actors to conduct research, both small and large. There is no question". But she also said that this link could be enhanced even further, and wanted that the RRCH, and also the other organizations at Nýheimar, to introduce their activities even more for the local community. When Stefán Ólafsson, manager of educational- and social matters in the Hornafjörður municipality, was asked if the RRCH had managed to enhance the link between the university and local actors, he replied: "Yes it has clearly been established, and it is also very clear that they would not have been established if we did not have the RRCH here".

This link between the RRCH and other local organizations is in general mostly within the tourist-, cultural- and food industries. The link between the RRCH and actors within the old traditional industries, agriculture and fisheries, is weaker and not as direct. But that does not mean that there is no indirect link to these industries, e.g. since much of the tourist industry in the Hornafjörður is farmer-related and the RRCH has participated informally on many and various projects in the fishing- and food process industries through other local [support] organizations at Nýheimar. One of the organizations at Nýheimar, Í ríki Vatnajökuls WOW, is a cluster of 78 small organizations within the local tourist-, culture- and food
industries. The RRCH has participated very actively, both with the cluster itself and also with many single organizations within it. The RRCH participated in the establishment of the cluster and also in its development, it participates with the cluster in managing various conferences and symposiums. But as with other organizations in Ñýheimar the physical proximity between actors often spur informal conversations regarding various projects and how to solve problems.

One of the reasons why the RRCH had succeeded in enhancing the link with local organizations was, according to all my interlocutors, that they involved these local organizations in the process from the beginning, i.e. including the decision making process, and treated them as equals instead of approaching them from above (i.e. from the academic ivory tower if you like). After all it was these organizations that were going to carry out the work after the RRCH had finished their direct participation. This development towards more participatory approach with local actors was partially manifested through the NEST- and later the NEED project.

5.4.3 The link between the RRCH and the common public

It was clear from my interviews that the link between the RRCH, local authorities and other local organizations had been enhanced, but the strength of the link between the RRCH and the common public was not as clear. My interlocutors could not provide a clear answer regarding the strength of that link, but it was their gut feeling that it had been enhanced from before. Many felt that the common public knew at least about the Ñýheimar concept and what it could do for the municipality, but not necessarily so much about the RRCH or its activities. Stefán Ólafsson (manager of
educational- and social matters in the Hornafjörður municipality) was not sure if the common public was so aware of the RRCH and said that both them and local authorities could introduce them more to the common public.

All my interlocutors said that local actors had been skeptical regarding the RRCH in its first years, and perhaps even skeptical regarding these ‘new’ knowledge intensive activities, but that had changed and the locals are now more open towards both the RRCH and the other organizations at Nýheimar. They felt that an increased part of the common public realized that their presence was essential for the municipality, and that relying solely on the old traditional industries was no longer enough for economic prosper. Service related- and more knowledge intensive industries are growing both relatively and proportionally in the municipality and although these new industries are based on local qualities, culture and even the old traditional industries, they are built on different knowledge base than is embedded in the municipality, a knowledge that the RRCH (and also other actors at Nýheimar) can provide. Local actors are becoming very aware of that. One of the thing that indicated that the link between the RRCH and the common public had been enhanced was a recent development in the Icelandic economy. Following one of the deepest economic crisis modern Iceland has faced, which started with the fall of the Icelandic banking system in October 2008, the national government has had to go through significant budget cuts. When making the national budget plan for 2009, there were plans to withdraw all funding to the RRCH, which would probably have led to its shut down. When that plan was made public, while it was still being discussed on the national level, many actors in Hornafjörður municipality rose and shared their concerns regarding the prominent shut down of the RRCH. In my
interviews I often heard a story about a local car repairman who had no previous connection to the RRCH or academic actors. The car repairman became highly anxious about this imminent shutdown. Despite his no apparent link to the RRCH he realized its importance to the local community, and expressed his support to Þorvarður Árnason (manager of the RRCH). According to most of my interlocutors this was a common tale and many unlikely actors, i.e. that had no apparent link to the RRCH, protested and expressed their concerns and local authorities crusaded strongly against this budget cuts and made the importance of the RRCH to the Hornafjörður municipality very clear to the national government. The budget cuts, regarding the RRCH, were eventually aborted. Although I could not provide strong evidence regarding the link between the RRCH and the common public in Hornafjörður municipality, this event indicates, at least partially, that this link has at least been enhanced from before.

