



LUND UNIVERSITY
School of Economics and Management

**Master programme in Economic Growth,
Innovation and Spatial Dynamics**

The role of proximity for business development in business incubators

Gijs van der Poel

gijsbert.van_der_poel.750@student.lu.se

Abstract: This thesis adds the role of the different types of proximity to the discussion on business development. It does so by aiming at start-ups that are currently located in business incubators in the city of Amsterdam, The Netherlands. Current research has focused on the output, effectiveness, diversity, and different types and roles of business incubators. It focuses on what happens within the incubator walls or examining the results on regional economic development. Simultaneously, there is a large body of research on the role of location for businesses ranging from specialisation to diversity. This exploratory thesis tries to combine these two types of research. It does so by conducting semi-structured interviews with both incubator managers as well as start-ups located in a business incubator. The questions are derived using network and proximity theories as well as localisation theories. This results in the research question: "What is the role of proximity for business development in business incubators?" By doing so this research fills up a niche left open by the current body of research as well as providing tools for start-ups that are looking to (re)locate, as well as business incubator managers and policy makers that are considering a location for the development of a new business incubator.

Key words: proximity, business incubator, start-ups, location

EKHR72

Master thesis (15 credits ECTS)

June 2013

Supervisor: Lars Coenen

Examiner: Jerker Moodysson

List of Contents

1. Aim and Justification.....	2
2. Theory.....	3
2.1 Organisational life cycle	3
2.2 Knowledge creation and diffusion.....	4
2.3 Network creation.....	6
2.4 Proximity.....	7
2.5 Proximity: Specialisation and diversity on a regional level.....	9
2.6 Incubators: The concept.....	11
3. Contribution of this study	14
4. Scope and Limitations	14
5. Methodology	15
6. Mapping.....	16
7. Incubators	18
7.1 De Groene Bocht.....	18
7.2 ACE Venture Lab.....	19
7.3 New Energy Docks	19
7.4 CODUM.....	20
7.5 theGROUNDS	21
8. Survey results and Interviews with companies.....	21
9. Analysis	22
9.1 Location.....	22
9.2 Proximity.....	23
9.3 The role of the incubator	25
10. Conclusion and Discussion.....	28
11. Reflection and further research	30
Bibliography.....	32
Appendix.....	33
Appendix A: List of topics for interviews with incubators.....	33
Appendix B: List of topics for interviews with businesses in incubators	33
Appendix C: Survey questions	33
Appendix D: List with incubators used for mapping	36

A special thank you to Lars Coenen for supervising me and providing me with valuable feedback, suggestions and improvements. A big thank you to De Groene Bocht, ACE Venture Lab, New Energy Docks, CODUM and theGROUNDS for their collaboration, answers and insights as well as to the interviewed businesses. Finally a big thank you to Annelies Sewell, Klára Šimčíková and Niek van der Poel for their feedback and linguistic improvements.

1. Aim and Justification

Every year many new start-ups see the light of day and many do not survive for a long time. In order to improve their survival rates, a number of policy instruments have been created and executed. By placing them in close geographical proximity of each other and providing them with guidance, survival rates are supposed to increase. The concept of the 'business incubator' was created. Their services range from a desk and four walls to investing, training, management, shared services and network development.

The current body of literature touches upon different aspects of the role of location for businesses and business development. It is mostly aimed at explaining how specialised regions or diverse metropolitan areas increase economic development. Marshall (1919) was the first to describe positive externalities when businesses co-locate, whereas Porter (1990) more recently created his so-called cluster benefits theory. Jacobs (1969) as well as Florida (2002) were of large influence in their argument that it is not the clustering of people who specialize in the same direction that creates competitive advantages, but that diversity is more important for innovation. This diversity is found mostly in metropolitan areas, hence the concept of urbanisation economy.

In the last decade knowledge creation has been of great interest among scholars as well as networks and network creation (ASHEIM ET AL., 2007). The way incubators play a role in network creation has also been looked into (EBBERS, 2013). Tacit knowledge, strong and weak ties, buzz, spillover effects, and creative class are a few of the many concepts dominating the current scientific field. The role, outcomes, and effectiveness of business incubators have often been discussed and results differ as do the variety of different incubators and sectors in which they are active (HACKET & DILTS, 2004). More recently Boschma (2005) introduced different types of proximity in order to explain mutual learning activities.

This thesis combines these bodies of research and looks into a niche left open by the same body of research. It aims at investigating the role of proximity for business development and while doing that aims at the role that business incubators play. By doing this it provides businesses with more knowledge on where to locate, incubators a better insight where to open a new location and policy makers a better understanding of what locations that currently have no function may potentially be of interest for future incubator locations. This results in the research question: "What is the role of proximity for business development in business incubators?" This research is conducted by taking the city of

Amsterdam as a case study example and aiming at a large variety of business incubators to provide a comprehensive picture.

2. Theory

The concept of a business incubator is broad and constantly developing ever since the first one was founded in 1959. The term business incubator has been around since and has been an umbrella term for every building hosting multiple companies independently of its activities, services, goals, missions, ownership or origin. For this research, the broad view will result in a better understanding of the different roles that location can play for the different types of incubators and results in an overview useful to all. A large proportion of former completed research is either towards the role of location for businesses or towards effectiveness and efficiency in incubators, and therefore this thesis explores the combination of the two. In order to do so, firstly the organisational life cycle is discussed. Secondly, knowledge creation and diffusion is elaborated upon. Thirdly, the different aspects of proximity are explained and finally the contribution and roles of business incubators play are discussed.

2.1 *Organisational life cycle*

New businesses start often in order to compete with established businesses. People start businesses as an alternative way to have employment, because of innovation or to provide competition to current 'inefficient' businesses (STOREY & GREENE, 2010, CH. 6). Start-ups go through different stages from start-up to established company to eventually bankruptcy or revival. Miller & Friesen (1984) suggested five stages of organisational development: birth, growth, maturity, revival and decline. The first stage refers to the birth of the company where it orients inside the current market, finds customers, creates a network and starts working. The growth stage comes when the company starts to get its first projects in and starts growing also in budget and number of employed staff. The third stage is maturity, when the company becomes established, growth starts to decline and the (niche) market share is large. The fourth and fifth stages (revival and decline) are not relevant for our thesis as companies are not considered start-ups any more at this stage and therefore unlikely to be located in an incubator.

2.2 Knowledge creation and diffusion

Innovative knowledge is of importance to all start-ups. In order to gain success and to increase their survival rate, the knowledge created needs to be marketable and is therefore innovative. Firms in incubators particularly tend to be innovative and provide the market with new types of products, processes or ideas. Knowledge creation is not considered a linear process but an interactive process between different actors and different types of knowledge. In order to have a better understanding on knowledge creation and innovation it is important to look deeper into the current body of research on this topic. The emphasis will be to explain the difference between codified and tacit knowledge, the so-called spill over and spin-off effects as well the difference between buzz and face-to-face meetings.

Codified knowledge is knowledge that is codifiable in some sort of way. It can be written down in texts, maps, numbers or blueprints. This 'code' can be transferred to anywhere in the world and interpreted by anyone with the proper training, resulting in knowledge transfer. This type of knowledge is easy and cheap to transfer across the world, due to the large reduction of transportation and communication costs over the last decades (STORPER & VENABLES, 2004).

On the other hand, there is so-called tacit knowledge. This type of knowledge consists of knowing more than you can codify. Some types of knowledge are hard to transfer at all and are practically only transferable through face-to-face interaction. Work experience, local context as well as work routines are difficult to codify but can be considered essential for successful running of a business. In order to have face-to-face interaction, geographical proximity between two or more people is considered to be necessary (ASHEIM ET AL., 2007; BROEKEL & BOSCHMA, 2012). More recently, examples were presented in which the transfer of tacit knowledge across long distances is possible and even essential to keep a specialised region competitive (BATHELT ET AL., 2004).

The second concept of importance to knowledge creation is spillover and spin-off effects. Spillover effects are considered to be positive externalities to companies located in close geographical proximity to the source of this knowledge. The exact drivers of this clustering differ from industry to industry and also depend on the type of knowledge involved. The assumption is that these externalities have to do with the easy transfer of workers between companies and therefore 'rubbing off' their knowledge and skills to their new colleagues (STORPER & VENABLES, 2004). Spinoff effects take place if someone decides to leave his or

her current job and start a new firm. Apart from having codifiable knowledge about the new product or service that this company will produce, there is also tacit knowledge that is transferred into the new start-up. Having experienced existing organisational routines, a new start-up can copy and even adjust the routines (WENTING, 2008).

