Location, location, location

on the role of geographical proximity in a startup's access to local knowledge

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On the role of geographical proximity in a startup's access to local knowledge

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Abstract:
As regional clusters become more important, and startups become more flexible in their choice of location, relocation of startups starts playing a larger role in regional development. Theories on the role of geographical proximity in knowledge diffusion have thus far failed to address these relocated firms. This exploratory case study assesses how relocated Dutch startups in Silicon Valley have access to local knowledge, based on the newly emerging theory of proximity dimensions. This theory proposes that proximity is not only geographical, but also the cognitive, social, institutional and organizational dimension of proximity may be significant for knowledge access. The results show that the geographical proximity as a result of relocation may have positive and negative effects, and is not always necessary, nor sufficient for local knowledge access. It also shows that the dimensions of proximity should not be assessed in isolation, as the interdependencies between the dimensions may go unnoticed. Last, the results show the need for a more dynamic approach of knowledge diffusion.

Keywords: Innovation cluster, knowledge diffusion, startups, firm relocation, local knowledge, proximity dimensions

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Executive summary

Research aim

Recently, economic policy has shifted from focusing on the national scale to the regional scale (Breschi and Malerba, 2001). As emphasis on innovation as a source of economic growth has grown, the drive of policy makers to create regional innovation clusters has increased (AWTI, 2014). An innovation cluster is defined as an agglomeration of firms within close geographical distance that are often active in the same or related sectors, and that are often aimed at producing knowledge and/or innovations.

As startups are highly associated with innovation, these types of firms are a key focus in these regional policies (AWTI, 2014). Due to multiple globalization processes, we see that startups have the growing ability to choose their own location. This has led to policy makers actively trying to attract foreign firms to their region (Carmichael et al., 2010), as well as relocation being viewed as an important method of knowledge access for firms (Sorenson et al., 2006).

Several theories exist that try to explain why innovation activities tend to cluster within close geographical proximity. Scientific consensus exists on the fact that knowledge diffusion plays a large part in this explanation (e.g. Saxenian, 1994; Breschi and Malerba, 2001). However, no consensus yet exists on the effects of relocation to innovation clusters on startup firms. Theories such as network theory (Granovetter, 1984) and knowledge spillover theory (Feldman, 1994; Jaffe, 1989) predict solely positive effects, whereas the recently proposed theory of proximity dimensions (Boschma, 2005) also predicts negative effects of relocation.

This research aims to close this gap in the literature, by answering the following research question:

How do Dutch startups in Silicon Valley get access to the knowledge that is present in that specific region and what role does their geographical location play in the knowledge access of these firms?

Research approach

This research has three aims. The first aim to is to create an overview of all Dutch startups that are located in Silicon Valley, as such an overview is currently lacking. Data sources such as newspapers, the internet and semi-structured interviews with three key informants are used to construct this overview.

The second aim of this research to identify how Dutch startups in Silicon Valley have access to the local knowledge of Silicon Valley. To be able to answer the research question, an explorative case study is conducted on Dutch knowledge-intensive startups that are located in Silicon Valley. A qualitative research approach is taken, because of the need to understand the social processes behind the transfer of knowledge (e. g. Breschi and Lissoni, 2001).

Data is collected through semi-structured interviews with 11 Dutch startups in Silicon Valley. This data is supplemented by interviews with key informants and other data sources such as documents and websites. The data is analyzed according to three sub topics, namely (1) the sources used by Dutch startups to gain access to local knowledge in Silicon Valley, (2) the local actors that make up the networks of these startups and the local knowledge they provide access to, and (3) the methods Dutch startups use to build, strengthen and maintain their local network in Silicon Valley.

To finally assess the role of the geographical location of these startups, the data is analyzed using content analysis based on the proximity dimensions framework (Boschma, 2005). This framework

proposes that the geographical proximity between firms within innovation clusters is only one dimension of proximity. Four other dimensions, which are cognitive, social, institutional and organizational, may play a role in the knowledge diffusion between relevant actors. The analysis will focus on which dimensions are of importance for Dutch startups to access local knowledge. It will also look at the interdependencies between the different dimensions.

Findings

The research has identified 26 knowledge-intensive Dutch startups in Silicon Valley. These startups have either relocated or expanded, or have been set up in Silicon Valley. Of these startups, 24 are active in the IT sector. The 11 participants in the interviews have indicated that next to investment opportunities, the local knowledge of Silicon Valley has been significant in their choice for Silicon Valley as a location.

The results show that Dutch startups in Silicon Valley use both sources of local knowledge that can be accessed from a distance, such as websites and internet forums, and knowledge sources for which physical proximity is required. Of these 'offline' sources, the local connections in Silicon Valley, and specifically the local labor pool are important sources of local knowledge for Dutch startups.

The results also show that the local knowledge of Silicon Valley can be divided into four categories. These different types of knowledge are often provided by different types of local actors in Silicon Valley. First, business related knowledge is the knowledge on business operations that are best suited to set up a company and to achieve high growth rates, and is mostly provided by other Silicon Valley entrepreneurs and venture capitalists. Second, technological knowledge is mostly provided by Silicon Valley engineers, though may also be accessed through licenses of larger firms such as Google. Surprisingly, universities and research institutes seem to play no role in providing technological knowledge to Dutch startups in Silicon Valley. Third, legal knowledge is concerned with the legal sides of setting up a business or office in Silicon Valley, and is mostly provided by lawyers. This type of knowledge is more relevant for firms that have grown enough to start thinking about employees and investments. Last, industry related knowledge is knowledge on the developments within a specific domain, and is provided by venture capitalists. The relations with these actors may differ per type of actor, and thus also on the type of knowledge that is being transferred.

We may distinguish three phases in the creation of a new relation, which are making the first contact, strengthening the relationship and keeping in touch with the relation. Geographical proximity is not required when making or maintaining new connections, as this may be achieved over the phone or using internet. The strengthening of the relationship does require geographical proximity, as face-to-face contact is considered to be necessary for the strengthening of the relation between two actors. Although many factors can be stimulating to the building of trust, the results also show that the cultural mismatch between Dutch and Silicon Valley entrepreneurs may inhibit the strengthening of a relationship.

The results show that geographical proximity has direct effects on the access to local knowledge. Geographical proximity can make communication more effective, as it facilitates face-to-face contact. Moreover, geographical proximity is often required for access to local sources of technological and business related knowledge, such as local events. However, geographical proximity is not always enough to grant unlimited access to these local knowledge sources, and not always necessary to gain access to local knowledge sources, as these may for example be accessed online.

The results also show indirect effects of geographical proximity. First, geographical proximity is facilitating, but not always necessary when making and maintaining local contacts in Silicon Valley. However, geographical proximity is regarded as necessary when strengthening a relation, as face-to-face contact is required for building trust between two actors. Second, cognitive proximity is positive for Dutch startups, mostly because it makes reputations that were built in the Netherlands easier to interpret for Silicon Valley actors. However, this process takes time; relocation does thus not immediately lead to more cognitive proximity. This may have negative effects on the direct role of geographical proximity, as a lack of track record may have negative effects on a startup's access to the local labor pool. Moreover, it is questioned whether cognitive proximity is always positive for explorative knowledge access, as it may lead to a lock-in situation. Third, geographical proximity has a positive effect on proximity in the institutional dimension, but also this process takes times. Relocation thus does not immediately solve problems that are based on a lack of institutional proximity, such as the difficulties in building trust between Dutch and Silicon Valley actors. Face-to-face contact may provide a partial solution to these difficulties, as it may contribute to an effective transfer of nonverbal communication. Last, geographical proximity has a negative effect on proximity in the organizational dimension, but this increase in organizational distance has a positive effect on the startups' access to local, explorative knowledge.

Conclusions

Based on this research, we may conclude that relocation has both positive and negative effects on a Dutch startup's access to local knowledge. Furthermore, relocation is not always necessary, nor is it always sufficient to gain access to local knowledge. Third, this research points out that the effects of the different dimensions of proximity on knowledge access should not be assessed in isolation, as the interdependencies between the dimensions may go unnoticed. These conclusions all agree with the arguments put forward by the theory of proximity dimensions.

However, the results also show the need for a dynamic approach to knowledge access. The effects of geographical proximity on the other dimensions often takes time. Moreover, the effects of the different dimensions on the knowledge access of a startup often change as the startup also changes. Last, the interdependencies between the dimensions are not static, but may change as the proximities in the different dimensions change. Although already argued for by Boschma (2005), little research on the dimensions of proximity has taken these dynamics into account. It is thus suggested for further research on the proximity dimensions to approach knowledge diffusion as a dynamic process, rather than a static phenomenon.

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1. Introduction

1. Introduction

Recently, regional policy makers have stressed the importance of regional development for economic growth (Breschi and Malerba, 2001). Moreover, innovation is seen as one of the key drivers for regional development (AWTI, 2014). Inspired by the economic growth of regions such Silicon Valley, many cities are striving to transform into so-called innovation clusters (AWTI, 2014). Within the Netherlands we can see multiple cities such as Amsterdam, Delft, Eindhoven, trying to become the next 'Silicon Valley' (de Valk, 2014).

The increasing importance of regional innovation clusters (e.g. OESO, 2009) can be explained by two generally accepted propositions. The first is that knowledge creation and absorption are both important for innovation, and thus for regional growth (e.g. Boschma, 2005). The second proposition is that certain knowledge diffuses more easily over small distances (Döring and Schnellenbach, 2004; Jaffe, 1989). Due to recent advances in telecommunications and transport technologies, a significant amount of knowledge can spread more easily over large distances (e.g. Stiglitz, 1999), making it a global public good that accessible for all firms (IMF, 2000). Since firms can thus no longer distinguish themselves based on this globally accessible knowledge, so-called 'local knowledge' is becoming more important for firms to distinguish themselves from their competitors (Porter, 1998; Maskell, 2001). Thus, the location of a firm is important for its competitiveness.