5.4.4 The link between the local authorities and other local actors

In my interviews I did not only focus on the link between the RRCH and local actors. I also focused on the link between other local actors (both other organizations and the common public) and the local authorities, since that is an important link in the Hornafjörður RIS. Everyone I interviewed from those organizations agreed that the link between them and local authorities was strong. Most of them felt that they could have a good dialogue with local authorities regarding their various projects and problems and they understood very well what was important for local actors. Guðmundur Heiðar Gunnarsson (from Matis) said that the local authorities trusted
the various organizations at Nýheimar and there was no intrusion on their part, i.e. regarding how things were done. He also said that the local authorities were not afraid to seek counsel from the actors in Nýheimar. It was also obvious that the local authorities provided good moral support to local organizations, and they often provided funding for various local projects which had proven very important regarding their initial steps. Few of my interlocutors pointed out that even though the link between local authorities and local organizations had been established it could be enhanced further. This was especially prominent in my interviews with organizations placed in the rural periphery of the municipality, some distance from Höfn. Sigurlaug Gissurardóttir (from Brunnhóll tourist accommodation) felt that not all local actors in the municipality, including the common public, had established a strong link with local authorities and the actors in Nýheimum. She said that local authorities could introduce better the possibilities that both they and the organizations at Nýheimar offered. She said that "local authorities and the knowledge community, and part of the local community know precisely how these things work, but there are too many who do not. Perhaps both because of their lack of interest, but also because that this has perhaps not been introduced enough systematically".

To summarize, the RRCH has managed to enhance the link between the university and local authorities and other local organizations, and it was in fact quite strong, in particular the link with the tourist-, cultural- and food industries. An answer regarding the link between the RRCH and the common public could not be provided by this case study, but interviews indicated that they had been enhanced from before. The link between the local authorities and other local organizations and
the common public is relatively strong, but it was pointed at that it could be enhanced further. The local authorities have provided both financial- and moral support for local organizations which is well appreciated by them.

5.5 Innovative activities stimulated by the RRCH

One of the main focus of this thesis was to investigate if and how the RRCH stimulated innovative activities in the region. All my interlocutors had no doubt that the RRCH had stimulated innovative activities, and all agreed on that the RRCH brought in necessary [academic] knowledge needed in the various projects and activities in the region. My interviews revealed in which industries this stimulation was especially apparent, the circumstances they occurred in, and what kind of knowledge was being communicated. I will now discuss these main issues.

5.5.1 Innovation within the tourist-, cultural- and food industries

This stimulation of innovation activities has especially been apparent in the tourist-, cultural- and food industries, and goes hand in hand with the strong link the RRCH has established with these industries. The RRCH has both stimulated activities of single organizations within these industries and also these industries as a whole. Its interaction with the cluster organization, Í ríki Vatnajökuls WOW, bare witness of that, but according to Þorvarður Árason (manager of the RRCH), "the establishment of that cluster was probably the single most important step for the local tourist industry". The purpose of that cluster was to create new jobs in the tourist- and related industries, and especially focus on a better exploitation of winter months,
but these industries had mostly been active in the summer months before. According to many of my interlocutors the RRCH participated actively in the establishment and the development of that organization, but it currently contains 78 local actors, as mentioned above. The cluster is an innovation in itself (at least to the region) and according to many of my interlocutors, the RRCH has been very active in forming its character and image, and also its environmental guidelines. The RRCH has complemented various projects within the cluster with the necessary academic knowledge they lacked. This was especially true regarding their strong knowledge within tourism and the cultural- and environmental sphere. According to Þorvarður Árnason, much of their stimulation of innovative activities in the region, had been channeled through that cluster.

5.5.2 Formal- and informal interactions and the importance of tacit knowledge and physical proximity

The knowledge transfer between the RRCH and various actors in the region occurs both through formal and informal interactions. The RRCH has often participated in formal projects with various private organizations, usually regarding the initial phases of the projects. The RRCH e.g. helps organizations to develop their original idea and sometimes help them to create applications for fundings or even apply for funding themselves, which is then used for that project. These ideas often give birth through informal dialogue between various staff members of the RRCH and the owners of small private organizations or other actors who want to establish an organization (or projects),and/or through interactions at conferences or symposiums.
that the RRCH holds (sometimes with other organizations and/or the local authorities) or participates in.

The dialogue between the RRCH and various local actors is very often based on tacit knowledge, and occur in these informal interactions discussed above. According to Þorvarður Árnason (manager of the RRCH), the RRCH focuses e.g. very much on sustainable tourism where environmental issues are highly important (i.e. the interaction between men/tourist industry and the nature). This dialogue is often channeled through the cluster organization, Í ríki Vatnajökuls WOW, as discussed above. He said that to pass this knowledge on, informal interactions are very important: "If this is coded knowledge then... ok, people can perhaps learn it and even understand it, but it does not link it with their reality and their persona. You somehow need to have more direct contact to simply infect people of this or to get them somehow to... create some sort of circumstances so that people can assimilate themselves to things and see for themselves that this matters. Sustainable development depends on that it is done on the individual- and firm level. In a way you need to let people convince themselves." These informal interactions based on tacit knowledge between the RRCH and local actors are therefore not just important, they are also necessary.

