Knowledge, Place and Economy

Smart Specialization and the Triple Helix framework in Amsterdam and Sapporo

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1. Introduction

Contemporary economies tend to be interconnected, in a context of global competition and fast processes of technological change, requiring a high incorporation of information and knowledge.

This global process demands a strong interaction within local and regional economies in order to explore synergies and complementarities, which allow companies to innovate and to compete in global markets.

All over the world, the processes of cooperation at local level between private companies and research centres are crucial for public institutions with responsibility on economic development, in order to guarantee high levels of employment and well-being for the citizens.

Marina van Geenhuizen, Peter Nijkamp, “Creative Knowledge Cities”, Fig.3.2 revised.
Nevertheless, there are important **obstacles** for this collaborative processes:

- **Aims**: The **purposes** of researchers and knowledge centres are often different from the needs of private companies.

- **Communication**: It’s generally difficult for the research centres to **understand** how they can contribute for the economic performance of a private company, while it’s difficult for the private company to perceive the application of research findings in a productive process.

- **Timings**: Scientific research tends to have a **long-term** perspective, while companies tend to pursue **short term** objectives.

- **Finance**: **Long term** research projects oriented to innovative products or services require **financial resources** without guaranteed results.

- **Excellence**: Scientific quality measured by **global peer-review standards**, not necessarily adjusted to the **specialization, needs and priorities of local economies**.
Opportunities for the Universities within the regional innovation systems:

- stimulate the **entrepreneurial spirit** of their staff and students;
- provide **advice and services to SMEs**;
- **training workers and managers** of local companies;
- promoting the **training and placement of high level graduates in innovative businesses**;
- **host incubators** for spin-offs in science and technology parks;
- cooperation with companies to design **specific curricula**.

The **results** of the collaboration of Universities with private companies are **not quick** and they are **often unclear**, requiring:

- a **long term shared vision**;
- an **holistic** approach,
- to be based on **programs** (with different components and a long term perspective) rather then projects (with a limited and precise task, to be accomplished in short time).
Human resources, Innovation and Economy in Europe:

Although Europe hosts a large and diversified pool of skilled human resources for research and innovation, this needs to be constantly replenished, improved and adapted to the rapidly evolving needs of the labor market.

Today only 46% of this pool works in the business sector, which is much lower than in Europe’s main economic competitors: 69% in China, 73% in Japan, 80% in the United States.

European Commission, 2011
Netherlands is located in the center of West Europe, at short distance from the biggest European economies (France and Germany), the Nordic countries and the United Kingdom, with a very easy access to the sea.

Logistics, international trade and financial services are economically important.
The Amsterdam Metropolitan Area (AMA) is located in the center of the Netherlands.

The territorial limits of this area are the result of a “bottom-up” process based on initiatives of local governments.

Other important cities, in economic, political or academic terms (Utrecht, Leiden, the Hague or Rotterdam), are located at very short distance.
CAUSE | global ambition

Gateway to Europe
EU2020 – Europe’s Growth Strategy

Global Business Hub
Diversity - Knowledge - Creativity - Connectivity

Presentation of AEB by Rik Bleeker (General Manager)
Chairman Mayor of Amsterdam

Industry 9 members

Knowledge institutions 5 members

Government 4 members (local government)
**Hokkaido University – North Campus**

Cooperation between University (red), public institutions (blue) and private companies (orange)
Knowledge, Place and Economy

**Research and Business Park Project Promotion Council**

12 organizations (secretariat: NOASTEC)
Academy, Companies, Government (National, Regional, Local)

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**Business**

Hokudai Business Spring (Hokkaido Branch of Organization for Small and Medium Enterprises and Regional Innovation)

**Production**

“Collabo Hokkaido” (managed by “NOASTEC”, a Regional Foundation)
Hokkaido Prefectural Research Institute (Hokkaido research organization)
National Institute of Advanced Industrial Science and Technology (AIST)

**Development**

Creative Research Institution (CRIS)
Shionogi Innovation Center for Drug Discovery (Private company), etc.

**Basic Research**

Creative Research Institution (CRIS) [in collaboration]
Frontier Research Center for Post-Genome Science and Technology

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Based on notes by Prof. Araiso, CIBP, Hokkaido University
# Sapporo and Amsterdam *Territorial and economic aspects*