Moreover, a second development is currently taking place. Due to recent globalization processes, the choice of location for firms is increased. Globalized standards, as well as a decrease in regional and national legislation has made that relocation for firms is becoming almost effortless (The Economist, 2014; Baaij et al., 2005). These developments have increased the 'transnationality' of firms (Drori et al., 2009). Thus, location is important for a firm's competitiveness, and location can be chosen more freely by firms. This has led to policy makers actively trying to attract foreign firms to their region (Carmichael et al., 2010), as well as relocation being viewed as an important method of knowledge access for firms (Sorenson et al., 2006).

These developments have not only sparked interest of policy makers, but also of scientific scholars. Many scholars have recently come up with theories trying to explain why certain knowledge spreads more easily over small distances, and thus trying to understand how clusters rise and sustain themselves in order to support regional development policy makers (Torre and Rallet, 1999; Maskell, 2001; Ozman, 2009). However, other than the fact that knowledge plays a significant role in innovation clusters, little consensus on these explanations has been reached among scholars.

1.1 Research aim

It is surprising to see that the theories that try to explain the role of geographical distance in knowledge diffusion have thus far been ignorant of the previously mentioned globalization processes and the effects these have on the effort it takes for firms to relocation. This research therefore proposes an exploratory multiple case study on Dutch startups in Silicon Valley to close this gap in the literature, by answering the following research question:

How do Dutch startups in Silicon Valley get access to the knowledge that is present in that specific region and what role does their geographical location play in the knowledge access of these firms?

The following sub questions will assist in answering the main research question:

- What sources do Dutch startups use to gain access to local knowledge in Silicon Valley?

- What local actors provide these startups with local knowledge and what kind of knowledge do these actors provide?
- How do Dutch startups build, strengthen and maintain their local network in Silicon Valley?

The proposed case study may be used to evaluate the different theories on the role of geographical proximity in knowledge diffusion in this specific case, and thereby contribute to closing this literature gap. Results may also be of practical interest for Dutch startups looking to (re)locate because of knowledge-related concerns, and all institutions trying to stimulate this behavior as a result of the increased emphasis on regional development (AWTI, 2014).

1.2 Report outline

The outline of the report is also visually presented in figure 1.1. We may divide the following report into two parts. First, Chapter 2 and 3 will present the different theories on the role of geographical proximity in knowledge diffusion, followed by presenting the gap in the scientific literature that this research tries to address. Chapter 3 will furthermore present the research question, and will end with the methodology used to provide an answer to this question.

Chapter 4 and 5 will present the case study and the results. Chapter 4 will start with an overview of the Silicon Valley region, after which we will slowly zoom in the participating startups. It will finish with an overview of the situation of these startups. During this chapter, the results will also slowly shift from being based on reviewing literature, to reviewing documents and websites, to results based on interviews. Chapter 5 will then start with giving an overview of the results on how Dutch startups gain access to local knowledge, and will finally assess the role of their physical location in these processes.

Chapter 6 will present the conclusions that can be drawn from the results of this research. It will furthermore present implications for regional policy, reflections on this research, and suggestions for further research.

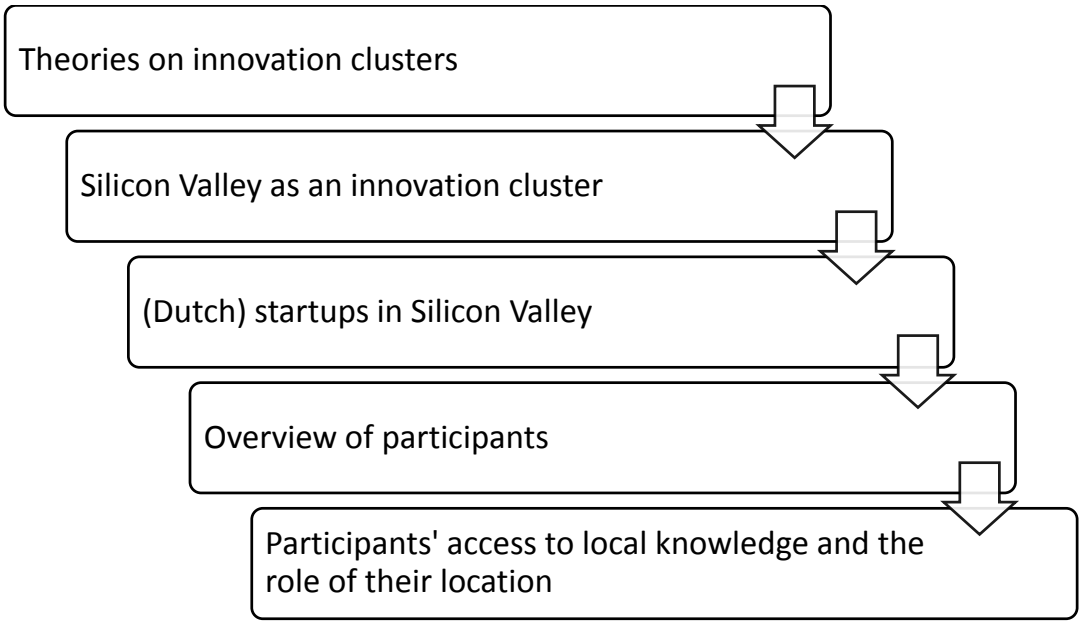


Figure 1.1: Outline of report

2. Theory and concepts

2. Literature review on geographical proximity in knowledge diffusion

Little consensus exist between scholars on the role of geographical proximity in the diffusion of knowledge. This literature review will examine several scientific theories on the role of geographical proximity in knowledge diffusion. The theory on local knowledge spillovers will be discussed, as well as the embeddedness theory and theories based on evolutionary economics. It will then introduce recent critiques on these theories, and discuss the theory of proximity dimensions, which emerged as response to these critiques.

We define the term innovation cluster as an agglomeration of firms within close geographical distance that are often active in the same or related sectors, and that is often aimed at producing knowledge and/or innovations (Porter, 1998; AWTI, 2014). An exact definition of 'close geographical distance' is rarely given by scholars of this topic, but it is often implicitly assumed that two actors are geographically close together when they are located in the same political and cultural region, or when they have the possibility to experience daily face-to-face contact (Shearmur, 2011).

Another note must be made on a large share on the research of the role of geographical closeness on knowledge diffusion. Knowledge diffusion is hard to measure, and it is thus difficult to provide empirical evidence to support theories. Some scholars use indirect output measures such as patents citations as a measure of knowledge diffusion (e.g. Jaffe, 1989; Feldman, 1994), others use input measures such as time to adoption (Baptista, 2000). Many other theories are only theoretical or supported by case studies (Torre and Rallet, 1999; Breschi and Malerba, 2001).

2.1 Theories on the direct role of geographical proximity

Scientific theories on the role of geographical distance in knowledge diffusion can be found on both the firm-level (e.g. Maskell, 2001; Malmberg and Maskell, 1995; Keeble and Wilkinson, 1999) and the regional level (e.g. Coleman, 1988; Burt, 2000; Cooke et al., 1997). Explanations on the firm-level argue that the benefits caused by geographical closeness may or may not be captured by a firm, whereas explanations on a regional level assume the benefits created by proximity are of a non-excludable nature, and are therefore experienced by any firm that is located within the cluster. As this research focuses on individual firms, only the theories on firm-level will be discussed. These explanations may be based on neoclassical economics (Marshall, 1980), evolutionary economics (Veblen, 1898), or the embeddedness theory as argued by Granovetter (1985). These three theories will now be discussed.

2.1.1 Neoclassical accounts on the role of geographical proximity

Alfred Marshall (1890) is often regarded as one of the founding fathers of neoclassical economics, and was the first to try and explain the processes that took place within innovation clusters. Many scholars have built upon these first explanations of the phenomenon of innovation clusters. Although Marshall concentrated his work on the clustering of manufacturing firms, scholars have shown that his theories also apply to other sectors (e.g. Feldman, 1994).

Marshall (1890) claimed that clustered firms could create a common knowledge pool between them. As Marshall described this, 'the mysteries of the trade become no mysteries; but are as it were in the air'. First, he argues that the creation of a common understanding between the workers in a cluster will result in approval of good work and the inventions with the most potential will be recognized as such. Second, he argues for the fast diffusion of knowledge on inventions, machinery, business processes, and business organizations. Even though he did not go into detail on the specific

diffusion mechanisms with clustered firms, his work has been very influential in the current theories on physical distance and knowledge diffusion.

The neoclassical studies focusing on these knowledge-based processes within innovation clusters, like studies by Jaffe (1989) and Feldman (1994), refer to these processes as knowledge spillovers. The central argument in this theory is that knowledge diffuses more easily over small geographical distances. Especially tacit knowledge, or knowledge that cannot be captured by documents or patents, and as such requires face-to-face contact to be transferred, will diffuse more easily within a cluster. Tacit knowledge is thus seen as a partial public good, being non-rival and partially non-excludable. In support of this theory, an influential paper by Jaffe (1989) found a positive correlation between university research and corporate patents on a state-level. Feldman (1994) has found a positive correlation between the presence of complementary firms, such as service businesses and related industries, on industry patents. These results confirm the notion that the knowledge that is produced by universities and research institutes is more easily accessed by firms that are located within a smaller distance than by firms at a larger distance.