The third relevant aspect of knowledge creation is the role of face-to-face contact for the creation of new knowledge. As stated before, face-to-face contact is considered essential in order to create new types of knowledge and innovation. This is due to the interaction that is involved in innovation. Innovation and knowledge creation as well as learning are not single linear processes but are complex and include many feedback loops. In order to keep this communication, interactive geographical proximity is considered necessary for knowledge creation and innovation (BATHELT ET AL., 2004; STORPER & VENABLES, 2004; ASHEIM ET AL., 2007; BROEKEL & BOSCHMA, 2012).

The final aspect of knowledge creation relates to the difference between buzz and face-to-face meetings. Where historically the two concepts have been used interchangeably, these two aspects differ from one another (ASHEIM ET AL., 2007). Buzz was firstly named ‘industrial atmosphere’ and considered as something “hanging in the air” (MARSHALL, 1921). It is therefore limited to people being in geographical proximity to each other.

Buzz overcomes coordination problems (STORPER & VENABLES, 2004) and in order to have this buzz, co-presence and co-location are required (BATHELT ET AL., 2004). Both articles use fairly ambiguous formal definitions, which do not help the understanding of this already vague concept. Asheim et al. (2007) refer to it as a “non-deliberate knowledge-exchange and information-exchange propensities” (ASHEIM ET AL., 2007, P. 658). However, this definition implies that this type of information is also transferable electronically and does not necessarily require face-to-face contact, even though this is still the most common method.

Buzz has been used as a framework for knowledge exchange but it can also be used to create new network ties. Face-to-face meetings require coordination and also have the intention of knowledge-exchange and information-exchange. Due to this intentional exchange, face-to-face meetings fundamentally differ from ‘buzz’. Even though these face-to-face meetings can also be performed in global networks, the complexity of interaction often requires face-to-face interaction in the same location (STORPER & VENABLES, 2004).

2.3 Network creation

The role of networks, different types of networks and network creation is an entire body of science on its own. For this thesis, a few aspects are of importance that mostly concern the different ways in which networks are created as well as the geographical component of network creation. Firstly, it is important to determine that networks consist of many different ties. The first distinction is between weak ties and strong ties. Strong ties mean that the personal or professional tie between two (groups of) people is characterised by high levels of trust and that people know each other well. Strong ties have been found of high importance to transaction and coordination in groups. Weak ties, on the other hand, where people do not know each other that well, are very valuable in gaining access to new information and opportunities (GRANOVETTER, 1973; EBBERS, 2013). In a private sphere strong ties can be considered friends and family, where weak ties can be seen as acquaintances.

The second distinction is between internal ties and external ties. Internal ties are within a company and consider the ties between colleagues of the same company, whereas external ties are ties between employees of different companies. When someone moves from one company to another or starts a spin-off firm, the former internal ties become externalized and can therefore change. As most start-ups consist of very few employees and collaborate a lot with outside economic agents, most networks of start-ups are considered external.

The third distinction concerns official ties between companies and private ties between employees of a company and another company. The first form happens when companies start a joint-venture with any of their divisions. Another option is the currently increasing collaboration between university, industry and government. These ties are considered sustainable and robust due to their formality, but therefore also have higher transaction costs to establish. A more fluent form of ties is that between employees of different companies. These ties can be created within the more formal collaborations. They come into existence because employees migrate between firms where former internal ties become externalized. They can also be created through private relationships. These types of relationships rest on personal connections, and are therefore less robust, but have a much lower establishing cost.

There are different ways in which these personal ties are created. Firstly, ties can be transformed from the private sphere into the business sphere. As written in §2.6, friends and family are considered an important party when it comes to investing capital in start-

ups. Secondly, these ties can be created through the interference of a third party, known as a connector (EBBERS, 2013). Apart from these personal, private and business related connections, people are also part of different private groups like Rotary clubs, student organizations, university alumni organizations etc. where they are likely to create weak ties, which can be used for business purposes.

2.4 Proximity

The concept of proximity has always been of importance and traditionally has been referred to as geographical proximity: the extent to which people, economic agents or organisations are located geographically close to each other. With this idea of proximity in mind, many economic geographic theories on knowledge exchange and learning have been developed. Boschma (2005) proposed five dimensions of proximity that all influence the amount of knowledge exchange between economic agents. These dimensions are institutional, organisational, social, cognitive, as well as the previously mentioned economic geography.

Institutional proximity refers to the proximity at the institutional level, which is often interpreted as the extent to which (economic) institutions are alike, have the same rules, routines, ideas and policies. The assumption is that economic institutions shape to a large extent the business climate within a region or country and collaboration between companies is hard when these climates differ too much due to institutional differences. Institutional differences differ along the line of the region. Every city and country has its formal and informal institutions that create these differences. Even though Boschma (2005) never explicitly talks about institutional differences within sectors, it is plausible to assume that different sectors have their own formal and informal institutions and that institutional proximity also contains 'sectorial proximity'.

The second aspect of proximity is organisational proximity. Every company has its routines, tacit knowledge, work ethics and local context. These aspects differ more from each other when companies operate in different fields or have different missions and goals. These aspects differ largely between a government institution, a university, an NGO and a business. This means that collaboration is less likely to happen when these differences are large and more likely if people understand these local contexts and routines.

The third aspect is social proximity. This refers to the same type of proximity as organisational proximity, but on a personal level. People are more likely to exchange

knowledge if they feel that they are part of the same community, groups of any kind or even nationality. Situated together in an incubator, having attended the same high school or university or being part of a Rotary club makes it easier for people to collaborate and exchange information because they have more in common on a personal level. Saxenian (2007) provides an example of professional organisations in Silicon Valley that were divided along the countries of origin and therefore provided the ability to exchange knowledge.

The fourth aspect is cognitive proximity. This proximity refers to the knowledge base of a person. It is easier for people to exchange knowledge if they have a similar background and simultaneously a language that they both can master to some extent. The amount of knowledge exchange between a Russian computer engineer, an anthropologist from Morocco and a hot dog vender from the United States will be fairly limited if they only speak their own native tongue. Furthermore, their educational backgrounds differ so much from each other that business related knowledge, exchange is likely to be very limited. However, three computer scientists that all have the same native tongue are more likely to be able to exchange professional knowledge and learn from one another because they have a similar cognitive base.

The final aspect of proximity relates to the aforementioned geographical proximity. This proximity assumes that the closer economic agents are located, the higher the likeliness is that they will exchange knowledge. Geographical proximity is an important feature of the different types of proximity. Business incubators provide a very high level of geographical proximity to the start-ups that are located within the incubator. In order to examine the role of geographical proximity between the start-ups in the incubator and the outside world, two aspects are of importance.

The first aspect is the commuting tolerance. Every person has a maximum amount of time he or she is willing to spend, as well as a maximum amount of costs this person is willing to spend on transportation. Proper reachability therefore is divided into different modes of transport (WEE & ANNEMA, 2009). If someone lives, for example, far away from Amsterdam, this person is likely to decide to take a car to the incubator in order not to spend too much time commuting. If the costs of gasoline or parking are however above the maximum amount of acceptable costs, this person either has to choose another form of transportation or decide to locate somewhere else.

A similar dynamic is in place with partners, clients, suppliers, etc. that want to physically meet with one of the start-ups inside of the incubator. They also have a maximum amount of time and money they are willing to spend in order to physically meet with a person. Being located in close geographical proximity to these people, in terms of time and costs to get there, is therefore important. The benefits of being closely located are further elaborated upon in §2.5.

Boschma (2005) does not only describe the perks of proximity, but also introduces the so-called proximity paradox. This paradox states that there is an optimal point in the different levels of proximity for knowledge exchange to take place. If two companies are located geographically close, have the same routines, institutional context, cognitive base and social networks, they are very unlikely to exchange knowledge because that will weaken their competitive advantage over one another. If these companies are located in two different countries however and therefore work in different local contexts, they might benefit from each other's knowledge because they are not in direct competition with each other. This idea is in line with the theory on weak and strong ties, where weak ties are seen as the best ways for new information to make its way through, because there is no direct competition from the different economic agents that are tied. A more extensive analysis of the role of geographic proximity, specialisation and diversity along the different lines of proximity from a regional point of view will be provided in §2.5.