It was very prominent in my interviews that the RRCH was considered a necessary element in the Nýheimar concept, but it was also prominent that without each other these organizations would not be able to function properly. Projects or business ideas often stem from informal interaction between staff members of the various organizations at Nýheimar. There is an ongoing dialogue between the actors there regarding their various ideas and ongoing projects. This dialogue often
gives birth to projects that have often created jobs and economic activities in the region. All my interlocutors, both from organizations insight Nýheimar and also from other organizations in the region, including local authorities, agreed that the RRCH brought in both the necessary academic knowledge and the necessary link with other academic actors, i.e. not just other national organizations but also with many various foreign universities and organizations. According to Eyjólfur Guðmundsson, principal of FAS (secondary level school) which is also located in Nýheimar, the RRCH has stimulated innovative activities within the region, and is "one tool in the toolbox" for local actors in that sense. Although the other organizations at Nýheimar have led the projects and even though the RRCH had not always been in direct contact to these external actors, they participated in these projects through the informal interactions at Nýheimar I discuss above.

My interlocutors were very aware of the importance of having the RRCH in their local environment. Before the RRCH was established, local organizations had to seek the knowledge they provide elsewhere. According to some of my interlocutors, this was often a difficult task due to the lack of local knowledge and even lack of interest of those who were supposed to provide support for innovative activities. They said it was very important that these knowledge providers needed to be located in the municipality and live there, not only because of the necessary local knowledge, but also because then they would be active participants in various projects that actually meant something to themselves and their livelihood. According to Þorbjörg Arnórsdóttir, which operates Þórbergssetur (a cultural center) and a tourist accommodation at Hala, when discussing the RRCH: "it is such a huge breakthrough to have an access to this locally that it can hardly not be described".
The RRCH has participated actively with her in the organization in various projects, especially regarding cultural activities and literary studies, as one staff member of the RRCH is a literary scholar. Þorbjörg says that there is no doubt that their interaction with the RRCH has stimulated their innovative activities. She said that "this wide interaction here is making progress for us and the RRCH is one of our main supports". Among products that has stemmed directly from this interaction are few books that are in the process of being published. One is about local trails for tourists, with German- and English texts, and few others are translations of Þórbergur Pórðarson books (German and English translations), but the latter grew out of a translation conference that was held in participation with the RRCH.

5.5.3 The openness of the RRCH and the local positivity

All my interlocutors agreed on that they had a very open access to the RRCH and were always welcome to visit them and discuss their ideas and seek counsel. This openness of the RRCH had proven to be a very important element in the stimulation of their innovative activities. According to Dúddi, which operates a tourist accommodation at Hoffell, "it does not matter what kind of errand you bring in here. And that is what is so important for local actors, is that if I present something to them and that idea is a hopeless one, I will soon find out. That is not less valuable than to bring in ideas that are worth something... what is important is that actors are either stopped or backed up". Magnús Guðjónsson and Guðrún Guðmundsdóttir, which operate a tourist accommodation and a small zoo of domestic animals, said it was a great quality to be able to seek knowledge to the RRCH when they needed.
Guðrún says that "their encounters with Þorvarður (insert from author: the manager of the RRCH) has been so good that I think that if we needed something, e.g. that we thought he could assist us with, than it would be no problem to pay a visit". The existence of the RRCH and its approach towards local organizations has stimulated them towards developing new ideas, and all my interlocutors agreed on that it had managed to change how they want to approach their various tasks. According to Sigurlaug Gissurardóttir (from Brunnhóll tourist accommodation), "the link with the university has meant that we will now focus more on the concept ‘instructive tourism’ as our speciality (...) and I think that development is because of our participation with the RRCH”.

There has been a prominent stimulation of innovative activities in the region through the NEST and the NEED projects. Participatory approach have been apparent in these projects, but the idea was to involve local actors more in the development of the recently established Vatnajökull national park and how to exploit its socio-economic means. Through these projects the local inhabitants (and land owners) participated in the decision making process, which was very important for them. My interlocutors sincerely believed that it is much better to involve the local inhabitants right from the start (bottom-up approach), instead of involving them later in the process (top-bottom approach) since it is them who live and work there, and carry on with the projects when the supportive organizations had finished their work.