An important implication of the theory on knowledge spillovers is that knowledge spillover effects should be stronger for industries and activities where knowledge plays an important role, and thus that firms that are active in knowledge-intensive sectors should benefit more from clustering than firms that are not active in knowledge-intensive sectors. Audretsch and Feldman (1996) have indeed found that in highly knowledge-intensive industries, innovative activities tend to cluster more than in industries where knowledge is less important.

The role of geographical distance is thus that knowledge diffuses more easily over small physical distances. Especially tacit knowledge, since it requires face-to-face contact to be transferred, diffuses more easily over a small distance. Firms being located close to one another thus have a more efficient knowledge production function, according to authors as Jaffe (1989) and Feldman (1994).

Critique on the notion of local knowledge spillovers

Several scholars have criticized the notion of local knowledge spillovers in neoclassical economic theories (e.g. Breschi and Lissoni, 2001). Breschi and Lissoni (2001) argue against the 'fuzzy' and dichotomous divide between tacit and codified knowledge. They claim that the definitions proposed by the knowledge spillover scholars contradicts with their proposed theories. If tacit knowledge is indeed embodied within people, this contradicts with the notion of knowledge being a public good. They also argue that rather than knowledge being either tacit or codified, the distinction should be regarded as a continuum, and that often both types of knowledge are necessary to correctly interpret information.

Furthermore, neoclassical economics assumes highly rational, profit-maximizing economic actors, an assumption that rarely matches with reality. In doing so, neoclassical economists downplay the role of social processes (Granovetter, 1985). For example, knowledge spillovers are treated as a black box, without going into detail on the spillover mechanisms that enable this type of knowledge diffusion, as Jaffe himself already argued (1989). Breschi and Lissoni (2001) have argued that this leads to a superficial understanding of the processes taking place within innovation clusters, and that opening up the black box of knowledge spillovers would show that these spillovers are often more intended than the theory proposes.

Also, neoclassical economies often fall short when trying to explain differences in success between seemingly similar innovation clusters (e.g. Saxenian, 1994). Neoclassical economies searches for equilibria in economic systems, thereby ignoring the dynamic processes that take place in such a

system. Already in 1898, Thomas Veblen argued for an evolutionary approach to economics, based on the assumption that the economy is constantly adapting to changing environments. Such an approach would provide the possibility to take historical processes into account, which are often important in explaining the differences between innovation clusters (Saxenian, 1994).

Two theories have emerged in reaction to these critiques. The embeddedness theory of Granovetter (1985) gives a role to social processes, arguing that all economic behavior takes place in a social context, whereas evolutionary economy (Veblen, 1898) provides space to include dynamic processes in economic theories, and argues that economic actors adapt constantly and incrementally to an ever-changing environment. These theories should not be viewed as being two opposite views on the role of geographical proximity, but are often argued to be mutually reinforcing processes (Breschi and Malerba, 2001; Norcliffe, 2009; Maskell, 2001).

2.1.2 Explaining innovation clusters with embeddedness theory

Granovetter (1985) argues in an influential paper that the neoclassical view on economic behavior treats economic actors and their decisions as independent of their social context, or as he calls it, as if economic actors are atomized. Instead, Granovetter argues that economic actors and their behavior should be understood in relation to their social context, such as their personal relations and position within social networks. By taking this view, he places himself between oversocialized and undersocialized economic approaches.

Granovetter (1985) argues that some form of relation between two firms is necessary, though not always sufficient, for interaction to take place. Scholars explaining innovation clusters based on Granovetter's theory (e.g. Saxenian, 1994; Maskell, 2001) propose that these interactions between firms are the infrastructure through which knowledge diffuses, and that geographical proximity improves this infrastructure in two ways. First, geographical proximity stimulates the creation of new relations, since it facilitates meetings between firms. Second, geographical proximity facilitates the maintaining and strengthening of existing relations, because it makes it possible for firms to have regular face-to-face contact.

First, geographical proximity is believed to stimulate the creation of new relations, because it facilitates meetings between firms (e.g. Saxenian, 1994). These inter-firm connections often lead to benefits for the firms involved in these relationships (Grodal and Powell, 2006), such as access to knowledge or other resources (Ozman, 2009). Thus, the more actors present in a firm's network, the more potential knowledge pools are available to this firm (Coleman, 1988; Huggins and Johnston, 2010), and the more resources this firm has access to (Ozman, 2009). Thus, firms located within clusters are argued to have more access to potential knowledge sources than firms that are located outside clusters (Ozman, 2009).

Second, scholars have proposed two mechanisms to explain how inter-firm relations can give firms access to knowledge, both based on an opposing characteristic of the relation in question. On the one hand, scholars argue that weak ties, or acquaintances, provide benefits for a firm (Granovetter, 1973; Hansen, 1999). Granovetter (1973) has argued that weak ties are the ties that provide firms with access to new information. He argues that a firm's weak ties have more connections with sources unknown to the firm, than strong ties. Weak ties are thus often associated with explorative knowledge (Ozman, 2009).

On the other hand, strong ties are believed to facilitate efficient and effective knowledge transfer between firms (Breschi and Malerba, 2001; Maillat, 1998; Saxenian, 1994), and lower risk and uncertainty (Capello, 1999; Granovetter, 1985). Strong ties are believed to be a requirement for trust to be built between two firms (Granovetter, 1985), which is argued to be necessary for the

transfer of tacit knowledge (Granovetter, 1973). Geographical proximity is believed to play an important role in establishing strong ties. Being spatially close together, facilitates face-to-face contact, which has a positive effect on building strong ties and trust. Empirical evidence has been found on the positive effects of geographical proximity and face-to-face contacts on knowledge exchange and a firm's access to information (Ozman, 2009).

Maskell (2001) for example takes the arguments put forward by the theory of strong ties, to explain why firms experience benefits from being located within innovation clusters. He argues that these benefits come from the process of vertical specialization in clusters. Vertical specialization occurs when firms focus on only a small part of a product's production process, which results in a concentration of suppliers and customers. As such, vertical specialization leads to a deepening of a region's knowledge base, and higher quality products. However, since knowledge becomes highly specialized, firms need to be able to exchange knowledge very effectively. As geographical proximity facilitates knowledge exchange, it thus becomes an enabler for vertical specialization.

Thus, network theory argues that interactions between economic actors are essential for knowledge diffusion, and that geographical proximity has a positive role in establishing these interactions. Geographical proximity is believed to facilitate the creation of new relations, providing firms with more sources of knowledge. Furthermore, geographical proximity is believed to stimulate the building of trust between two economic actors, through facilitating face-to-face contact. These strong relations provide firms with access to local, exploitative knowledge. It is however important to note that between the theories on strong and weak ties, it is often argued that firms have to find a balance between the weak and strong ties and the type of knowledge they provide (e.g. Bathelt, Malmberg and Maskell, 2004; Peeters, 2013), or that it is dependent on the firm or innovation characteristics (e.g. Hite and Hesterly, 2001; Rowley, Behrens and Krackhardt, 2000).

2.1.3 The evolutionary theory on the role of geographical proximity

A second theory emerged in respond to the critiques on the explanations provided by theories based on local knowledge spillovers. Instead of viewing economic processes as moving towards a steady state or equilibrium, evolutionary economy argues for an economic system continually adapting to its changing environments (Veblen, 1898). The theory thus argues for a more dynamic approach. In explaining this constant adaptation, evolutionary economists use the evolutionary theory proposed by Darwin, consisting of variation, selection, and retention. The resulting economic processes are dynamic, incremental, context-specific and assume bounded rationality. Evolutionary economy gives learning an important role in the evolution of economic systems. The theory views learning as an incremental process, where economic actors build upon, but are also directed by the already existing knowledge pool (Dosi and Nelson, 1994; Maskell and Malmberg, 1995).

The variation between firms exists in their behavior, such as the standards they use, or the interactions they seek (Nelson and Winter, 1977). Firms acquire this behavior, or these routines, either by experimentation or imitation of other firms. Markets work as a selection mechanism; firms with 'fit' routines will capture a share of the market, and firms with 'unfit' routines will either go out of business or imitate the firms that do well. The fitness of a firm's routines is context-specific, and depends on a firm's environment. Thus, when an environment changes, firms have to adapt their routines.

Geographical proximity is believed to facilitate the process of variation, selection and retention, as it is argued that it is easier to assess the routines and fitness of a firm that is located nearby (Maskell, 2001; Keeble and Wilkinson, 1999). Firms located within an innovation cluster are able to experience more variation and easier selection, thereby facilitating and speeding up the learning process.

Learning and adapting is thus easier for firms located in an innovation cluster, than for firms located outside of innovation clusters (Boschma and Lambooy, 1999).

Maskell (2001) argues that innovation clustering may facilitate the process of variation, selection and retention through observation. Clusters are often horizontally specialized (Sabel and Piore, 1984), meaning that many firms perform similar tasks. Firms within a cluster are also geographically close together. This proximity makes a firm's routines and performance visible, and thus enables firms to observe and compare routines of other firms in relatively great detail, and to learn from them. Positive routines of firms involved in similar tasks may then be absorbed by other firms within the cluster. Maskell emphasizes that interaction between firms is not necessary for this process to take place. This process results in an incremental learning process, as argued for by evolutionary economists.

Another explanation that builds upon evolutionary economics is proposed by school of collective learning. Building upon the neoclassical accounts based on a firm's knowledge production function, this theory argues that geographical proximity facilitates the creation of a base of common knowledge within a cluster, its diffusion being bounded within that cluster (Keeble and Wilkinson, 1999). The notion of knowledge as a partly non-excludable good corresponds to the notion of Jaffe (1989) and Feldman (1994) and thus attributes the same role to geographical distance in knowledge diffusion. The diverse set of knowledge that clustered firms thus have access to, will lead to the creation of new knowledge and solutions, which will in turn be contributed to the shared knowledge base (Lawson and Lorenz, 1999; Keeble and Wilkinson, 1999). Although examples of the diffusion mechanisms are mentioned, such as labor mobility and inter-firm cooperation, often no detailed explanations are given (e.g. Maskell and Malmberg, 1995).