2.5 Proximity: Specialisation and diversity on a regional level

The effect of the individual ties and networks on a more aggregated level is very likely to be of influence for the motivation of businesses and incubators to locate themselves in a certain location. A focus is also needed on urban districts, because the analysis of this thesis is for the city of Amsterdam. In essence there are two camps in this discussion that appear to be non-compatible and continue to argue on the topic of proximity: specialisation and diversity.

Geographical proximity between economic agents has been considered of importance for knowledge exchange and interaction. In this interaction it has been stated often that specialisation leads to economic regional development. Ricardo (1817) was the first to establish this idea with his theory on comparative advantage. He states that regions, and in his famous example countries, that specialise develop economies of scale and therefore are more efficient in the production of goods and services. Marshall (1919) elaborated on this

phenomenon through the theory on industrial districts, where knowledge and labour exchange was easier within a specialised district and where small companies took up one link of the production chain. Finally Porter (1990) introduced the concept of clusters. Porter elaborates on the economic benefit that companies have by being located in close geographical proximity to one another. His theory states that specializing in a certain industry can provide a regional economy with strong competitive advantages, due to having a critical market around the corner, having specialised suppliers in the region and being able to have a high flow of employees between different companies among many other benefits. The existence of CBD's implies that there is indeed something that can be considered positive specialisation benefits.

The other camp is the camp of those who emphasise the role of diversity in economic development. They are in line with the proximity paradox and the influence of weak links, where people who know each other too well and are too closely related in what they do and what they are become less likely to develop new knowledge and interact. Jacobs (1969) was among the first to beatify the city and its diversity. She stated that economic development did not come from overproduction of the surrounding country-side, but that the city was responsible for economic development throughout the centuries, due to its economic and social diversity. Florida (2002) emphasizes that openness of networks, ease of their creation and how embracing diversity is one of the essential pull factors of modern cities, when it comes to highly talented people, the so-called the creative class. This creative class is responsible for regional economic development.

Even though these two camps seem to be divided and incompatible, there are a few nuances that show possible combinations of these two camps. Storper & Venables (2004) emphasise the "cross-fertilization between sectorally-specialized networks" (p. 365). Even though they acknowledge specialisation as something essential, they emphasize a special role for cross-fertilisation between the different specialised networks, resulting in a benefit for diversity. Asheim et al. (2007) state that the role of diversity and therefore cities has been exaggerated. The amount of face-to-face interaction depends per sector on the different types of knowledge (a different typology than described in §2.2) and different industries. Bathelt et al. (2004) emphasise that successful clusters are the ones that manage to transfer knowledge to other successful clusters in the world through what they call 'global pipelines', while keeping their regional specialisation.

2.6 Incubators: The concept

The clustering of economic activities has positive effects as well as possible negative effects. One of the forms of clustering for start-ups is the so-called business incubator. These business incubators are historically buildings that contain multiple start-ups that are guided with their development and therefore have an improved survival rate. In order to understand the role of proximity for start-ups, business incubators are a very interesting phenomenon that provides a unique opportunity to look deeper into these dynamics. Currently, many different typologies exist on the different services, ownerships, missions and definitions on business incubators (HACKETT & DILTS, 2004; BØLLINGTOFT & ULHØI, 2005; GRIMALDI & GRANDI, 2005; BERGEK & NORRMAN, 2008). This thesis uses the parts that are of relevance in order to examine the role of proximity and business incubators for business development.

There is a diverse pallet of services that business incubators can provide. Some business incubators provide a very limited amount of services and rest more on the physical location, where other incubators see the physical location as a necessary side-effect, but distinguish themselves with the services they provide. These services are either aimed at consulting, financing or improving the networks and collaboration activities of the start-ups. While examining that, it is important to elaborate on the different roles that incubators can play in these activities. By providing a static typology, this thesis follows the current body of literature that shows business incubators as static economic agents. It is however important to bear in mind that over time business incubators can change their behaviour, the services they provide and the roles that they play. In order to understand the role of the incubator, it is also of importance to examine the ownership, missions and ideas behind the business incubator.

Firstly, the role of services is elaborated upon by using the typology of Bergek & Norman (2008). They state that there are four types of services that are provided by business incubators. Shared office space, shared services, business support and network provision. Financing the start-up is the fifth service discussed here and is the odd man out in this analysis. The first type of services contains the Internet, a coffee machine, a meeting room, kitchen, a phone and a desk and can be considered essential in order to run a business. The second type of service consists of a shared front desk, mail and other shared services. These services benefit from economies of scale if they are shared between start-ups instead of individually bought. These first two types can be considered 'basic services'.

The third type of services is the business support or consultancy service. This service tries to increase the knowledge of the entrepreneur on how business development, commercialisation a new idea, PR etc. They can do so by organising workshops, master classes, meetings or conferences, where they invite professionals that can support and increase the knowledge of the start-ups located within the incubator. They can also take a more passive role in this by providing an environment in which more informal consultancy can take place.

Finally, business incubators can play a role in the networking activities of their start-ups. Firstly, they do so by providing an environment where the start-ups within the incubator can contact each other. They can organise activities that bring together groups from both inside and outside the business incubator and that have a mutual interest in getting to know each other, so-called network events. Finally, they can also actively connect two or more people that could be of interest to each other (HANSEN ET AL., 2010; EBBERS, 2013). Apart from what Ebbers (2013) considers to be top-down networking, business incubators can also provide opportunities where start-ups create networking opportunities for each other between those located within and those outside of the business incubator. The role that the business incubator plays differs per service, but also per incubator. Some take a more passive role that Caves (2003) considers to be a gatekeeper role. They can also play a more intermediary role following the definition of Boon et al. (2008).

The ‘odd man out’ is the financing of the business incubator. In order to finance a start-up, six traditional types of financing are available: family and friends, business angels, venture capital, banks, state subsidies, and direct investments from the business incubator. Family and friends are often involved in the investment of start-ups. They have strong ties with the entrepreneur that often results in investments from this side. The second group is the one of business angels. This group exists of people that invest their personal money in start-ups, often in sectors that they have a lot of knowledge about and a good network. They therefore often provide business support and help to create ties in order to increase the survival rates of the start-up and therefore their own investment.

The third group is the one of venture capital companies. They act similar to that of the business angels, but not with their private money. In practice they also tend to aim at businesses that are a bit later in their development. The fourth group is the provision of capital through banks. They provide capital often in an even later stage than the venture capital companies and therefore take less risk. The fifth group is state subsidies. In some

countries there is a very active policy on improving the amount of entrepreneurs and innovation and therefore a decent amount of capital available for start-ups. The final form is the direct investment from the business incubator, where the incubator managers invest capital in the start-up themselves. Apart from the state-subsidies, all capital investments are done through either a loan or by buying stocks in the start-up. A new, more recent form of financing start-ups has been developed which is called crowd funding. This form of financing uses publicly available websites where large groups of people, the so-called crowds, are taking the role of individual business angels and invest their own money into start-ups.

There are multiple roles that an incubator can play in resource acquisition, apart from investing its own money. The business incubator managers can provide knowledge on how to apply for state subsidies and on what subsidies are available. They can play a similar role in how to create a crowd-funding proposal and where to go for proper crowd-funding. They can also create contacts with business angels, banks and venture capital companies in order to attract capital. Obviously, they cannot play any role for the friends and family group.

The ownership and missions of business incubators shows large variety (table 1). This typology for ownership and mission is largely deducted from Grimaldi & Grandi (2005). They distinguish four types of incubators concerning the ownership of the incubator. The first type is the private incubator. These incubators are privately owned and are focused at making profit or creating a market for their real estate. They may have more complex mission statements or additional goals and missions, but making money is always one of them. The second type of private incubator is the corporate incubator. This incubator also aims at making money, but has a special connection to the 'mother company'. They are in general specialised in the same field as the corporation that owns them and might also create interesting non-monetary rent related profits for the corporation, such as recruitment, innovation, outsourcing or even symbolic good will.

The third type is the publicly owned incubator. These incubators can have many different goals and missions depending on what the owner wants with them, but in general have missions along the line of creating regional economic development, jobs, innovative industries, etc. The final type is the academic incubator. This incubator aims at commercialising academic or technological research conducted at the university. This can be either research performed by beginning students to senior professors.

It is important to state that the current incubators may fit into one of these typologies, but also often are a combination of the four options. Because in recent years the collaboration between university, government and industry as innovation catalysts results in constructions in which all three parties are represented in the incubation management or supervisory board.