It is not only the openness of the RRCH towards local actors that matters. The local environment and spirit matters very much when it comes to innovative activities. According to Þorvarður Árnason (manager of the RRCH), the
entrepreneurial spirit and openness to new ideas are prominent in the region and he says that local actors were full of "optimism and positivity and people are ready to try new things and they want to try new things". Ari Þorsteinsson (from the Innovation center) said that "the community itself is the key to success and we have been so fortunate here because the locals understand this". He said that "entrepreneurs thrive poorly in a negative community" so this positive attitude in the region is very important for innovative activities. This positive environment and the ‘readiness’ of the locals is therefore obviously very important for the RRCH and its activities. Some of the projects and activities that the RRCH has participated in with local actors can be seen in table two below.

To summarize, the RRCH had in fact stimulated innovative activities in the region, mostly within the tourist-, cultural- and food industries. This was especially apparent through their interactions with the cluster organization, Í ríki Vatnajökuls WOW. The interaction between the RRCH and other actors is often formal (e.g. applications, conferences and symposiums), but is most often based on informal interactions and dissemination of tacit knowledge. The fact that the RRCH was located in the region, and in physical proximity to local actors, was very important for the stimulation of the various innovative activities there, and much of its stimulation was channeled through the other organizations at Nýheimar. The pros and cons of the RRCH will now be discussed.
Table 2. Examples and nature of projects/activities that the RRCH has participated in with local (and foreign) actors

<table>
<thead>
<tr>
<th>Project/activity</th>
<th>Nature of project</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEST - Northern Environment for Sustainable Tourism (International project)</td>
<td>Development of possibilities to use national parks and preserved areas for socio-economic activities in the rural periphery.</td>
</tr>
<tr>
<td>NEED - Northern Environmental Education Development (International project)</td>
<td>Development of new methods in knowledge mediation regarding natural- and environmental issues.</td>
</tr>
<tr>
<td>Hoffelsstofa. Environmental and cultural center at Hoffell. Still in progress.</td>
<td>Project development and provision of data.</td>
</tr>
<tr>
<td>Icelandic landscape classification and evaluation project.</td>
<td>Landscape classification for land-use planning. Provision of data.</td>
</tr>
<tr>
<td>The Management plan for Vatnajökull national park</td>
<td>Development of preservation strategies.</td>
</tr>
<tr>
<td>The Vatnajökull national park monitoring project</td>
<td>Monitoring of the regional effects of the recently established national park. Provision of data.</td>
</tr>
<tr>
<td>íríki Vatnajökuls WOW (e. The Vatnajökull region WOW)</td>
<td>Development of a cluster organization in the tourist-, food- and related industries.</td>
</tr>
<tr>
<td>Fuglaklasi SA-Íslands (e. The SE-Iceland birdcluster)</td>
<td>Development of birdwatching as a tourist attraction.</td>
</tr>
<tr>
<td>Fræðslustígur við Fláajökul (e. The Fláajökull glacier educational trail)</td>
<td>Project development and provision of data.</td>
</tr>
<tr>
<td>Perlur Mýranna (e. Pearls of Mýrar)</td>
<td>Project development and provision of data.</td>
</tr>
<tr>
<td>An ecological course in FAS (the local college).</td>
<td>Development of the fieldwork part of the course.</td>
</tr>
</tbody>
</table>
5.6 Pros and Cons of the RRCH.

According to Rögnvaldur Ólafsson, the Chairman of the Board of the IRR, many positive things have developed because of these centers in general, e.g. regarding new knowledge intensive jobs, research projects (which would probably not have been done without the centers), many various projects related to employment- and cultural affairs, closer collaboration with the UI, and increased collaboration with foreign scientists and students than before. In order to draw some learning and pretty clear assumptions from my research and even provide some possible advices for e.g. the IRR, RRCH and local authorities in the Hornafjörður municipality, I asked my interlocutors to discuss the pros (advantages) and cons (inconveniences) of the RRCH. I will start by discussing the pros.

5.6.1 Pros

It was clear from my case study that the RRCH has brought very much to the region, especially academic knowledge and the very valuable links with external actors, as discussed in the previous sections.

When I asked Þorvarður Árnason about the RRCH’s pros, he replied: "Flexibility, we are ready to participate in new and diverse projects and we are ready to jump on projects when needed". The RRCH and its staff members are very open towards local actors and are more than willing to work with all of them. Stefán Ólafsson (from the local authorities) agreed, but emphasized that the personalities of the individuals who worked at the RRCH was also very important. According to him, they are very accessible and open towards people who e.g. needed their advice
or guidance. He said that "this is not a closed academia, which is one of the pros, rather a relatively open platform, you are always welcomed with open arms. But of course this is very dependent on the staff members we have each time". It was very clear in most of my interviews that it was very important who worked at the RRCH. According to my interviews, the staff members of the RRCH participated actively with all actors in the community and were very visible and willing to enhance it. This is an important fact and they often go beyond their defined job description if necessary.