However, the theory on collective learning argues that geographical proximity has another effect on knowledge diffusion. Scholars of this theory argue that geographical proximity facilitates a common understanding of the problems clustered firms are trying to solve (Norcliffe, 2009), through common norms, conventions and codes (Breschi and Malerba, 2001). The theory emphasizes that this common understanding of the encountered problems in the region is necessary for all firms to be able to coordinate and appropriate the local knowledge (Keeble and Wilkinson, 1999). Furthermore, it is argued that this shared understanding has a positive effect on the building of trust (Norcliffe, 2009). As has been discussed previously, trust can play an important role in knowledge diffusion and innovation.

The theory however proposes that the process of collective learning may not only be beneficial to firms located in innovation clusters. The theory proposes that the buildup of this shared knowledge base is path-dependent, that is, the process is cumulative and builds upon the base that is already there. Inertia therefore needs to be actively avoided within innovation clusters (Lawson and Lorenz, 1999.

Thus, theories based on evolutionary economics argue for a positive role of geographical proximity in knowledge diffusion, as geographical proximity facilitates observation between firms, and a shared understanding of the problems these firms are working on. Both effects stimulate learning for firms located in innovation clusters. Furthermore, the shared understanding between firms in innovation clusters also facilitates trust between these firms. However, several scholars also argue that these processes may not always be positive for clustered firms, as they may lead to lock-in situations.

2.1.4 Conclusion

In conclusion, we can distinguish three different roles for geographical proximity in the diffusion of knowledge, as can be seen in figure 2.1. Theories on knowledge spillovers argue that certain types of knowledge diffuse more effectively over small geographical distances via face-to-face contact. Network theory argues that trust, which is easier to establish over small geographical distances, increases the effectiveness of knowledge transfer. Evolutionary theories argue that geographical proximity facilitates a shared understanding of problems between clustered firms, which has a positive effect on knowledge diffusion. These effects of geographical proximity are proposed to be direct, and almost always lead to positive effects.

It is important to note that these effects are not always separate, but that many scholars have argued for an interaction between evolutionary and embeddedness explanations of the benefits provided by innovation clusters (e.g. Breschi and Malerba, 2001; Norcliffe, 2009; Maskell, 2001). These scholars argue that strong regional embeddedness facilitates the formation of shared understandings, whereas a shared understanding has positive effects on trust-building.

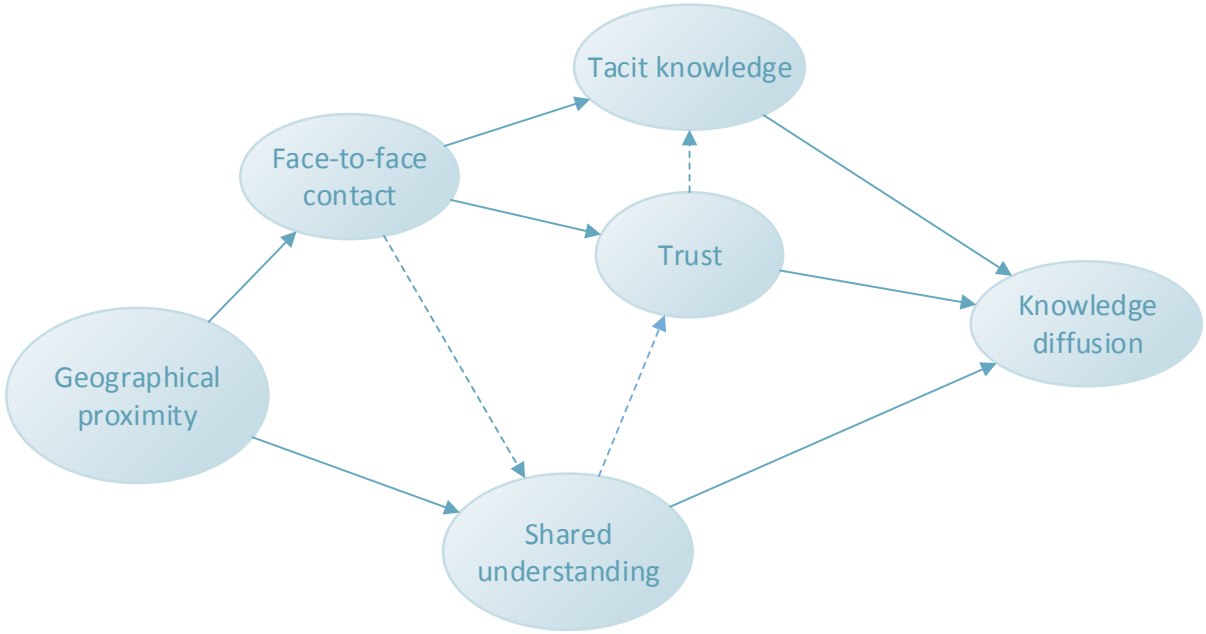


Figure 2.1: Common theories on the role of geographical proximity in knowledge diffusion

2.2 Recent critiques on the direct role of geographical proximity

Even though the embeddedness and the evolutionary approaches emerged in response to critique uttered towards the neoclassical approach, these approached themselves have raised some critiques as well. First, many scholars argue for a lack of empirical evidence to support the embeddedness and evolutionary theories (e.g. Torre and Rallet, 1999). Furthermore, the evidence that does exist is often not generalizable (Shearmur, 2011; Ozman, 2009), due to the fact that research has often focused on single case studies, as argued by Breschi and Malerba (2001).

Also, it is often argued that too much significance is attributed to geographical proximity in trying to explain innovation clusters. Shearmur (2011) argues that many scholars have neglected to give a definition of geographical proximity, and have used it as a dichotomous variable, rather than as a continuum. Furthermore, he argues that the borders of an innovation cluster are often not a given start point, but rather the result of the social processes within the innovation cluster. Lorentzen (2008) argues that a firm's international links are largely neglected by scholars, even though these links may be just as important, or even more important in a firm's access to knowledge.

Torre and Rallet (1999) claim that the innovation clusters that are explored most often are only one of many agglomeration models. First, they argue that geographical proximity does not necessarily lead to social interaction, just as one may have never spoken to a neighbor. Second, they argue that colocalization is not always necessary to reap the benefits provided by geographical proximity. Mobility as well as the use of ICT may provide the same benefits as permanent colocalization. Last, they argue that geographical proximity is not always positive, but may lead to a lock-in situation for the firms located in an innovation cluster with negative effects.

In conclusion, scholars have argued that the role of geographical proximity has been overestimated in previous theories. They argue for a more indirect role for this specific type of proximity, and that geographical proximity does not necessarily provide only positive effects for firms.

2.2.1 The proximity dimensions framework

Torre and Rallet (1999) propose an extension of the existing theories that is able to explain all types of agglomerations they distinguish. They argue that geographical proximity is not the only type of proximity that plays a role in the processes that take place within innovation clusters. They argue for a second type of proximity, which is organizational proximity, or the ability of an organization to make its members interact with each other. Taken together, these two dimensions of proximity are able to explain all types of industrial agglomerations, and create a dynamic approach to explain innovation clusters.

According to Boschma (2005), the role of geographical proximity in establishing interaction cannot be fully understood when assessed in isolation, but should always be regarded in other types of proximity. He argues that geographical proximity is 'neither sufficient nor necessary' to establish interaction between economic actors, and that its role is more facilitative in establishing other types of proximity. In an influential paper, Boschma argues to extend the two types of proximity proposed by Torre and Rallet, and proposes five different dimensions of proximity, which are cognitive, organizational, social, institutional and geographical proximity, as can be seen in figure 2.2. Even though he does not substantiate this specific selection of proximity dimensions, the proposed framework has been influential among many scholars (e.g. Marrocu, Paci and Usai, 2011; Mattes, 2012).

The cognitive dimension of proximity refers to the overlap between two actors in their knowledge and the way they interpret problems. Cognitive proximity between two actors causes them to be able to learn from each other, and communicate and cooperate effectively with each other. According to Boschma, this is the only necessary dimension of proximity to enable interaction between two economic actors. Organizational proximity is defined as to what extent control and autonomy can be exerted in relations between and within organizations. This may range from no relations between economic actors at all, to a strict hierarchical organization or networks. Organizational proximity partly builds on network theory, claiming that the amount and types of relationships that exist in an innovation cluster have an effect on the benefits provided by locating inside that cluster (Boschma, 2005).

Social proximity is derived from the embeddedness theory, and refers to the extent of trust embedded within individual relationship. This trust has to be built on friendship, kinship or experience. If trust between two economic actors is based on a culture or a set of values shared with a larger group of people, institutional proximity is used to describe the relationship. Both dimensions of proximity lead to a decrease in uncertainty and opportunism. Geographical proximity is defined as both the absolute and the relative physical distance between two actors. It is argued to have little

direct effects, but to have a facilitating role towards the other four dimensions of proximity (Boschma, 2005).

Besides arguing for multiple dimensions of proximity, Boschma (2005) also argues against the positive role that has been attributed to geographical proximity by other scholars. He argues that too much proximity in any of the five dimensions may have negative effects on knowledge diffusion, as they may lead to lock-in situations. When too much geographical proximity is combined with too much cognitive proximity, and regions look too much inwards, they lose their flexibility and their capability to respond to new developments. Boschma proposes the right balance between regional and international links as a solution to avoid such a lock-in situation.