Name	Mission	(not) for profit
Private incubator	Renting out their building	For profit
Corporate incubator	Location for corporate spin-offs Location for new external talent	For profit
Academic incubator	Location for academic spin-offs	Not for profit
Public incubator	Creating jobs through start-ups Creating economic development	Not for profit

Table 1 Typology through ownership

Source: Own production

3. Contribution of this study

The role of geography for business location has been of interest to economic geographic scholars for decades. The introduction of the different types of proximity has added a better conceptual understanding on why certain interaction is taking place and another is not, mostly aimed at explaining innovative activities and knowledge creation and diffusion. The role of business incubators in business development, has been studied further, but never combined with the role of location or any sort of proximity to the knowledge of the author.

This thesis explores the role of proximity for start-ups located in business incubators and the role that incubators play in creating, maintaining and developing interaction between agents, both passive and active. The thesis also aims at creating a better understanding as to why business incubators and start-ups are to be found in certain locations, using the influence that location, different concepts of proximity and the different roles that incubators have. By doing this, this thesis provides start-ups, policymakers and business incubator managers with a better understanding for future strategic decisions on what conditions need to be in place for a location to be suited for a (certain type of) business incubator.

4. Scope and Limitations

The incubators as well as the start-ups studied are located in business incubators in the city of Amsterdam. These business incubators differ widely in ownership and services that

they provide. Simultaneously, the businesses located in these incubators are active in a wide variety of sectors and provide many different products and services. As Amsterdam is a metropolitan region with a wide variety of economic activities, this thesis will therefore limit itself towards business incubators that are in metropolitan areas with a wide variety of economic activities. Business incubators in largely specialised clusters are likely to show different dynamics, but are very unlikely to have the same drivers. This thesis does acknowledge that the large variety as well as the explorative nature of this thesis means that no conclusions can be drawn on the relative importance of the different drivers and aspects that are involved.

5. Methodology

This thesis applies the theories above in order to examine the role of proximity for business development in business incubators. In order to do so it is of importance to look into the role of different forms of proximity, the role of location itself and the role that incubators play. This results in the research question: "What is the role of proximity for business development in business incubators?" This research is conducted by a case study using the city of Amsterdam. Amsterdam has a high level of incubators and, more importantly, a high diversity of incubators. Amsterdam is also a diverse metropolitan area with a high diversity in economic activities. Simultaneously, the researcher does have Dutch as a native tongue, which makes interaction with interviewees as well as finding information through other media easier to perform. By choosing the city instead of a larger regional or national network, the role of proximity is easier to standardize since everybody works within the same geographical framework. Choosing one area also removes certain institutional, cultural and economic differences that can hinder exposure of the studied dynamics.

The research is performed in three parts. Firstly, a mapping of the different incubators in the Amsterdam region is performed. Here, a first impression of the location of different types of incubators will be made. The incubators are retrieved from the list of the Dutch Incubator Association (DIA, 2013) as well as incubators located in Amsterdam that are mentioned in previous research (EBBERS, 2013). Secondly, all of the incubators were emailed and semi-structured interviews were conducted with willing incubator managers, resulting in an in-depth impression on the dynamics going on within the incubator and the incubation. Thirdly, semi-structured interviews were conducted with companies located in the incubators that both tested the results from the interviews with the incubators as well

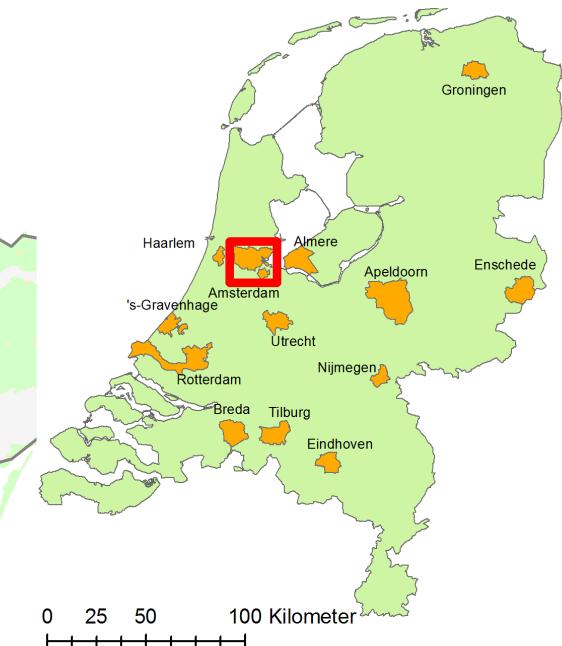
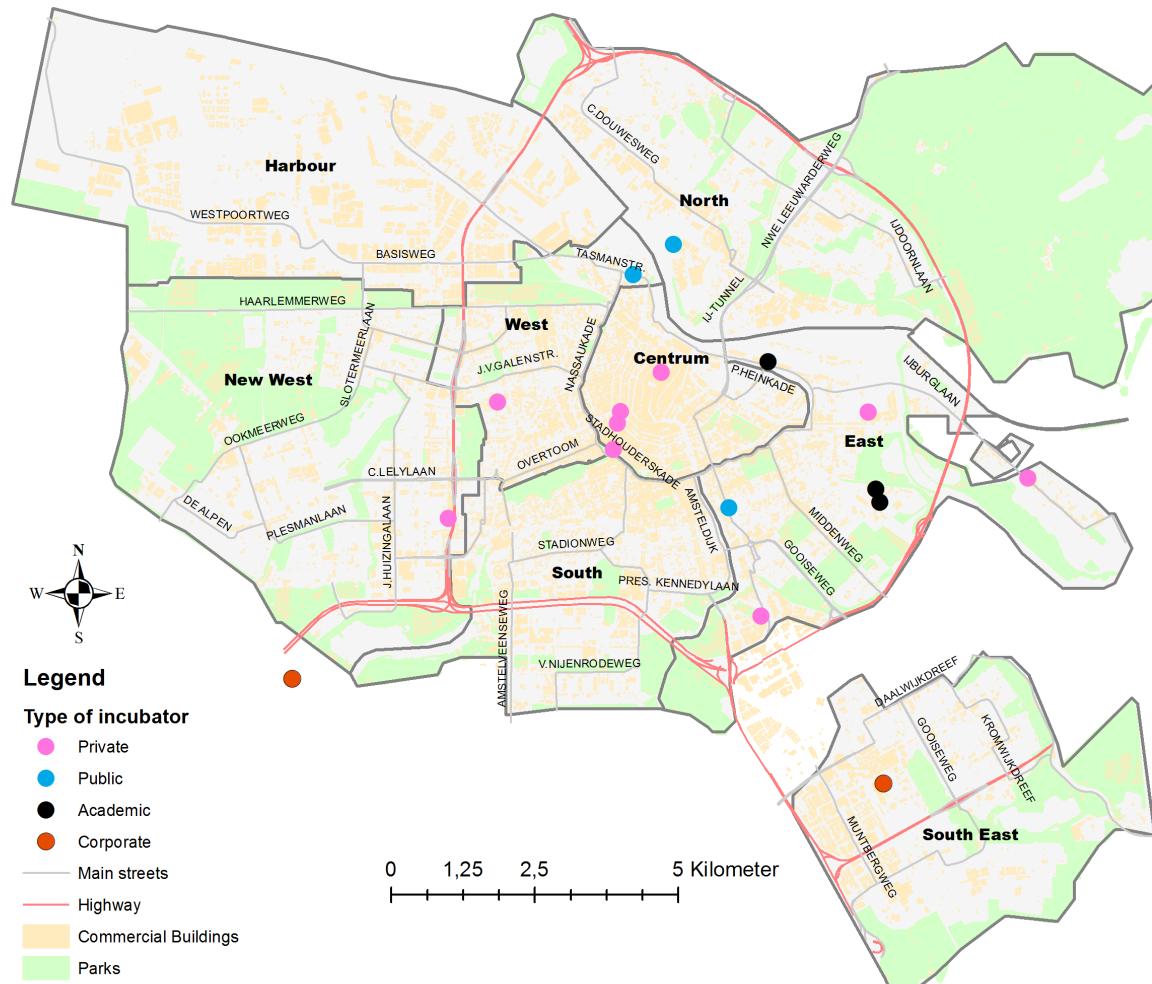
as provided an insight into the companies embedded in the incubator and its surrounding. Originally, a survey was conducted (Appendix C) but the response rate was insufficient and therefore semi-structured interviews were employed in order to increase the amount of information. The list of topics for the interviews can be found in appendix B.