It was also considered very important quality to have the RRCH located in the region instead of having to seek the knowledge outside the region. Þorbjörg Arnórsdóttir (from Þórbergssetur at Hala) said that one of the main qualities of the RRCH was "first and foremost to have effortless access to the academic community here in the rural regions, and that they are part of the local community which paints a different vision than if this was an organization located in Reykjavik (insert by author: the capital of Iceland)". Physical proximity which often spur personal connections between local actors and the staff members of the RRCH and the local awareness of those who are operating local support organization, is very important. Eyjólfur Guðmundsson (Schoolmaster, FAS) said that among qualities regarding the RRCH are the physical proximity and the informal character of their interactions, but both organizations are located at Nýheimar. Helga Davids, expert at the Vatnajökull national park, and Ari Þorsteinsson, manager of the innovation center, agreed with Eyjólfur and said that the easy access to knowledge and advice from the RRCH was an important quality for all their innovative activities. Ari Þorsteinsson also
mentioned that the RRCH was very good at applying for funding for various projects and participate in these projects if they are launched, that is a great quality.

Hjalti Pór Vignisson (Mayor of Hornafjörður municipality) said that the external link with the University of Iceland and with foreign actors (e.g. through the NEST and NEED projects) is very important for the region and its development towards a more service- and knowledge oriented society. Their activities in the region have been very important, both for the local authorities and for the tourism- and related industries. According to Haukur Ingi Einarsson, manager of technological- and environmental issues, it was very important for local authorities to have access to neutral and unbiased research. This was especially important when the local authorities were introducing solutions for the local economy, e.g. regarding land use plan and environmental issues. When discussing the informal character of the interactions between various actors in Nýheimar, Guðmundur Heiðar Gunnarsson (from Matís), said that one of the main qualities regarding his interaction with the RRCH was that "it is very informal but becomes very creative due to that. We work in a close physical proximity and we are always working towards building the same infrastructure with the same vested interest in mind. They (insert by author: the RRCH) give me access to knowledge which is e.g. not available within Matís which perhaps channels my opinions to places I have not visited before".

It was clear from my interviews that the access to academic knowledge, either directly from the RRCH or through its external links, was considered very important for the local economy. According to Rögnvaldur Ólafsson, chairman of IRR, one of the main qualities of the RRCH (and also other satellites of the IRR in the other rural regions of Iceland) is that it creates opportunities for young educated people.
He said that "it is essential for these rural municipalities, which are infact lagging regions regarding their traditional industries, at least regarding the number of jobs, then it is highly crucial for them to get young educated people from these new industries (insert by author: more knowledge intensive industries), and with this new education and new vision. So this can change the social character which consequently effects economic development and such. I would say that this was the strongest quality". Rannveig Ólafsdóttir, the first manager of the RRCH, agreed on the importance of creating new opportunities for the rural regions and said that if "you are planning a regional development scheme it must be based on their own premises and on increased diversity in the local economy".

To summarize, among pros of the RRCH are its provision of academic knowledge and external links, which are considered very important for the Hornafjörður municipality and its economy. These qualities could in fact create opportunities for young educated people in the region. The fact that the RRCH is located in the region and not elsewhere was considered an important quality, and also their provision of neutral and unbiased research.

5.6.2 Cons

When I asked about the cons regarding the RRCH and their operation, my interlocutors often had difficulties in providing answers. Most of them did not see many disadvantages regarding their experience of it and were quite pleased with their interaction so far. The very little they were willing to say regarding disadvantages of the RRCH were mainly related to three factors. One was the RRCH
budget or working capital and the adjunct unsecurity for their operation due to that.

Rósa Björk Halldórsdóttir (from Í ríki Vatnajökuls WOW) said that it was very important to secure fundings for the RRCH, because of the everlasting and imminent uncertainty regarding if they can secure funding for the next year or not. This is quite withering for its staff members. She did not want to see the day when the RRCH had to be shut down due to lack of fundings. Everyone would lose if that happened.