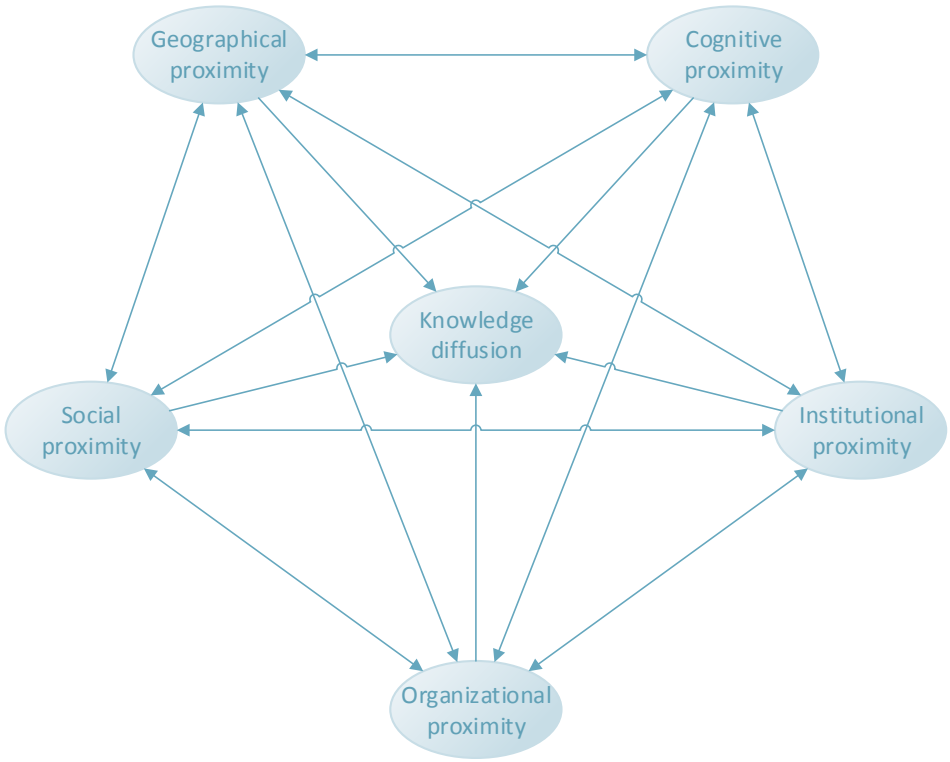


Figure 2.2: Dimensions of proximity in the diffusion of knowledge (as proposed by Boschma, 2005)

Knoben and Oerlemans (2006) have attempted to further specify and disentangle the different dimensions of proximity. They recognize the argument put forward by Boschma (2005) that the role of geographical proximity should not be studied in isolation. They also recognize that many of the frameworks proposed by scholars studying the dimensions of proximity are either under- or over specified, and that the dimensions used in their research may overlap. Recognizing the need for a more precise framework to study inter-firm collaborations, they conducted a literature study and specified three dimensions of proximity, which are geographical, technological and organizational, as can be seen figure in 2.3 (from Knoben and Oerlemans, 2006).

Geographical proximity is defined as the extent to which it is possible for two economic actors to have daily face-to-face contact. As such, geographical proximity is not just the absolute physical distance between these economic actors, it also depends on the relative distance as well as the infrastructure that exists between them. The technological proximity is defined as the overlap in knowledge bases between two economic actors. According to this definition, the technological dimension proposed by Knoben and Oerlemans corresponds directly to the cognitive dimensions proposed by Boschma. Organization proximity is defined as the overlap in explicit and implicit routines that facilitates coordination and effective knowledge transfer. The different routines that

an organization may have, are specified in subdimensions of the organization dimension. As such, routines that refer to the way an actor perceives and interprets the world around him are described in the cognitive proximity. Routines that refer to the institutional framework of a country or region are described in the institutional proximity. Cultural proximity refers to the similarities between two economic actors in the way they give meaning to situations. Last, social proximity refers to the presence and type of relationship that exists between two economic actors (Knoben and Oerlemans, 2006). Although the framework proposed by Knoben and Oerlemans is supported by previous literature, the resulting classification has become less clear when compared to the framework proposed by Boschma (2005).

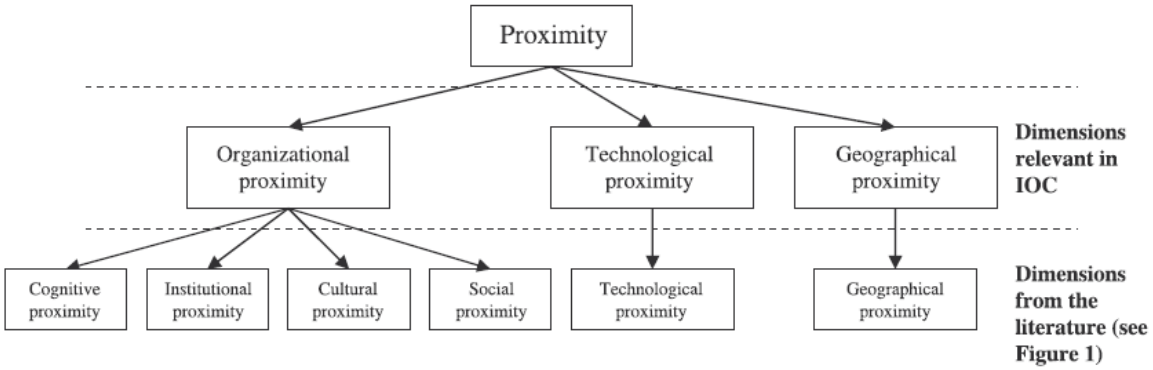


Figure 2.3: Dimensions of proximity (from Knoben and Oerlemans, 2006)

2.2.2 The current state of research

The current research based on the proximity framework is still trying to figure out the possibilities that this framework can offer. Recent research using the proximity framework shows large dissimilarities in the variables it tries to explain, the applied research methods and the different dimensions of proximities it uses as independent variables. Questions regarding the proximity framework recent scholars try to answer focus often on the interactions between the proximities (e.g. Capaldo and Petruzzelli, 2014; Huber, 2011; Marrocu, Paci and Usai, 2011), and the dynamics of the different dimensions of proximity (e.g. Menzel, 2008).

According to Aguiléra, Lethiais and Rallet (2012), the proximity framework has been used to explain three issues. First, scholars may use the proximity framework to explain the selection of cooperation partners. Second, the proximity framework may be applied to explain the innovative performance of both firms and regions. Last, the proximity framework is applied in trying to explain knowledge exchange and learning processes. Only research regarding knowledge exchange will be discussed in this literature study. Within this category, researchers have applied the proximity framework to individual relations between firms. These relations may be innovation-based or based on knowledge creation (Capaldo and Petruzzelli, 2014; Werker and Cunningham, 2011) or between a firm and its customer (Aguiléra, Lethiais and Rallet, 2012). The framework has also been applied on the level of individual researchers and their knowledge-based contacts (Huber, 2011). Last, the proximity framework has been applied on regional-level. It has been used to explain the knowledge access of individual regions (Marrocu, Paci and Usai, 2011) and innovation-based collaborations between regions (Capello and Caragliu, 2012).

Some differences may also be found in the research methods applied to find the effects of the different dimensions of proximity. Whereas most researchers use regressions on created or already existing data sets (e.g. Capaldo and Petruzzelli, 2014; Capello and Caragliu, 2012; Werker and Cunningham, 2011), some researchers try to model the effects of different kinds of proximities (e.g. Marrocu, Paci and Usai, 2011). Only very few researchers make use of more qualitative measures to investigate the effects of the proximity dimensions (e.g. Huber, 2011).

Even more dissimilarity exists in the selection of proximity dimensions that different scholars make. None of the above mentioned studies correspond in either the amount or the type of dimensions they consider. Most researchers take a combination of the different categories described by Torre and Rallet (1999), Boschma (2005), and Knoben and Oerlemans (2006). It is therefore not possible to make valid comparisons between the outcomes of the research. Moreover, because of the interrelatedness of all dimensions of proximity, one can only assess the effects of a particular proximity with regard to all other proximity dimensions (Boschma, 2005; Knoben and Oerlemans, 2006). More agreement between researchers on the specifications of the framework in the school of proximity dimensions is therefore required, to be able for the framework to make any valid contributions.

Although valid comparisons cannot be made, some of the results of these researches will be discussed. Current research has focused on trying to answer two questions still remaining in the framework. First, many scholars have focused on the interactions between the different dimensions. Complementary effects and substitutions mechanisms are often supported (e.g. Capaldo and Petruzzelli, 2014; Huber, 2011; Marrocu, Paci and Usai, 2011). The cognitive or technological dimensions of proximity is often attributed the most important role, and often regarded as the only necessary dimension to make knowledge exchange possible (ed. Marrocu, Paci and Usai, 2011; Huber, 2011; Aguiléra, Lithiais and Rallet, 2012). Only in his assessment of personal knowledge-based contacts did Huber (2011) found no significant effect for the geographical dimension of proximity. Aguiléra, Lithiais and Rallet (2012) have found support for non-linear relationships between the proximities in their assessment of relations between firms and their principal customers.

Some theoretical proposals have been made to further specify the effects of the proximity dimensions. Focusing on the cognitive, the organizational and the geographical proximities, Menzel (2008) has proposed a more dynamic approach towards the dimensions of proximity, arguing that these dimensions change over time, and that distance in one dimension may be bridged by proximity in another dimension. Furthermore, he argues that making the distance in one dimension smaller will result in creating a larger distance in another dimension. Mattes (2012) has proposed that the proximities depend on the type of knowledge that is to be transferred. As such, she argues that current research should not only be looking for support on the underlying interactions between the dimensions of proximity, but also try to explain when and why certain proximities matter more than other dimensions of proximity.