6. Mapping

The first part of the results consists of the mapping exercise. In this exercise the different incubators examined are divided into the different categories as described in §2.6. That means that the different incubators are divided between private, public, academic and corporate. It is important to keep in mind that many incubators are owned and managed by organizations with different backgrounds, missions and goals. This means that even though the typology uses hard divisions, in reality these are not so clear. For example, New Energy Docks is considered public in this analysis due to the extra funding they receive from public bodies, but the supervisory board also contains people from academia and a large corporation.

In order to understand the location motivations of the incubators it is important to examine the current economic activity of the city of Amsterdam. The core of the local economy is in the city centre, even though it is difficult to reach by car. On the southern border of Amsterdam is the CBD, known as ‘Zuid-As’. This is where many of the large corporations have their headquarters and they are specialized in financial, consultancy and law related activities. The rents in the city centre and this southern part of Amsterdam are significantly higher than the rest of the city especially compared to the regions in the northern part of Amsterdam and outside of the Amsterdam ring road, with the Zuid-As as the exception.

Incubators in Amsterdam



Netherlands

Figure 1 Map of incubators in Amsterdam

Source: Own production

The map shows that the city centre contains mostly private incubators. In the outskirts there is a more diverse pallet of incubators in place. The private incubators are mostly related to the art industry and therefore many are art ateliers, but some are also offices for creative industries. The academic incubators are all located next to the university or faculty that they have the strongest ties with. The corporate ones, including New Energy Docks, even though this is only partly a corporate incubator, are all located next to one of the large offices of the corporation. The public incubators are located a bit outside of the city centre in cheaper regions with less economic development.

7. Incubators

7.1 De Groene Bocht

De Groene Bocht (The Green Curve) was founded in March 2010 as a project by the four founders of Cool Endavour to find a place to work. One of them knew the owner of the building that would later on become De Groene Bocht 1. Even though the building was too large they thought that they could create a sustainable location for sustainable businesses. Through their personal networks and the local government they recruited new companies and in a matter of weeks the building was filled. The name came was deducted from the Golden Curve on the next canal (Herengracht) where in the 17th century the VOC and related trade companies made millions by trade that is not considered very ethical according to the standards prevalent today, as it included much slave trade, manslaughter and colonisation in different forms. De Groene Bocht aims towards companies that want to make money by improving the world in a sustainable and ethical way. De Groene Bocht 2 saw life halfway through 2011 and is located across the street. With their vision of creating a more sustainable and ethical planet they reject more businesses than they accept, while maintaining a continuous flow of income. The buildings are located 100m from another and even though they share a mission, de Groene Bocht 1 aims more at start-ups in their early stage where the Groene Bocht 2 aims at businesses that are in their growth stage. Both locations offer only basic services. They provide a shared reception, internet, kitchen, administration and meeting rooms. As an extra they provide these services in a very sustainable way by implementing state of the art energy production, electrical car infrastructure etc. They do not actively offer network improvement or innovative stimulation, but do create an environment for a buzz with the shared kitchen. The buildings are rather small and everybody knows each other, which results in combined

projects. The location has status and a symbolic value. It's located in the city centre, therefore it is easy to reach with public transport and by bicycle.

7.2 ACE Venture Lab

ACE Venture Lab is the newest of the interviewed incubators and only opened their doors in January 2013 after a year of planning time between the two universities in Amsterdam (UvA, VU) as well as the Amsterdam University of Applied Sciences (HvA). It aims at commercialising research conducted at one of the universities. The aim is mostly at recently graduated PhD students or Master students that received their degree in the field of hard sciences or natural sciences. These programmes are taught at the faculty located next door from the incubator. The incubator has currently included a few start-ups brought there by the financing. It will soon start its first round of drafting large groups of new start-ups from the faculty of sciences. The recruiting is conducted from a large pool of mostly technical radical innovations and the incubator will provide them with a two-year set up programme in combination with the Massachusetts Institute of Technology (MIT) in Cambridge, Massachusetts and Stanford University, from Stanford, California. They are located in close proximity to the faculty of science of the two universities. These are the locations where they draft their potential start-ups from and to which they have most ties. The start-ups are also helped with getting in touch with the necessary network as well as having the incubator providing them with a buzz apart from the intensive help with the set-up of the company.

7.3 New Energy Docks

New Energy Docks is located in the former docks on the northern part of the IJ lake in Amsterdam. Shell Company, which owned 26 hectares of ground in this part of the town decided in 2008 to stay but decrease their space usage. This meant that 20 hectares remained empty and needed a new function. A university professor took initiative and started New Energy Docks in one of the former buildings there. Sustainable businesses were aimed for and this was especially aimed at commercialising science-based research. Even though they succeeded in attracting 33 different companies between 2008 and 2012, of which 27 still exist; nearly none of them are science based. The companies based here do not necessarily have to work sustainably, but more importantly have to promote a more sustainable world through their products and services and are selected by this criterion as

well. Another criterion is that there are no business already located there that do exactly the same type of work and are therefore a direct competitor.

The ownership of the incubator is very diverse; there is a supervisory board with representatives from Shell, local governments and the two universities who control a management team. These are as well the partners that contributed to the erection of the incubator with hours, money and ideas. The incubator shares office space as well as work space for technical installations, meeting rooms, front desk, internet etc., but is also involved in many network related events as well as innovation stimulation events. They specialise in creating different types of networks for different types of start-ups and focus mostly on the companies that are ready to go to the market and start to grow. They have a network of around 1750 people that are recruited for different events, workshops, lectures etc. held at the incubator itself. They also organise master classes in which a group of companies within the incubator is selected and helped by creating a new form, vision or idea for their innovation strategy. These events are all paid for by subsidies, the government or other donors and sponsors. They also create events together with research, where researchers are asked to provide guidance and a vision towards the future for both the industry and their field of research.

7.4 CODUM

CODUM was founded in August 2008 in Rotterdam by a creative freelancer who needed a place to work. He found an empty building, asked the owner to rent 20m² but the owner would only take the deal if this man would take over the entire building. He went into the pub and recruited people that wanted to join him in his new office. He reproduced this model and now owns six incubators in Rotterdam, two in Amsterdam and one in Arnhem and has around 400 companies in his network. The target group consists of companies in the creative industry. The incubators in Amsterdam, located in different parts of the city, have diverse target groups. A&C in the city centre aims at the creative service industry, which contains companies producing apps, new media, games, social media etc. OH3 located in the western part of the city, has more artistic businesses. They rent both buildings in Amsterdam and are located close to one of the main train stations. They select buildings that are chosen for their character. They aim at businesses in all stages of their life resulting in younger businesses that can profit from the older ones, even though they do not select them because of a certain age. The incubator provides basic services as a reception desk and Internet connection; they host network events and send out a

newsletter. They are currently moving the A&C building to a different part of town on the other side of the river. The new building allows them to create their own style and work more with soft services. They will aim at companies in the field of media and technology where also other partners like university, schools and government will hopefully become a part of the incubator. Even though they will move out of the centre to the northern part of town it will still be close to Central Station.

7.5 theGROUNDS

theGROUNDS is an incubator at Schiphol Airport and was founded in 2010 by the airport itself. Even though it is a corporate incubator, it has strong connections with other partners in industry as well as the government and universities in the rest of the country. It aims at acquiring businesses with the objective of creating a more sustainable world within the sector of airports or aviation industry. The corporate partners use it in three ways. Firstly, they use it to emphasise their aim towards a more sustainable way of working. Secondly, they can also contribute to this. Finally, they can use the business incubator to recruit and collaborate with people that are working there. These people are in many cases former students of the TU Delft that want to continue in this specific field and feel that they, in order to do so, need to be located at the biggest airport in the country. Apart from providing the more basic provisions like tables, coffee, Wi-Fi and a printer, there is also informal advice and networks that are of importance for the start-ups. It also facilitates the mainport innovation fund, a fund that helps the type of companies located at the incubator with subsidies for their projects. The location, even though expensive, is unchangeable as Schiphol is also a large customer of the start-ups located here.