Rögnvaldur Ólafsson (Chairman of IRR) said that it was difficult enough to persuade many young educated people to move with their families to the rural regions to work in these centers, and participate in changing what and how things were done in the rural regions. But to risk losing them again due to uncertainty regarding future funding for the centers is quite inappropriate and awkward for that cause. He said that "it is bloody hard to drag young educated people to the rural regions and then having to take them back". Þorvarður Árnason (manager of the RRCH) said that the biggest con regarding the operation of the RRCH was the insecurity regarding funding and he said that sometimes he could not be sure what to expect after six to twelve months. He said that "I do not know what to say to my staff, will I have work for them after half a year or twelve months (...) there is first and foremost a great need for a more order regarding these matters". This problem was also true regarding fundings of every single projects that the RRCH participated in. If the necessary funding to finish various projects that the RRCH participates in is not secured, there is always the danger that they will only fade out. This can be sensitive and even critical for the reputation and trustworthy of the RRCH within the municipality, e.g. when great hopes for success are linked with the projects.
Lack of funding is related to the second factor, the number of staff members and their academic fields. Hjalti Þór Vignisson (Mayor of Hornafjörður municipality), pointed out that the academic field was quite narrow and mentioned that it would e.g. be very valuable for the community to have a cartographer and a glaciologist on permanent basis at the RRCH. But he was also clear about that the academic fields in the RRCH should be based on the regional character. Haukur Ingi Einarsson (from local authorities), said that if the RRCH would have more staff members, research activities could be more applicable to the community and the knowledge spectrum would increase. That would be very important and useful for local actors. Þorvaldur Árnason (manager of the RRCH) agreed on that it could be better to have fewer more staff members and said that he thought the optimal number of employees was nine, then the academic fields could be between five to nine. He said that "these academic fields would strengthen each other and yield possibilities regarding internal links which I find very exciting, but I am very interdisciplinary minded. From this, new projects would give birth". Þorvaldur said that with more staff members he could also focus more on his important role in building and maintaining both local- and external links. Networking with various actors is essential for both the RRCH and the region. He said that "if I am not active in these networks, they die, at least regarding us". Without these important links there is no means to the end, the RRCH would be very weak, which is not very fruitful for the region.

The third factor, which was how ever inconspicuous, was that few of my interlocutors felt that the RRCH could be more active in introducing their activities in the region, i.e. that too many did not know what it was doing or what opportunities its presence could offer. Guðrún Guðmundsdóttir (from Hólmur tourist
accommodation) was convinced that the link between the RRCH and local actors had been reinforced, but she was not sure that actors that had not been actively been searching for opportunities for themselves as she had done, they would not necessarily have this link with the RRCH. She said: "I cannot generalize but it is my feeling that it (insert by author: the link) has not been established. But there is nothing strange about that, this is not an old phenomenon (insert by author: the RRCH)". Þorbjörg Arnórsdóttir (from Þórbergssetur at Hali) said that the RRCH could do better regarding introducing themselves for peripheral actors in the Hornafjörður municipality. Such introductions would enhance the periphery and connect it better with the more populated area at Höfn. Stefán Ólafsson (from local authorities) was very positive towards the RRCH and its work so far, but he was also not sure that a link had been built with the common public in the region. He said that the RRCH and local authorities could do better in introducing the opportunities the RRCH could provide for the community. He thought that the common public was pretty aware of Nýheimar but he expected that people probably knew least about the RRCH when it came to knowledge regarding its organizations.

To summarize, the interlocutors did not see many cons regarding the RRCH, but mentioned that the amount of and uncertainty regarding its funding was very inconvenient because it created insecurity for its staff members and its various projects. Its small size and the narrow academic field were considered a disadvantage, and some of the interlocutors said that the RRCH could be more active in introducing themselves and their operation.
These conclusions will now be discussed in the context of the theoretical part of this thesis. The research questions will be answered and few assumptions will be drawn from this research.
6 Discussion

The main research questions of the thesis were if the RRCH had succeeded to enhance the link between the university (research and knowledge) and local actors in the region, and if and how that link stimulated innovative activities there. I will now discuss my main findings in the context of the theoretical part of this thesis and answer these research questions. I will conclude with some reflections and recommendations, and also discuss possible future research.

6.1 Regional development and the RRCH in Hornafjörður municipality

The Hornafjörður municipality has been facing various socio-economic problems, e.g. negative migration due to industrial changes and globalization, similar to what Pike (et al., 2006) discuss regarding recent developments in the developed world. The old traditional industries are lagging and the more service related industries, e.g. the tourist- and related industries, are becoming more prominent in Hornafjörður municipality. These ‘new´ industries are very dependent on strong external networks and knowledge, very similar to what Moodysson and Johnson (2007) discuss. The recent establishment of the RRCH and also the other support organizations at Nýheimar have provided this external networks and ‘new´ knowledge for local actors. According to the science and technology policy for 2006-2009 (The Prime Ministers Office, 2006), scientists should increase their participation with actors in society as a whole, and that is exactly what has been happening in Hornafjörður municipality. My case study reveals that the RRCH and its staff members have been very active in the region and participated actively with local actors.
6.2 The Hornafjörður RIS and the stimulation of innovative activities