2.3 Conclusion

Based on the literature review we may thus distinguish two kinds of theories on the role of geographical proximity in knowledge diffusion. We can see many similarities between these theories. Both approach the knowledge diffusion process as a social process, where factors such as trust and common institutions play a role.

However, theories such as new economic geography, embeddedness theory and theories based on evolutionary economics argue that a smaller geographical distance has a direct, positive effect on knowledge diffusion (e.g. Feldman, 1994; Maskell, 2001; Cooke, 2001). The proximity dimensions theory expands on these theories. It argues that the role of geographical proximity is indirect, and that it may be not be always positive (e.g. Boschma, 2005).

3. Research design

3. Research question and methodology

The theories we have previously discussed have not yet been applied to startups. This is surprising, considering two facts. The first is that startups are widely viewed as an important source of innovation (e.g. Schumpeter, 1934; Acs and Audretsch, 1990). They are considered to be more flexible and thus able to make dramatic changes. For example, startups don't yet have any legacy to take into account (Jurvetson, 2000). The second fact is that startups are geographically less flexible. Whereas they may be very flexible in selecting their site of operation, because of their smaller size they are often limited to this location. For startups, the role of geographical proximity may therefore be more significant than for other companies (Torre and Rallet, 2005).

Furthermore, the presented theories have also not yet been applied to relocated firms, even though we have seen that the locational choice for firms, including startups, is becoming wider (Drori et al., 2009), as well as more important. Previous research has shown that startups that relocate to another country not only bring benefits to this country in terms of economic growth and job creation, they are also able to benefit from this relocation themselves in terms of better access to local resources (Smit, 2015). Firm relocation and innovation clusters may thus influence each other significantly.

Research on the benefits of relocation for startups has been conducted very rarely. Moreover, this research has neglected local knowledge as an important benefit for startups (Smit, 2015), even though previous research has shown knowledge access to be vital to a firm's competitiveness (Porter, 1998). The effects of relocation on a startup's access to local knowledge are therefore unknown thus far.

Furthermore, if we try to predict these effects based on the theories we have discussed previously, we are given contradictory predictions. Some theories claim a direct and positive role for geographical proximity, such as the theories based on local knowledge spillovers, network theory and theories based on evolutionary economics. These theories predict that the decrease in geographical distance between the startup and the local knowledge caused by relocation, should lead to easier access to this knowledge. Geographical proximity will for example lead to a larger local network, more trust between the startups and its local collaboration partners, as well as a more effective transfer of tacit knowledge, all contributing to the startup's access to the local knowledge pool.

On the other hand, the proximity dimensions theory predicts that a decrease in geographical proximity caused by relocation, does not directly lead to easier access to local knowledge, and may even have negative effects on this access. Relocated startups will most likely come across cultural and/or cognitive differences, which makes it harder for two people to understand and trust each other. Moreover, the lack of a local network upon arrival will have negative effects on the startup's access to local knowledge.

3.1 Introduction of the research question

Based on the shortcomings presented above, this research proposes an exploratory case study. This research will focus on the purposefully selected case of entrepreneurs that have internationally (re)located to an innovation cluster (Yin, 1989; Flyvbjerg, 2006). The research will include both entrepreneurs that have moved before they started their own company, and entrepreneurs that have moved their company to Silicon Valley.

In order to improve our understanding of the role of geographical proximity in knowledge diffusion in the case of relocation, this research will answer the following research question:

How do Dutch startups in Silicon Valley get access to the knowledge that is present in that specific region and what role does their geographical location play in the knowledge access of these firms?

The following subquestions will assist in answering the main research question:

- What sources do Dutch startups use to gain access to local knowledge in Silicon Valley?
- What local actors provide these startups with local knowledge and what kind of knowledge do these actors provide?
- How do Dutch startups build, strengthen and maintain their local network in Silicon Valley?

According to Huber (2011), more research on the role of geographical distance in knowledge diffusion is necessary, since the results may differ per industry or region. The proposed case study may be used to evaluate the different theories on the role of geographical proximity in knowledge diffusion in this specific case, and thereby contribute to closing this literature gap. The results of this research will add to our understanding of information access and diffusion, which is not only important for the generation, but also for the adoption of innovation, both of which require extensive information gathering. Results may also be of practical interest for Dutch startups looking to relocate because of knowledge-related concerns, and all institutions trying to stimulate this behavior as a result of the increased emphasis on regional development (AWTI, 2014).

3.2 Methodology

3.2.1 Research strategy

In order to answer the research question, a case study will be conducted on Dutch startups that are located in Silicon Valley. As previously shown, theories on the role of geographical proximity in knowledge diffusion often describe knowledge diffusion as a social process (e.g. Boschma, 2005; Granovetter, 1985). To be able to analyze the experiences of Dutch entrepreneurs in Silicon Valley local knowledge access, a constructivist research approach is taken. The constructivist research approach emphasizes that all social behavior takes place in a context; ignoring this context will yield results that do not correspond with its real-life context (Gillham, 2000; Moses and Knutsen, 2007; Yin, 1989).

Because of the small target group, a quantitative research method will not yield any reliable conclusions. Qualitative research will therefore be conducted. This will also allow for the complex social processes that take place to be studied in a scientific manner (Yin, 1989; Gillham, 2000). Since no research has been conducted on (re)located startups and their access to local knowledge, and theories are inconclusive in their predictions in this specific case, the case study will be of an exploratory nature (Gillham, 2000; Yin, 1989).

3.2.2 Case study justification

The case study focuses on Dutch entrepreneurs, because this target group is easily accessible. Furthermore, in the case of Dutch entrepreneurs, language will not be a barrier during interviews. High-tech companies are targeted specifically, because these firms are knowledge intensive, and knowledge thus plays a more important role for these firms. The choice for startups particularly comes from the fact that startups are more restrained by their geographical location than larger firms (Torre and Rallet, 2005), and thus location plays a larger role in their business strategies.

Several reasons have led to Silicon Valley as the place of investigation. The cluster is mostly comprised of high-tech companies, which makes not only that knowledge is an important part of the cluster, but also that the region attracts knowledge-intensive Dutch startups. It is one of the most successful clusters in the world, so a lot of research has been conducted on its culture (e.g. Saxenian, 1994). This enables a rich interpretation of the experiences of Dutch entrepreneurs in Silicon Valley. Last, but not unimportant, the researcher conducting this study has spent some time in the Silicon Valley area, which gives a familiarity with the local culture. This will help in interpreting literature and data about the Silicon Valley context.

3.2.3 Data collection

First, a literature study is conducted to gain a basic understanding of the explanations of the success of the Silicon Valley region and to gain a thorough understanding on theories that explain the role of geographical proximity in knowledge diffusion (Gillham, 2000). Information from published books, papers and websites are complemented with semi-structured interviews with key informants, such as researchers and employees of the Dutch consulate in San Francisco.

Since an overview of Dutch knowledge-intensive startups in Silicon Valley is lacking, this overview has to be created for this research. During this stage, information from the internet and from ongoing research will provide an overview of Dutch knowledge-intensive startups located in Silicon Valley. Specifically, the website from the Dutch consulate in Silicon Valley and the website StartupJuncture.com, as well as the research conducted by Peter Ester and Arne Maas (2014) are the starting points for compiling this overview. During the data collection phase, more Dutch entrepreneurs are found using the snowball method. Initial research has shown that references are of great importance in creating new connections in Silicon Valley (Saxenian, 1994). The snowball method thus fits in well with the reference culture of the region.

Emails are sent to the Dutch entrepreneurs found in Silicon Valley during the literature study, requesting for an interview. An additional email is sent when no reaction has been received. In total, 11 interviews are conducted. The interview questions are based on input from theories, as well as on general information about the company that are found on the internet or other media. The interviews are semi-structured (Weiss, 1994). Data from previous interviews is also used as input for later interviews, for either further investigation or verification. The data collection process is thus iterative. During this time, the data from the interviews is supplemented with documents and records on the Dutch startups and their entrepreneurs. Multiple data sources are thus used in this case study (Gillham, 2000; Yin, 1989)

Interviews are held over Skype or other VoIP products, because of physical constraints. These conversations are recorded, and notes of the interview are made. The audio files are transcribed and sent back for verification and possible additions (Gillham, 2000; Yin, 1989). Additional questions that come up during the research, are sent back and answered over email.

3.2.4 Data analysis, integration and validation

The transcripts, the additional answers provided over email, and the complementing documents and records are coded and sorted according to the research subquestions to be able to answer the first part of the research question. An additional code is used for relevant information not related to any of the subquestions. Output from the coding process is also used as input, making the coding process iterative. The same holds for the sorting process, making also this step of the process iterative.

The sorted results are then locally integrated. Any links that exist between grouped data of different codes, or between groups of data within codes will be marked during the integration process, using different colors for different codes. An example of output from this process can be found in appendix IV. The output from the integration process will be visualized as to not overlook the links that may exist between the different groups of data. An example of this visualization may be found in appendix V. Both outputs will contribute in fully grasping the links that may exist between different processes of local knowledge access.

A second coding process uses the dimensions of proximity as proposed by Boschma (2005), as to answer the second part of the research question. This coding process focuses on the proximities that are present in this case study, as well as the interdependencies between the different dimensions of proximity. The process of coding, sorting and local integration is identical to the process described above. The results are inclusively integrated, which results in a narrative description (Weiss, 1994). Finally, these results are linked back to the theories on the role of geographical proximity in knowledge diffusion.