<table>
<thead>
<tr>
<th>Area</th>
<th>Hokkaido Prefecture</th>
<th>83,500 km²</th>
<th>City of Sapporo</th>
<th>1,120 km²</th>
<th>Amsterdam Metropolitan Area</th>
<th>41,500 km²</th>
<th>City of Amsterdam</th>
<th>1,800 km²</th>
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<table>
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<tr>
<th>Population</th>
<th>Hokkaido Prefecture</th>
<th>5.5 million</th>
<th>City of Sapporo</th>
<th>1.9 million</th>
<th>Amsterdam Metropolitan Area</th>
<th>2.4 million</th>
<th>City of Amsterdam</th>
<th>0.8 million</th>
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<table>
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<tr>
<th>Population density</th>
<th>Hokkaido Prefecture</th>
<th>70 people/km²</th>
<th>City of Sapporo</th>
<th>1,700 people/km²</th>
<th>Amsterdam Metropolitan Area</th>
<th>1,300 people/km²</th>
<th>City of Amsterdam</th>
<th>3,600 people/km²</th>
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<tr>
<th>Economy</th>
<th>Hokkaido Prefecture:</th>
<th>agriculture, fishery, food production, tourism services</th>
<th>City of Sapporo:</th>
<th>whole and retail sale, care service, tourism service, food production</th>
<th>Amsterdam Metropolitan Area:</th>
<th>business services, financial services, whole sale, care service</th>
<th>Global economy based</th>
<th>Center of the European economy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Local and regional based economy</td>
<td>Isolated from central industry of Japan</td>
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|------------------|-------------------------------------|------------------------------------------------|---------------------------------------------|------------------------------------------------|------------------------------------------------|

| Knowledge centers | - Hokkaido University is the largest university in Hokkaido Prefecture | - There is another comparable research university | - There are colleges and universities of applied science | - Other important Universities at very short distance (Leiden, Utrecht, Rotterdam or The Hague) | --- |
# Hokkaido University and VU-Amsterdam *Academic aspects*

<table>
<thead>
<tr>
<th>Facts and figures</th>
<th>Hokkaido University</th>
<th>VU University Amsterdam</th>
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<tbody>
<tr>
<td></td>
<td>12 faculties, 3 institutes</td>
<td>12 faculties, 14 institutes</td>
</tr>
<tr>
<td></td>
<td>18,000 students, 4000 staffs</td>
<td>22,500 students, 4400 staffs</td>
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## Organization and knowledge transfer

**Creative Research Institution (CRIS)**
- Interdisciplinary research institute as liaison center

**Center for Innovation and Business Promotion (CIBP)**
- Matching of researchers and companies
- Coordinating collaborative projects
- Running incubator
- Technology Transfer
- Creating new industry
- Licensing and managing intellectual properties

**Technical Transfer Office (TTO):**
- Support for subsides application
- Advisory for university's research strategy
- Organizing small projects among researchers and companies
- Matching of researchers and companies
- Promotion for internship
- Reach international market
- Generating spin-offs

## Policy

- Difficulties to implement a strategy and a common vision involving private partners.

- The importance of Triple Helix is stressed in *Strategic Plan 2011-2015* to exploit new financial resources

## Physical infrastructure

- **North Campus actually oriented to Triple Helix development**
- All facilities are owned by national government

- **New campus is under development** with 30 years strategic plan
- Multifunctional(future) campus:
  - promoting interdisciplinary research, Triple Helix, and social interaction;
- Compact and flexible(Future) campus:
  - sharing excess facilities and reorganizing working places
- **The university owns the facilities**
- Previous experiences to concentrate academic and entrepreneurial activities in specific locations (like the Science Park) didn’t achieve the expected results
# Sapporo and Amsterdam: *The Triple Helix Framework*

<table>
<thead>
<tr>
<th>Organization</th>
<th>Research and Business Park Project Promotion Council (RBPPPC)</th>
<th>Amsterdam Economic Board (AEB)</th>
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<tbody>
<tr>
<td></td>
<td>- North Campus triggered RBPPPC foundation</td>
<td>- AEB is led by municipality of Amsterdam</td>
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<td></td>
<td>- <strong>Physical infrastructure oriented organization</strong></td>
<td>- Public-private collaboration oriented since AIM and AKN</td>
</tr>
<tr>
<td></td>
<td>- RBPPPC was led by certain local private company</td>
<td>- <strong>VU is a member of executive board</strong></td>
</tr>
<tr>
<td></td>
<td>- HU motivated by budget application for CRIS construction to participate in RBPPPC</td>
<td>- <strong>Multinational companies</strong> involved</td>
</tr>
<tr>
<td></td>
<td>- 12 <strong>local organizations</strong> involved</td>
<td>- AEB itself is the board and the secretariat of the framework</td>
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<td></td>
<td>- One of the participating organizations is assigned secretariat task</td>
<td>- AEB has its own human resources</td>
</tr>
<tr>
<td></td>
<td>- No Human resources</td>
<td></td>
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| Strategy      | 4 strategic guidelines are taken now:                        | **Common agenda** has been set to promote **7 priority clusters** |
|              | - Creating high added-value industry utilizing local food.    | - AEB is conducting **systematic project evaluation** and coordinating Triple Helix projects for competitive funds application (mostly European Union funds) |
|              | - Developing medical and pharmaceutical industry.             |                                |
|              | - Combining food industry and medical industry.               |                                |
|              | - “Green innovation” for post carbon society.                 |                                |
|              | - **No systematic common rule to promote projects**           |                                |

| Funding       | - No RBPPPC's own budget for project implementation           | - No AEB’s own funds for project implementation |
|              | - All the **projects funded by national government** (MEXT) | - Project budget (40 - 50 M EUR in total) covered by **external funds** |
|              | - Half of the operational cost (92,000 EUR/year) covered by **one participating organization** | - Operational (4.5 M EUR/year) and project **budget shared by 3 sectors** |
3. Smart Specialization

The concept of *smart specialization* has been recently developed at theoretical level (2008) but quickly adopted as a key-concept for the *regional development and innovation policies* in the EU and integrated in the *Innovation Union* strategies within the *Horizon 2020* programs.