6.2.1 The Hornafjörður RIS

According to my case study, the RIS in Hornafjörður municipality is reasonably strong, at least regarding the link between the RRCH, local authorities and local organizations. According to my interviews the link between the knowledge exploitation subsystem and the knowledge creating and diffusion subsystem, discussed by Coenen and Asheim (2006) was strong. All my interlocutors, which are part of one of the two subsystems, agreed that this link had been enhanced in recent years and was in fact quite active. This had much to do with the establishment of the RRCH and also of the other organizations at Nýheimar and their interactions (which are often mutual) with local actors. These interactions are mostly based on informal interactions and tacit knowledge and are most often dependand on personal relations and physical proximity between actors. That fits with Polanyi’s illustration of tacit knowledge and goes hand in hand with Granovetters (1985) logic of what makes regional approaches valuable, and also the "sticky" nature of knowledge discussed by Asheim and Gertler (2005). My interviews also revealed that despite that some of the knowledge involved was coded, its communication dependent on the personal dialogue between the RRCH’s staff members and local actors. It has therefore a certain tacit dimension as Nightingale (1998) discuss. These informal interactions, mostly based on tacit knowledge and physical proximity, concur with the importance of such interactions which Colyvas (et al., 2002) discuss. It would therefore be naïve to focus mainly on the communication of coded knowledge in Hornafjörður municipality, but according to Wright et al. (2008), most policies
regarding universities before were designed around the transfer of coded knowledge.

The only link that I could not provide strong enough evidence on was the link between the local common public and the RRCH on one hand, and its link the local authorities on the other. My interviews pointed towards that these links had been enhanced from before and I consider that to be highly likely, but an answer to that question can only be provided by a special survey among the local residences. The links between these various actors in the Hornafjörður RIS, which I focused on in my case study are demonstrated in figure eight.

![Diagram](image.png)

**Figure 8. The link between various actors in the Hornafjörður RIS**

It was very clear in my case study that the RRCH had managed to enhance the link between the university and local actors, especially with local authorities and organizations within the tourist-, cultural-, and food industries. What Chaminade and
Vang (2008) call a mature RISs, could well be applied to the Hornafjörður RIS, but they say that innovations are more likely to happen when the RISs’ building blocks are strong and the necessary human- and social capital are available. The answer to the research question, "Has the RRCH enhanced the link between the university and local actors?", is therefore yes.

6.2.2 Stimulation of innovative activities

These strong links discussed above are in fact an important base for innovative activities in the Hornafjörður RIS. My case study revealed that despite its short lifetime in, the RRCH has participated in myriad of all sorts of projects with all kinds of actors in the Hornafjörður municipality. It was very clear in my interviews that it has stimulated innovative activities through their numerous interactions and knowledge communications with these local actors. This was especially evident in the tourist-, cultural- and food industries, but the RRCH has stimulated innovative activities both of individual firms and these industries as a whole. Its indirect interaction with other local industries through their participation with the other support organizations at Nýheimar, has also stimulated innovative activities in the Hornafjörður municipality. The physical proximity and interactions with these other organizations at Nýheimar, based on similar objectives, has not only been important for the RRCH, it has proven to be quite necessary, both for all the organizations at Nýheimar and innovative activities in general in the Hornafjörður municipality. Innovative activities in the Hornafjörður municipality are based on a wide and active interactions between all relevant participants, which supports that innovations are
socially constructed (Yearley, 2005) and do not occur in isolation (Fagerberg, 2005). They have also been highly shaped by the positive attitude towards new things and innovations in the local environment, local learning processes and knowledge building, but according to Bruland and Moverey (2005) and Smith (2005), innovations are influenced and shaped by these factors.

The answer to the research question, "Has the RRCH stimulate innovative activities within the Hornafjörður municipality?", is therefore yes.

6.2.3 How has this stimulation of innovative activities occurred?

The stimulation of innovative activities has both been through formal- and informal interactions. The RRCH has participated with local organizations in various formal activities, such as conferences and symposiums, and has helped or participated in developing their ideas and creating applications for fundings. It was clear from my interviews that the provision of academic knowledge and external linkages were considered one of the RRCH’s greatest qualities. International project such as the NEST and NEED projects bare witness of the importance of external linkages for innovative activities in the Hornafjörður municipality. The RRCH communicated academic knowledge mainly through their flexible- and informal activities and dialogues with local actors, often based on personal relations, but its emplacement in the region and the physical proximity to its staff members was considered highly important.

The answer to the research question, "How has it done it?", is therefore in short, by the provision of academic knowledge and external linkages through its
various formal- and informal interactions with local actors and also through its participation in various local- and international projects.