The data of this research is validated using multiple research strategies (Yin, 1989; Gillham, 2000). First, conducting a significant amount of interviews, as well as using multiple different data sources allows for triangulation of the data. Second, the interview questions is piloted by a set of diverse people outside of the target group. Examples of participants in this pilot study include one person with this own startup in the Netherlands and another person experienced in interviewing. Furthermore, feedback is asked during the first interview, which is incorporated in later interviews. Third, both the transcripts from the interviews as well as the final report are sent back to participants for their consent and any additional remarks they may have.

4. Case study

4. Introducing the case study

This section will discuss the case of relocated Dutch startups in Silicon Valley. First, it will introduce Silicon Valley as a region, after which we will zoom in on Silicon Valley as an innovation cluster. Next, it will discuss Silicon Valley as a destination for relocation, and specifically for the relocation of startups. These sections will all be based on (scientific) literature and documents on Silicon Valley. After that, we will gradually move to the results of the interviews held for this research. Based on documents and the interviews, we will discuss the overview that has been created as part of this research on Dutch startups that are located in Silicon Valley. Then, we will dive deeper into the companies that have participated in the research. We will provide detailed backgrounds on the startups, as well as an overview of these startups. Last, solely based on the interviews, we will discuss the reasons for these participants for moving to Silicon Valley, as well as some general experiences of the participants of the Silicon Valley culture.

4.1 Silicon Valley as a region

Most scholars agree Silicon Valley refers to the geographical area of the city of San Jose in California, and its surroundings, although the boundaries of these surroundings are not very clear (De Valk, 2014; Silicon Valley Index 2014; Kenney, 2000). Recently, the Silicon Valley area has grown and now often includes San Francisco, as well as parts of the east side of the bay. Unless noted otherwise, Silicon Valley will refer to the expanded area as shown in figure 4.1, including the San Jose, San Francisco and the cities between them, as well as parts of the east side of the bay area.

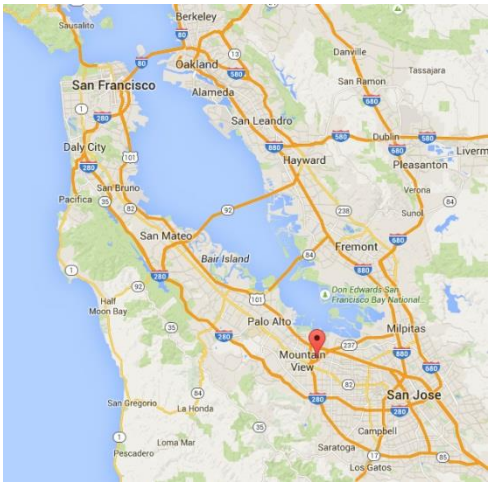


Figure 4.1: Map of Silicon Valley

The region of Silicon Valley is marked as being one of the richest areas in the United States. Although only 10% of the population of California lives in Silicon Valley, the region holds 13% of all jobs in California, and 14.5% of the total Californian GDP. Compared to both the US and the state of California, the average income in Silicon Valley is about 50% higher. Almost half of the adult population has a bachelors' degree or higher, which is significantly higher than the education rates in the US, where less than a third of the population holds a bachelors' degree or higher (Silicon Valley Index 2014). The area is home to two of world's best universities. Stanford is located in Palo Alto, the University of California, Berkeley is situated a small distance away from San Francisco.

The economic success of the region is caused by the agglomeration of successful high-tech, knowledge-intensive firms in Silicon Valley. The region started out as an area with a large number of silicon chip manufacturers in the 60s and 70s, to which the name Silicon Valley refers (Hoefler, 1971). Currently, the region has evolved into a region known for its internet-based giants, such as Google, Facebook and Twitter. Silicon Valley also still hosts many chip and hardware manufacturers, next to the well-known software developers. Other well-known companies that are based in Silicon Valley include Apple, Microsoft, Hewlett-Packard, Intel and IBM. The Valley is not only known for its many success stories, but the region is also characterized by the many startups located there that try their success.

The magnitude of the knowledge-based industry in Silicon Valley is reflected in the fact that almost half of the patents granted in California, are granted towards companies based in Silicon Valley, and 12% of the patents granted in the US (Silicon Valley Index 2014, 2014). Of all investments made in the US, a staggering 40% is invested in the Silicon Valley region, even though only 2.5% of the US population lives in the region (de Valk, 2014). According to Ferrary and Granovetter (2009) 3341 dollar per capita is invested in Silicon Valley, an amount 30 times as high as the investment rate per capita in Europe. A recent report by Startup Genome ranked Silicon Valley as the number one startup ecosystem of the world, scoring highest on all components (2012).

4.2 Silicon Valley as an innovation cluster

The success of Silicon Valley has been attributed to the success of the region as an innovation cluster (e.g. Saxenian, 1994; Lee et al., 2000). Explanations of the success of the Valley generally assume the direct and positive role of geographical proximity in knowledge transfer that we have seen in previous explanations of innovation clusters. Based on the previously presented theories, we may distinguish five, often mutually reinforcing explanations of the success of Silicon Valley.

4.2.1 Large labor pool

According to the predictions made by neoclassical economists, the economic success of the Silicon Valley region goes hand in hand with a large highly skilled labor pool (Lee et al., 2000). Two sources can be distinguished as input for this labor pool. The first source are the universities hosted by the Silicon Valley region. Especially Stanford University and UC Berkeley rank among the top universities in the world (Times Higher Education Ranking, 2015). More science and engineering degrees have been conferred in Silicon Valley when compared to the average science and engineering degrees conferred in the United States. 3.2% of all sciences and engineering degrees of the United States have been conferred by universities in Silicon Valley, when only 2.5% of the US population lives in Silicon Valley (Silicon Valley Index, 2014).

Another source for the Silicon Valley labor pool is immigration. Within Silicon Valley 36.4% of the population is foreign-born. Most immigrants in Silicon Valley are Asian, as 20% of the Silicon Valley population is born in Asia. Hispanics are also a significant part of the Silicon Valley immigrants, as 11% of the Silicon Valley is born in Mexico or other parts of Central and South America. The immigrants in Silicon Valley are often highly skilled. 58% of the Asian immigrants has a bachelor's degree, which makes them the most highly educated ethnic group in Silicon Valley. African Americans and Hispanics are however lagging behind, with respectively only 27% and 15% having a bachelor's degree (Silicon Valley Index, 2014).

Furthermore, the small physical distances between the firms within the Silicon Valley region create a high labor mobility (Angel, 2000; Castilla et al., 2000; Cohen and Fields, 2000). Contrary to many other many other innovation clusters, engineers in Silicon Valley are loyal to a product or a technology. Corporate loyalty is thus not the norm, which makes them more open to switching between companies (Saxenian, 1994). This labor movement can be found throughout the entire industry, and does not adhere to sector boundaries, the private-public boundary and is independent of company size (Bahrami and Evans, 2000, Castilla et al., 2000). There are ample examples to be found of researchers going into consultancy or venture capital, CEOs of big companies moving to a small startup, or researchers at a university moving to the semiconductor industry. Changing jobs in Silicon Valley does not require one to move, rather to drive the car another route in the morning. The costs of changing jobs are therefore very low, if they even exist at all (Saxenian, 1994; Bahrami and Evans, 2000).

4.2.2 Vertical specialization

As argued by embeddedness scholars, geographical proximity plays a facilitating role in vertical specialization within an innovation cluster. Firms may become so specialized, that face-to-face contact and a strong relationship are necessary to effectively communicate with suppliers and customers. Silicon Valley's high level of vertical specialization is often cited to explain the success of the cluster (Maskell, 2001).

An industrial system of vertical specialization requires close collaboration between suppliers and customers. Components are made by different companies, but have to be joined together in the final product. Early and close collaboration is thus required to make sure the quality of the end product is warranted. As such, close relationships between suppliers and customers have become the standard in the Silicon Valley region, and are regarded as long-term investments. Many firms in Silicon Valley know and acknowledge their close collaborations with their suppliers, and realize that their success is partly dependent on the success of their supply partners. This may go as far as companies investing in their supplier for expansion, or deferring payments to get them through hard times (Saxenian, 1991). As such, the boundaries of firms have become blurred.

Distinctive of the computer system industry in Silicon Valley are the multiple components that are present in a final computer system product. A single firm is unable to produce each component in high quality (Davis and Moore, 2001), thus Silicon Valley firms have specialized in a small part of the production process. As such, final products may be created using only high quality components. This process of vertical specialization is not limited to new or small firms; large, established firms such as Hewlett-Packard have also created autonomous business units, each with their own specialization (Saxenian, 1994).

The resulting system stimulates innovative activities in multiple ways. Because of the flexibility of such a system, - another component may be added easily to the supplier-customer network -, it is capable of a quick response to the fast changing environments of the high-tech industry, and as such it is capable of sustaining its technological dynamism. It significantly reduces product development times, and decreases time-to-market. Furthermore, the system results in a spread of risks and costs, making it more attractive for entrepreneurs to start a business, and more attractive for firms to innovate (Bahrami, 1992).