8. Survey results and Interviews with companies

Due to the small amount of interviews and in order to provide anonymity to the ones who were interviewed, a small summary of the main findings will be provided here: Firstly, most of the businesses were attracted to the incubators through personal or professional ties with either the incubator management or other organisations located in the incubator. The decision to locate in an incubator is often due to the network that can be used as well as the price, while the reason for locating in a specific incubator in many cases depends on the location. Apart from the scale on which the networks exist, the survey failed to distinguish between the different aspects related to location and therefore it is hard to state what aspect of location is of importance. Most of the respondents for the business

incubators inside the city go to work by bicycle or on foot and live within the city of Amsterdam, with only a few coming from outside of the city. The amount of collaboration is lower than expected for most. Many assumed that the low transaction costs of interaction would result in a higher amount of interaction. “I thought we would be collaborating a lot, but instead we had a bunch of people who were just working really hard in their own office” (interview 6). The results show however that the economic agents that are outside of the incubator but are located in Amsterdam, play a larger role than those inside of the incubator. The interaction with those inside the incubator did indeed happen, but not as often as expected. “If you shared an office and overheard a conversation about some service someone wanted, you could be like: ‘hey I know someone for that’ and vice-versa” (interview 7).

9. Analysis

This analysis is threefold. Firstly, the role of location is discussed. Secondly, the role of the different types of proximity are examined. Finally, the different roles that business incubators play in business development are elaborated upon.

9.1 Location

Three factors connected to location are of importance: status, price and opportunity. Firstly, status plays a role for start-ups. Status can be acquired from both the building and the location. Some buildings are iconic, have a history and can be considered landmarks for an area. Having an incubator in such a building increases the status of the incubator as well as that of the start-up located there. The same goes for location. In Amsterdam, the canals for example are world famous and have a rich history. Being located in a building along one of these canals increases the status of an incubator as well as the start-up. “By being located here, we show the world that we are to be taken into account” (interview 2).

The second factor is price. The price of locations differs, depending on many factors and every business has a certain budget for location. Because start-ups do not generate much income yet, expensive locations are in general not an option. The final factor is opportunity. One of the ways business incubators are created is due to a mismatch in the market where it is not possible to find one tenant for a building. Therefore an incubator was started. Others founded their incubator because their own start-up needed office space and a proper location was found. However, it was not possible to fill up all the office space and therefore multiple start-ups and established businesses were needed as tenants.

9.2 Proximity

Location has a role on its own, where status, price and opportunity play a role, but an incubator is not an isolated subject and therefore the role of proximity is essential for the location of an incubator. In order to elaborate on the role of proximity, the five dimensions of proximity and their influence on business incubator location will be discussed. Firstly, the positive effects of proximity will be discussed and finally, the proximity paradox will be elaborated upon.

The first form of proximity analysed is institutional proximity. It is of importance to take into account that all incubators are located in the region of Amsterdam. This means that all of them are located in the national institutional context of the Netherlands and the local institutional context of Amsterdam. Many businesses located in business incubators work in different industrial institutional contexts, due to the different sectors they work in. Some incubators aim at attracting start-ups that operate in the same industry.

theGROUNDS is for example an incubator for the aviation industry and therefore the institutional proximity is very high between the businesses located there. Other incubators aim at companies that operate in different industries, but with the same mission. For example, De Groene Bocht and New Energy Docks aim at start-ups that want to create a more sustainable planet, but focus on start-ups in different industries. This results in a mix of sectors in their incubators resulting in low institutional proximity between the start-ups.

The city of Amsterdam is to some extent specialised in a few sectors. These sectors, however, are not geographically clustered in the city, which does not imply that every industry is dispersed across the city. The institutional proximity therefore in most sectors is not higher in a certain part of Amsterdam than another. It is therefore valid to say that institutional proximity exists in sectorial specialised incubators or on the level of the city, but is absent on the intermediate scale.

Organisational proximity is the second type of proximity taken into account. All incubators have their own internal routines, rules and regulations that the incubators need to take into account. These routines are not as similar as when people work in the same organisation, but are still present. This means that start-ups in the same incubator receive some organisational proximity from sharing incubator routines. The second form of organisational proximity is only present for academic and corporate incubators. When all start-ups located in the same incubator share the same routines from their previous work location, either corporation or industry, they are likely to continue with the same routines

and therefore share the same routines. If the start-ups are recruited from different faculties, universities or corporate divisions, they are less likely to share organisational proximity.

The same goes for externally recruited start-ups for corporate incubators that are used to provide new development from outside into the corporate incubator.

The social proximity comes back in multiple ways. The first aspect refers to the scale of the incubator. Being part of a group increases the idea that the start-ups are part of a group.

Sharing a location, idea, goal and struggle for success increases the solidarity within a group and therefore increases social proximity. The second part of social proximity is the social proximity between entrepreneurs in the incubator and outside agents. This social proximity is also visible on a higher scale. On the intermediate scale this is visible for the corporate and university incubators. Their social networks are (partly) geographically clustered around the university and the corporation that they used to belong to and therefore (part of) their social network is geographically concentrated. Because many of the start-ups in these incubators share the same background, a part of their network is geographically clustered on an intermediate level. Social proximity is also visible on a higher geographical scale. Networks differ in many ways and some parts are geographically clustered on a personal level. Due to the diversity in background in many incubators, the accumulation of these personal networks is geographically diverse on the incubator level.

The fourth type is cognitive proximity. Cognitive proximity on the level of education appears to be high among the start-ups as many of the entrepreneurs there have a high level of education. The level of cognitive proximity differs between the different incubators. Incubators that are highly specialised have a higher cognitive proximity due to the similar services provided. In the network incubators studies there is differentiation in either different sectors they work in or different types of services they provide in the same sector. This is visible in, for example, the creative industries business incubator. The businesses there appear to have very different cognitive skills from graphic designers, journalists, writers, artists of various kinds, game and app developers etc. even though they all work in creative industries.

Finally, the role of geographical proximity is of essence. It might be obvious to state, but putting the start-ups in the same building creates a high level of geographical proximity. The people working in the incubator know each other, which results in very low transaction costs for interaction between start-ups. It is important to acknowledge that being located in small proximity to each other does not mean that everybody is constantly collaborating and connecting to each other, but that they spend most of their time

working on their own. This means that the amount of interaction might be low as it also differs over time, contrary to many expectations of much interaction. However, the ability to interact with low transaction costs is still a valuable asset.

The geographical proximity on a higher scale is of importance for the commuting distance of the entrepreneurs. Every person has a commuting tolerance, which is the maximum amount of time they are willing to commute on a daily basis. If incubators are located in locations that are easy to reach with different modes of transport, they are more likely to be of interest for entrepreneurs to locate their start-up there. In order to look into the effect of geographical proximity on a higher scale it is important to examine travelling costs, including time, with different modes of transport, than at the actual geographical distance.

Simultaneously, it is of importance to look at the locations of other agents that the start-ups want to physically meet up with. For corporate and university incubators, the incubators are likely to want to meet up with people in the corporation or university and are therefore likely to locate in close geographical proximity to these locations. For private and public incubators it is assumed that, as with many of the other types of proximity, their potential partner network is more diverse and therefore geographical proximity is expressed in reachability with multiple modes of transport. Finally, a specific aspect is present for public incubators. These incubators often have a mission where local economic development and job creation is pursued by locating these incubators close to or in 'developing parts' of the city. The proximity paradox is mostly visible if all aspects of proximity are high and businesses do such similar things that instead of being each other's partner, they become each other's competitor. Some incubators aim at differentiation between all companies based in their incubators in order to insure that companies benefit from being co-located instead of being scared to lose their competitive edge.

9.3 The role of the incubator

The role that incubators play differs with respect to what they offer, encourage and facilitate for business development. In all these roles incubator management can decide to play a passive gatekeeping role in which they allow start-ups, information, networks and events to come to their incubator. They can also play an intermediary role where they actively pursue new start-ups, information, networks and events.

The first aspect refers to the role that incubators play in allowing new businesses into their incubator. They have the explicit power on deciding who is allowed to locate their start-up

in the incubator and who is not, therefore deciding on who is eligible to become part of the incubator buzz and who is not. Networking activities is another activity in which incubators play a role. Some incubators have an extensive network that they actively maintain. They do this by setting up meetings between start-ups and agents or by creating a temporal buzz. A temporal buzz is the creation of buzz through interaction that only lasts for a certain period of time. This can be either a few hours or can be through for example a conference that lasts for multiple days. Networking activity can also be bottom up and initiated by the start-ups. In this form of interaction the incubator plays an indirect, passive role by facilitating interaction between the start-ups, while not initiating it through events or activities. Examples are shared coffee machines, kitchens and meeting rooms. The incubators also play a similar role when it comes to information sharing. Many have newsletters, websites and social network sites, where they decide what information is allowed in or in some cases even actively collect new forms of information.