6.3  **Similiarities to the Triple Helix concept**

These relatively strong links and interactions between these actors is very related to the core ideas behind the Triple Helix model, discussed by Etzkowitz and Leydesdorff (2000) and Etzkowitz and Klofsten (2005). It is obvious that the RRCH has played an important role in the Hornafjörður municipality’s increased knowledge-base reality. Although the RRCH is not directly conducting applied science it has participated with other local organizations that are doing so, and it has highly influenced their course of action, mostly through informal interactions. Etzkowitz (2002) says that there has been an increased pressure regarding the applicability of academic research. Although the RRCH’s focus is only on pure basic academic research, and also entirely on their own terms (i.e. not on the industries terms), they have mainly been within fields that can actually benefit the region directly, i.e. that local actors can use the results for their socio-economic activities. It can therefore be said that despite that the RRCH has only been conducting basic academic research, their research have in fact been highly practical for local actors and their results quite applicable for their various socio-economic activities.

Although it is not displayed by figure eight, the borders between the three main actors, which are highlighted in the Triple Helix model (universities, industry and government), are not very clear in my case study. It is clear that these actors have participated very actively with each other and have, at least partially, been involved in each others’ roles, e.g. regarding incubating activities, regional planning
issues and knowledge diffusion. That is very similar to what Etzkowitz and Klofsten (2005) discuss regarding the character of the interaction between the three institutional spheres, but they say that each individual sphere of the Triple Helix model sometimes take on the role of each other in society. It is clear from my case study that the RRCH has engaged in this "third task" (e.g. Hedin (ed), 2009), which is what Pavitt (2005) describes as informal networks between industry and academic actors, and OECD (2007) defines as cultural and community development.

6.4 Final reflections and recommendations

6.4.1 An applicable regional development approach

Judging from this case study it is obvious that the regional development approach that has been employed in the Hornafjörður municipality has actually worked quite well. The establishment of Nýheimar and the interactions of the various support organizations there, which enhance and compensate each other, bare witness of that. These organizations would be quite weak standing alone, and would as such not be able to provide the adequate support needed, but together they form the critical mass needed for the important stimulation of innovative activities. What has been crucial for this positive development are the [bottom-up] participatory approaches exercised by the local support organizations, based on equality and mutual respect between participants, and also on the uniqueness and special character of the region. They realize the importance of involving the grass-root level from the beginning of all projects, since it was the local [grass-root] actors who
carried on with the various socio-economic activities long after the participation with the support organizations had ceased.

This kind of an approach towards regional development in the low populated rural periphery can therefore be quite effective. Although it has been said that one success story cannot be fully repeated elsewhere (Scott, 2006; Hudson, 1999), I say that if approached in the spirit of these recent developments in the Hornafjörður municipality regarding regional development, this kind of an approach could be applied in other rural peripheral regions as well.

6.4.2 Recommendations for the RRCH, local authorities and the IRR

The recent development in the Hornafjörður municipality has been very positive and approaches to enhance local actors and stimulate their innovative activities have been very successful so far. Despite this success, I would like to discuss especially two important factors that could be improved further, and could in fact be pivotal for future regional development and the success of innovative activities in the Hornafjörður municipality. I recommend that both the RRCH and local authorities introduce their activities and the possibilities they offer more actively for local actors, with special focus on the common public who has had no experience of the RRCH and the other organizations at Nýheimar. This is however, at least partially, contingent upon the RRCH´s operational funding. Small and unsecure funding has entailed great insecurity in the RRCH´s operation and also for some of their various projects. With higher, stable and secure funding, both for its operation and its various projects, the RRCH could both invest more time to introduce their activities
better for local actors and conduct more basic research, which has proven to be very beneficial for the region. Without remedies, this lack of funding and operational unsecurity could potentially turn the success story so far into a failure. The case study in the Hornafjörður municipality has revealed the vast importance of the RRCH, an in fact its essentiality for the dynamic environment at Nýheimar, but the dynamism created there has been immensely important for the local community.

6.5 Further research

The IRR satellite centers are eight today and are located in the rural regions all around Iceland. I focused on just one of them instead of investigating them all in a shallow manner. During the field trip in the Hornafjörður municipality I started to see that it would have been interesting to study at least one other IRR center for comparison. Although each of the IRR center has its own special focus, they all have a common objective; to enhance the link between the UI and actors in the rural regions. Such comparison would therefore be quite interesting and could give my research in the Hornafjörður municipality some sort of relativity. A quantitative research on the economic effects of the RRCH would be very interesting, but my study only focused on the interactions between local actors, i.e. regarding the dynamism of innovative activities. Such comparison and even combination of these different approaches would be quite valuable. It would also be very interesting to conduct comparative studies on similar university centers in the rural periphery in other countries.
7 Bibliography


RRCH (2010). NEST. Site visited May 12th at: http://stofnanir.hi.is/hornafjordur/nest