This new key concept for the Regional Innovation Policies 2014-2020 (RIS3) aims to:

- increase the **focus** in a very short number of thematic priorities;

- support “**bottom-up**” innovative processes;

- encourage **experimentation** and strategic flexibility;

- promote a bigger involvement of **regional stakeholders** in the **planning** process (including the definition of a “**common vision**” for the future of the region, the **evaluation** of the strategy and the **monitoring** process);

- be supported by **monitoring systems** based on precise indicators.
Each region should develop **place and practice-based innovation processes** through an **entrepreneurial process of discovery** (including universities or public institutions as creators of “market-oriented” knowledge), supported by the **region’s distinctive industry structures and knowledge** and focused on the **creation of unique assets and capabilities**, based on its **own strengths**.

These strategies should follow a **broad concept of innovation** (including design, creative industries or business models) and **concentrate knowledge resources linked to a limited number of priorities**.

**Innovation:**
- **localised interaction** between market forces, knowledge centres and governmental institutions (entrepreneurial discovery)
- ensures **differentiation and uniqueness** in the regional specialization, based on the resources and capacities available in the **territory**.

Increase the **scale and scope** of production, generate **spill-overs** from a specific specialization pattern and from the **related variety** between interconnected sectors or clusters should be the main results to achieve.
The strategic identification of possible inter-cluster or inter-sectorial relations and connections, in order to generate spill-overs based on “**Key Enabling Technologies**” (with impact on different sectors and potential to be developed at local level) or **Information and Communication Technologies**, should follow the identification of priority sectors.

This strategy should consider the **societal and environmental contemporary challenges** (employment, climate change, aging societies) and to be flexible enough to allow **experimentation, creativity and adjustment to changing conditions**.
AEB (Amsterdam) and RBPPPC (Sapporo) according to the *Smart Specialization* concept

<table>
<thead>
<tr>
<th></th>
<th>AEB</th>
<th>RBPPPC</th>
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<tbody>
<tr>
<td><strong>Key priorities</strong></td>
<td>7 priority clusters</td>
<td>From a wide range of high-tech sectors like life science to focus on food sector.</td>
</tr>
<tr>
<td><strong>Key enabling technologies</strong></td>
<td>Unclear.</td>
<td>Food and medical technologies applied to primary sector, health or tourism.</td>
</tr>
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</table>
| **Entrepreneurial discovery** | - "Cluster table" selects projects with commercial potential for each priority cluster  
- Steering committee evaluates before decision to support from the Board.  | Not defined (selection of project topics much based on the orientation of the University). |
| **Collaborative leadership** | Local government, private companies and knowledge centers represented in the Board. | - No shared leadership formally established.  
- Financial support for projects is from national government.  
- Local government is starting to take an initiative for collaborative projects. |
| **Shared vision**    | Strategic plan decided by the Board, with the participation of all the members (local government, private companies and knowledge centers). | Strategies combined to the ongoing projects organized by the university. |
| **Monitoring**       | Clear and measurable objectives to be evaluated by all the members. | Broad objectives, difficult to evaluate. |
4. Discussion

The structure of the Amsterdam Economic Board is clearly oriented for a collaborative leadership among local governments, knowledge centres and companies.

The strategic objectives and the performance of the Board can be collectively monitored and evaluated by all the partners.

The creation of the “Clusters Tables” creates a possibility for the emergence of “bottom-up” projects and proposals, following the “top-down” guidelines defined by the Board.

The existence of large companies operating in the city favours their integration in AEB.

The impact of AEB’s initiatives in local SMEs is an interesting aspect to evaluate in the future.

The same applies to the priority clusters that were defined: 7 clusters is not exactly a “limited number of priorities” and this creates problems for the definition of “key-enabling technologies”.
Despite the initial leadership by a local company, **RBPPPC** is still dependent on the role of the University.

The **entrepreneurial structure** of the region of Hokkaido, dominated by **small companies** with a strong importance of the **primary sector**, might affect negatively the the continuity of RBPPPC.

The development of an **entrepreneurial processes of discovery** or the existence of a **common vision** and a **collective process monitoring and evaluation** require the involvement of private sector.

**Positive focus on the agro-food production**, developing **key-enabling technologies related to life science**, with potential **impacts on different activities** (food production, health care, medical products or tourism).

Recent initiatives developed by the **City of Sapporo** aiming to **increase collaboration** with knowledge centres also provide positive impacts.

As the only one nation-wide research university in the region holding core knowledge and creativities, with an historical orientation to “**practical learning**” and having adequate **human resources** and organizations (such as CIBP and CRIS) to promote the match between researchers’ seeds and companies’ needs, **Hokkaido University** seems an adequate organization to take the lead of RBPPPC in the future.

Nevertheless, its success also depends on the **involvement of the local private sector**.