Some incubators provide a wide range of services towards the incubators. Consultancy on business-set up, PR, HR and how to commercialise ideas is visible in some of the researched incubators. Some incubators create master classes, seminars and training programmes that are formally organised. In these events professionals get together with the start-ups through official events and provide their expertise there. Simultaneously, there is also unofficial consultancy. Incubator managers are often (former) entrepreneurs themselves and have therefore experience that they can transfer to the start-ups. Apart from actively organising these forms of consultancy, incubators can also play a facilitating role in consultancy by creating an environment where start-ups can consult each other on business development. Some incubators aim at companies that are in different stages of development so that the more mature ones can assist the newer ones.

The role that an incubator plays changes as well. Firstly, it changes depending on what is demanded from the businesses. Businesses that are in different stages of development need different consultancy as well as different types of network creation. Start-ups that are at a beginning stage need help with the start-up of how to write a business plan, attract capital in the early stages and how their idea could become commercialised. Their network-development is mostly diverse as they are still developing what type of partners and customers they want and what it is they will be delivering. After this stage, start-ups need help growing. They require help in how to create and maintain efficient processes and routines, how to acquire capital for growth and how to transform their business from a few people to a medium sized business. Their network is more specialised as they have

commercialised their idea and therefore their network development is aimed more at bringing in new potential customers. When a firm becomes an established company it becomes more of interest to find ways on how to keep acquiring new information and innovate further. The network development is therefore more diffuse again as well as it is more passive as entrepreneurs that just started their business want to get into contact with them as well. Current literature studies implicitly describe business incubators as static agents. The results show that in Amsterdam this is hardly the case and that a more evolutionary approach needs to be taken when analysing business incubators.

It is of importance to address the question on why someone would decide to start an incubator. The motives here are the ones found during this research and through previous literature, but are most likely not to be exclusive. The first reason is the one where a start-up needs space for its own and decides to rent a bigger location and recruit other businesses in order to fill up all the space. By creating an incubator they can use economies of scale for shared services and have a bigger range of locations to choose from. The second reason is coming from the side of the real-estate owner. Empty office spaces are not always easy to rent out and creating an incubator may result in being able to find multiple small tenants instead of one large one, thus increasing the possible market.

The third option is related to the academic incubators. Many graduates from bachelor, master and PhD programmes at universities will not be pursuing a career in academia. The university becomes more interesting if they can provide a place for when a degree is finished. Simultaneously, they provide a location for industry with strong ties to the university, hence increasing their own network through industry. This network can become beneficial for information exchange and for external funding for research projects.

The corporate incubator can be started to have a semi-external department where innovative projects take place, resulting in new innovative ideas, products and services that can be incorporated in the company itself. They can use it as a location where employees can start spin-off companies with ties to the corporation, but also as a location for recruitment for new employees that, with their start-up, eventually become incorporated in the company.

The final reason is the one that the business incubator was originally created for: improving the local economy and creating jobs. Many policy makers assume that start-ups create jobs and that improving the amount of start-ups as well as their survival rates will result in a better local economy. By creating and maintaining business incubators they

hope to achieve this result. It is important to take into account that after the creation of a business incubator, the business incubator develops, grows, increases their activities and adjusts to the start-ups that they serve. All incubator managers stated that they are going to change and improve their strategies, services and network activities in the near future.

10. Conclusion and Discussion

The role of proximity is of essence to create a better understanding on why incubators locate themselves in certain geographical places. The city of Amsterdam provides a good understanding in the geographical dynamics that are in play for incubators in a metropolitan area. Location on its own is of importance due to the status of a location or building. Being located in a certain building or in a specific part of town provides an incubator and a start-up with certain status and is therefore preferable over other locations.

The role of proximity is visible on five levels: Geographical proximity is of importance and very high as all businesses are located in the same building. It also plays an important role for the commuting distance that a person is willing to travel as well as the reachability of a location for clients, suppliers and partners. Institutional proximity is high on the local and national level as all businesses work in the same regional and national laws, rules and regulations. It is especially visible in highly specialized incubators where the start-ups are not only working in the same country and city but also same sector.

Even though the size of start-ups is so small that organisational and social ties are often the same, the organisational and social proximity levels still differ. Being located in an incubator creates a high level of social proximity. This is even increased if training programmes are undertaken together. Social proximity appears to be high for start-ups that are located in either an academic or corporate incubator as these start-ups not only share an incubator, but also often come from the same university or corporation. Social proximity might also be geographically clustered on a personal level, but it is not any more on an accumulated level. Organisational proximity is acquired as all incubators share routines, rules and regulations. This level is not as high as it is in many larger organisations, as the start-ups are autonomous to a high level. A higher level of organisational proximity is acquired for academic and corporate incubators if the start-ups are spin-offs from either the university or corporation. However, this level might be lower however if start-ups are recruited from diverse departments and faculties or even externally recruited.

Cognitive proximity is acquired to the extent that all studied incubators contain entrepreneurs with a high level of education. Some incubators aim at a niche sector, which results in a high cognitive proximity. Some incubators do however have a broader sector (creative industries) or do not specialise in a certain sector, but select companies on a shared mission (sustainability). Both result in a lower level of cognitive proximity. Some incubators try to avoid internal competition between the start-ups located in the incubator. If start-ups score high on all forms of proximity, it is likely that they provide similar services and are therefore each other's competition.

The role that incubators play differs with respect to what they offer, encourage and facilitate for business development. In all these roles, incubator management can decide to play a passive gatekeeping role in which they allow start-ups, information, networks and events to come to their incubator. In this role they facilitate bottom-up networking between the companies, other forms of interaction and decide which companies are allowed to locate themselves in the incubator. They can also play an intermediary role where they actively pursue new start-ups, information, networks and events. In this more active role they go out of the incubator and bring in new agents, information and networks. By doing this they can create a temporal buzz, which might be necessary for certain locations.

In conclusion, it can be stated that status, finance, availability, proximity, networks and the different roles determine where a business incubator is most likely to locate. There are differences between the different types of incubators. Private incubators are not bound to any board of owners that have geographical related interests and therefore will be most likely to choose the most popular and easy to reach locations. Public incubators are also not directly bound to geographically clustered networks, but often serve the societal cause of local economic development and job creation in an area that is short of jobs. Academic and corporate incubators are strongly tied to their university or corporation due to different levels of proximity and therefore will be located in close geographical proximity to them.

It is important to keep in mind that many incubators started from an empty building without a function or a start-up that wanted office space and decided to invite its network to co-locate with it. Many incubators are founded without long strategic decision-making.

Apart from the high variety of services that incubators can provide, it is of importance to recognise that current literature views incubators as a static agent that provides services

for changing start-ups. It is nonetheless important to recognise that incubators are constantly changing and developing, which also results into a new variable in the discussion on incubator effectiveness.

11. Reflection and further research

This research aims at using the different dimensions of proximity to explain why incubators are located where they are. It assumes that business development is dependent on proximity on different scales and that business incubators assist with this, though the proximity theory was designed to explain learning and knowledge creation. Even though start-ups do learn and increase their skill, the proximity theory appears to not fully fit. Different people have different skills in the same sector and appear to have similar skills in different sectors, and thus collaboration between those groups might be in some way useful for some, but not for others. This research looks further into why some companies would collaborate, give access to each other's networks and support each other, instead of learning per se. In order to do so it might be useful to create sectorial proximity as a sixth form of proximity for people who work within the same sector. As with the other forms of proximity, lock-in group thinking can stop such a group if the proximity gets too high, but it also makes collaboration easier if both parties work within the same sector.

The second aspect worth reflecting on to what extent start-ups within an incubator actually differ in their behaviour compared to network organisations. Especially in corporate incubators, that are almost always specialised, it can be seen as an independent R&D department, except that now the networks are officially external instead of internal. Apart from naming it is doubtful that they actually have different dynamics. With the increase of freelancers that work within corporations, the boundary becomes very vague.

The third aspect reflects towards buzz. Buzz appears to be always in place, but not always used. It seems that the low transaction costs of collaboration and interaction creates an ability to interact easily if necessary, but that in reality this interaction does not always happen. By creating a temporal buzz (event, conference, workshop, networking event etc.), interaction can also take place. Even though the transaction costs of these types of events are higher, they also provide an opportunity where all agents involved know that they are there to network and collaborate and therefore might increase effectiveness.

Future research should aim at trying to look deeper into these types of activities on a micro level to have a better view on what these dynamics look like. What should also be taken

into account for future research are two new phenomena. The first is crowd-funding, which might revolutionise the way financing start-ups and projects is done. Business incubators or even consultancy firms can play a large role in creating crowd-funding initiatives and guiding them. The second aspect is the footloose business incubator. Some business incubators do not even have a physical location where the start-ups are located. This ranges from entrepreneurship programmes at universities to accelerator projects where experienced entrepreneurs guide start-ups. What role does location play for these footloose programmes and projects or is a coffee bar with Wi-Fi sufficient for today's start-up?

The final aspect refers to the extent to which the conclusions of this thesis can be prioritised and quantified. In order to be able to properly understand the role of proximity for business development in business incubators, a quantitative analysis has to be performed. A large number of observations, both on the incubator level as well as the start-up level needs to be performed, due to the large variety of incubators. The different aspects of proximity need to be operationalized and quantified. This is a task that on its own that is not easy to perform, but essential in order to understand why, where, how long, when and with whom start-ups collaborate and what the role of business incubators in this all. This will add another valuable piece of information to the current debate, as it will not only show the different aspects described in this thesis, but also provide information on how valuable these different aspects are in comparison to each other.

Bibliography

- ASHEIM, B., L. COENEN, & J. VANG, (2007) Face-to-face, buzz, and knowledge bases: socio-spatial implications for learning, innovation, and innovation policy. *Environment and Planning C*, 25(5), 655.
- BATHELT, H., A. MALMBERG, P. & MASKELL, (2004) Clusters and knowledge: local buzz, global pipelines and the process of knowledge creation. *Progress in Human Geography*, 28(1), 31-56.
- BERGEK, A., & C. NORRMAN, (2008) Incubator best practice: A framework. *Technovation*, 28(1), 20-28.
- BOON, W., E. MOORS, S. KUHLMANN, & R. SMITS, (2008) Demand articulation in intermediary organisations: The case of orphan drugs in the Netherlands. *Technological Forecasting and Social Change*, 75(5), 644-671.
- BOSCHMA, R. (2005) Proximity and innovation: a critical assessment. *Regional studies*, 39(1), 61-74.
- BROEKEL, T., & R. BOSCHMA, (2012) Knowledge networks in the Dutch aviation industry: the proximity paradox. *Journal of Economic Geography*, 12(2), 409-433.
- BØLLINGTOFT, A., & J. ULHØI, (2005) The networked business incubator—leveraging entrepreneurial agency?. *Journal of Business Venturing*, 20(2), 265-290.
- CAVES, R., (2003) Contracts between art and commerce. *The Journal of Economic Perspectives*, 17(2), 73-84.
- DIA (DUTCH INCUBATOR ASSOCIATION) (2013)
<http://www.dutchincubator.nl/Index.aspx?pgId=1> Visited 01-03-2013.
- EBBERS, J., (2013) Networking Behavior and Contracting Relationships Among Entrepreneurs in Business Incubators. *Entrepreneurship Theory and Practice*. 1-23
- FLORIDA, R., (2002) *The rise of the creative class*. New York: Basic Books
- GRANOVETTER, M., (1973) The strength of weak ties. *American journal of sociology*, 1360-1380.
- GRIMALDI, R., & A. GRANDI, (2005) Business incubators and new venture creation: an assessment of incubating models. *Technovation*, 25(2), 111-121.
- HACKETT, S., & D. DILTS, (2004) A systematic review of business incubation research. *The Journal of Technology Transfer*, 29(1), 55-82.
- HANSEN, M., H. CHESBROUGH, N. NOHRIA, & D. SULL, (2000) Networked incubators. *Harvard business review*, 78(5), 74-84.
- JACOBS, J., (1969) *The Economy of Cities* New York: Random House.
- MARSHALL, A., (1919) *Principles of Economics* London: Macmillan.
- MARSHALL, A., (1921) *Industry and Trade* London: Macmillan.
- MILLER, D., & P. FRIESEN, (1984) A longitudinal study of the corporate life cycle. *Management science*, 30(10), 1161-1183.
- PORTRER, M., (1990) The competitive advantage of nations. *Harvard Business Review*, 68(2), 73-93.
- RICARDO, D., (1817) *The principles of Political Economy and Taxation* London: John Murray.
- SAXENIAN, A., (2007) *The new Argonauts: Regional advantage in a global economy*. Harvard University Press.
- STOREY, D., & F. GREENE, (2010) *Small business and entrepreneurship*. Financial Times Prentice Hall.
- STORPER, M., & A. VENABLES, (2004) Buzz: face-to-face contact and the urban economy. *Journal of economic geography*, 4(4), 351-370.
- WEE, G., & J. ANNEMA, (2009) *Verkeer en vervoer in hoofdlijnen*. Coutinho. (in Dutch)
- WENTING, R., (2008) Spinoff dynamics and the spatial formation of the fashion design industry, 1858–2005. *Journal of Economic Geography*, 8(5), 593-614.

Appendix

Appendix A: List of topics for interviews with incubators

(translated into English)

Founding and history
Ownership and mission
Group of companies targeted by the incubator
Services provided
Location
Networks
Innovation

Appendix B: List of topics for interviews with businesses in incubators

(translated into English)

Arriving in the incubator
Expected positive effects
Real positive effects
Negative effects
Collaboration
Location
Considering another location/Why did you move to another location?

Appendix C: Survey questions

(translated into English)

In what year was your company founded?

How much salaried personnel are currently working for you?

... FTE divided over ... People

On which markets is your company active:

- a) Business to Business (supplying other businesses)
- b) Business to Consumer (Supplying consumers)
- c) Both
- d) We are not active on any market

In which sector is your company currently active?

...

How innovative is the product/service you're providing?

- a) It is a small renewal/improvement compared compared to what is currently available
- b) It is a radical renewal/improvement compared compared to what is currently available
- c) It is completely new
- d) Other:....

How did you get into contact with this incubator?

- a) Through private ties with incubator management
- b) Through professional ties with incubator management
- c) Through private ties with another company based in the incubator
- d) Through professional ties with another company based in the incubator
- e) Other:....

How important are the different services provided by the incubator? For example: Assisting with innovation, management, PR, administrative support, workshops, clinics etc.?

- a) Very important
- b) Important
- c) Slightly important
- d) Not important

Did the incubator support you financially?

- a) Yes, through a loan
- b) Yes, through buying a share of the company
- c) Yes, through subsidies
- d) Yes, other:....
- e) No

What is the main reason to locate your start-up in an incubator?

- a) Cheap price
- b) Services provided
- c) Access to networks of other businesses
- d) Support on financing my start-up

What is the main reason to locate your start-up in this specific incubator?

- a) Cheap price
- b) Services provided
- c) Location
- d) Access to networks of other businesses
- e) Support on financing my start-up

How do you travel from your home to work

- a) Walking or by bike

- b) Public transport within Amsterdam
- c) Public transport from outside of Amsterdam
- d) Car within Amsterdam
- e) Car from outside of Amsterdam

Network

In order to have a better view of the activities of your organisation we would like you to fill out this part of the questionnaire as well. We would like you to rate the importance of your partners, competitors, clients and suppliers. In some cases there can be some overlap where a partner can also act as a client. In the answers please try to split these roles as much as possible.

How important are the following agents for your company?

(1 very low - 5 very high) 1 2 3 4 5

Partners	1	2	3	4	5
Universities in Amsterdam					
Universities in the rest of North-Holland					
Universities in the rest of the Netherlands					
Universities outside of the Netherlands					
The municipality of Amsterdam					
The provincial board of North-Holland					
The Dutch State					
The European Union					
Costumers, Suppliers and Competitors	1	2	3	4	5
Costumers in the incubator					
Costumers in Amsterdam					
Costumers in North-Holland					
Costumers in the Netherlands					
Costumers outside of the Netherlands					
Suppliers in the incubator					
Suppliers in Amsterdam					
Suppliers in North-Holland					
Suppliers in the Netherlands					
Suppliers outside of the Netherlands					
Competitors in the incubator					
Competitors in Amsterdam					
Competitors in North-Holland					
Competitors in the Netherlands					
Competitors outside of the Netherlands					

My network is mostly

- a) Local
- b) Regional

- c) National
- d) International

Appendix D: List with incubators used for mapping

De Groene Bocht 1
De Groene Bocht 2
Codum Arts & Crafts
Codum OH3
New Energy Docks
ACE Venure Lab
theGROUNDS
StartupBootcamp*
ABN Amro Dialogue House
Media Guild
Start-Up Push*
SPARK
Boven de Balie
CWI
Beehive West
Beehive Oost
Beehive IJburg
Kauwgomballenfabriek
Volkskrantgebouw

*virtual incubators so no set location