4.2.3 Extended networks

Embeddedness theory also argues that a small physical distance contributes to the creation and maintenance of networks, which increases the efficiency of knowledge diffusion throughout a region (Coleman, 1988; Granovetter, 1973). The success of Silicon Valley is therefore often attributed to the high density of the formal and informal networks that are present in the region (e.g. Saxenian, 1994; Castilla et al., 2000; Cohen and Fields, 2000). Historical facts that fueled the development of these networks include the fact that many researchers that worked in the Valley during the 60s had worked for the same company at one point or another. Thus many researchers knew each other from their times working together, but this also created a bond between researchers even if they hadn't worked together directly (Saxenian, 1994). Furthermore, the nearby university of Stanford played an active role in establishing these extended networks. Through an industrial park, companies were brought together, and courses provided to researchers located in Silicon Valley created new relations between these researchers. The development of these networks were further fueled by the many trade association meetings and industry conferences in Silicon Valley, as well as less formal meetings such as hobby clubs (Saxenian, 1994; Castilla et al., 2000). The Homebrew Computer Club is probably the most famous example of a Silicon Valley hobby club, home to Steve Jobs and Bill Gates among many others. Thus, the networks in Silicon Valley are both formal and informal. A note must be made however, that currently these networks are not built on friendliness

or affect, but are often based on the pursuit of technological advancement and commercialization (Cohen and Fields, 2000).

Unique to the Silicon Valley innovation cluster are the multiple ways in which these networks are constantly expanded and condensed. Economic actors in the Silicon Valley ecosystem that play an important role in this process, are the venture capitalists and the lawyers (Saxenian, 1994; 1991; Suchman, 1994; Castilla, 2003; Kenney and Florida, 2000; Ferrary and Granovetter, 2009). Both actors are involved with many different parties, and may provide their clients with contacts able to serve their needs. They may thus be termed the 'matchmakers of Silicon Valley'. By bringing actors from the Silicon Valley ecosystem into contact with each other, they actively build the networks of Silicon Valley.

It must be noted that this brokering role gives the venture capitalists and the lawyers a lot of power; they are able to help businesses grow by bringing them into their network, but they can also damage firms by not bringing them into their network. The selection made by venture capitalists and lawyers is often claimed to have replaced the market mechanisms. Although this new selection mechanism may be welcomed by firms looking for a business partner, on a cluster-level the advantages of this system may be questioned (Ferrary and Granovetter, 2009)

4.2.4 Pay it forward

Evolutionary economists have attributed the success of Silicon Valley to the efficient and effective learning processes that take place in the region. Contrary to many other places, venture capitalists in Silicon Valley fulfill more than the role of capital provider to firms. Unique in the venture capital system of Silicon Valley is that venture capitalists were often entrepreneurs who had made their money with their own local startup, looking to pay their success forward. Ex-employees of Fairchild such as Eugene Kleiner and Don Valentine stand at the beginning of two of the biggest venture capital firms in Silicon Valley (Saxenian, 1994). As such, venture capitalists became important sources of advice on many business subjects, rather than just financial resource providers.

Venture capitalists carry important and huge stocks of important knowledge for the startup industry in Silicon Valley. Their knowledge spans different domains, such as managerial experience, recruiting and accounting expertise, as well as legal advice. This knowledge does not only come from the venture capitalists themselves, knowledge and experiences are also shared among their investees. In Silicon Valley, venture capitalists gain limited partnership in the startup in exchange for the investment capital. In this model, venture capitalists become invested in making the startup a success, since this is how they earn their investment back. Combined with their knowledge of the industry and their previous experiences in making profitable businesses, venture capitalists in Silicon Valley became unusually involved with their investees (Saxenian, 1994; Kenney and Florida, 2000; Castilla, 2003).

Besides venture capitalists, lawyers also take an important place in the learning processes in Silicon Valley. Lawyers often have multiple clients. Being able to observe the experiences of their clients, they often have a lot of knowledge concerning managerial processes of businesses in Silicon Valley. This large stock of knowledge makes them able to help their clients looking for managerial advice to help solve their problems (Suchman, 1994; Suchman, 2000).

4.2.5 Startups and spinoffs

Another evolutionary explanation of the success of Silicon Valley focuses on a different way in which the region makes firms able to learn effectively, which is the positive attitude towards startups in Silicon Valley. This attitude is reflected in the large numbers of firms that are set up in Silicon Valley (Bahrami and Evans, 2000; Saxenian, 1994). A necessary part of this startup culture is the relative

tolerance to failure in Silicon Valley. Rather than being inert, Silicon Valley entrepreneurs go out and try. If their attempt has failed, the Silicon Valley culture allows them to just start over. Failure is thus not a bad thing; rather it provides entrepreneurs with more experience, and this experience may even give them an advantage over other entrepreneurs (Saxenian, 1994; Bahrami and Evans, 2000).

The development of the startup culture in Silicon Valley can be traced back to several historical events. The founding of Fairchild Semiconductor, the most famous spinoff of all Silicon Valley spinoffs, has had enormous effects on the Silicon Valley culture. This company is the first successful example of a spinoff, and its story has inspired many people to do the same in hope of becoming as successful as Fairchild. Fairchild itself has spawned many spinoffs, which also include many success stories, such as Intel (Davis and Moore, 2001). Stanford University has also greatly contributed to the startup culture in Silicon Valley. The university stimulates students and researchers to start their own businesses and helps them with financial investments and matchmaking (Saxenian, 1994).

Davis and Moore (2001) argue that Silicon Valley has found the right balance between large firms and startups. They argue that large firms have the knowledge to identify market opportunities. However, in a technological trajectory such as the trajectory of the semiconductor, the opportunities are in such amount that firms are unable to exploit all these market opportunities. Employees who want to act upon such knowledge may then leave the firm to start their own business.

4.3 Silicon Valley as a destination for economic relocation

Many people find their way to Silicon Valley, attracted by the many economic opportunities the region offers. As has been shown before, almost a third of the highly-skilled population in Silicon Valley was not born in the United States (Saxenian, 1999). Immigrants have contributed greatly to the success of Silicon Valley as an innovation cluster. Because of the diversity of people present in the Silicon Valley, many different perspectives come together, which is believed to be a driving force for the many innovations created in the region (e.g. Silicon Valley Index, 2014; Ester and Maas, 2014). Moreover, immigrants contribute significantly to the economic growth of Silicon Valley by setting up their own companies (Saxenian, 1999). Immigrants are thus not a rarity, but are ubiquitous all over Silicon Valley, and their contributions to the economic success of the Silicon Valley region are widely acknowledged (Saxenian, 1999).

Many immigrants are brought in by the big software companies, for which the labor supply within Silicon Valley is not big enough. Companies like Google, host large numbers of mainly Asians employees (Ester and Maas, 2014). Also, the top universities in the region, such as Stanford and the University of California, attract a lot of foreign students from all over the world, who often remain in the Silicon Valley region after graduation (Huffman and Quigley, 2002).

Immigrants thus often come to Silicon Valley for work or study opportunities. However, Saxenian has described that many immigrants have experienced a glass ceiling within the companies where they work, and have therefore decided to start their own company (1999). Not only immigrants that have originally come to Silicon Valley for work or study have founded startups. Some immigrants have moved to Silicon Valley just for the opportunities Silicon Valley offers to start their own company. These opportunities may for example include accelerator programs (The Economist, 2014) or easier access to venture capital (Smit, 2015).

Currently, over half of the startups in the Silicon Valley region have been founded by immigrants (Carmichael et al., 2010), even though only a third of the Silicon Valley population is immigrant. Google, Facebook, eBay and Yahoo are just a few examples of successful startups founded by

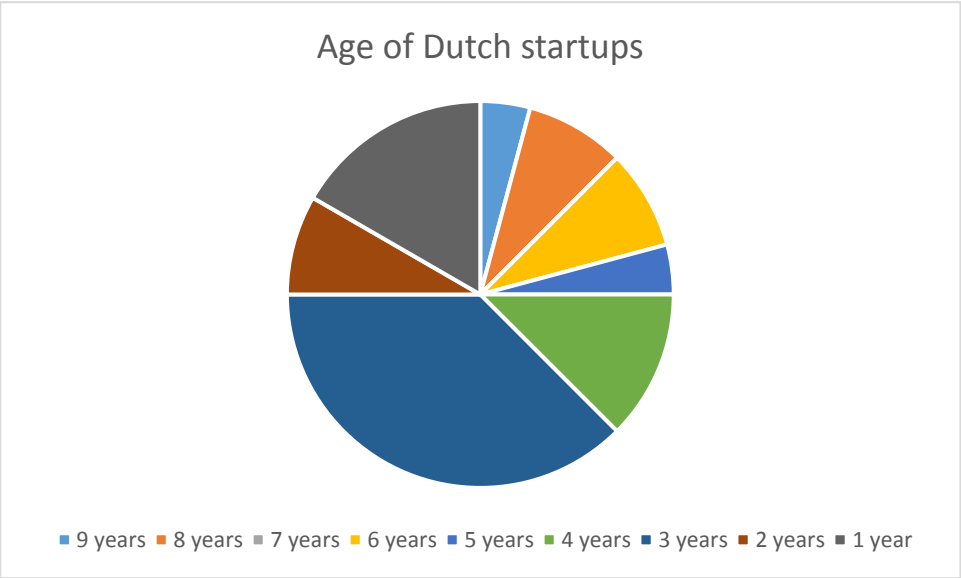
immigrants (Ester and Maas, 2014). Together with startups not founded by immigrants, Ester and Maas estimate the amount of startups in Silicon Valley to be a staggering 20,000 (2014). However, the presence of so many startups creates a huge competition among them for venture capital. Many startups never see any investments, and of the startups that do, 70-80% never delivers on its projected returns (New York Times, 2014). Since 2003, only 39 companies have become worth more than a billion dollar within just a few years, companies labeled by Silicon Valley as so-called unicorns (de Valk, 2014). Startups are thus created and quitted with enormous speed, resulting in a high turnover rate of startups in Silicon Valley.

4.4 Dutch startups in Silicon Valley

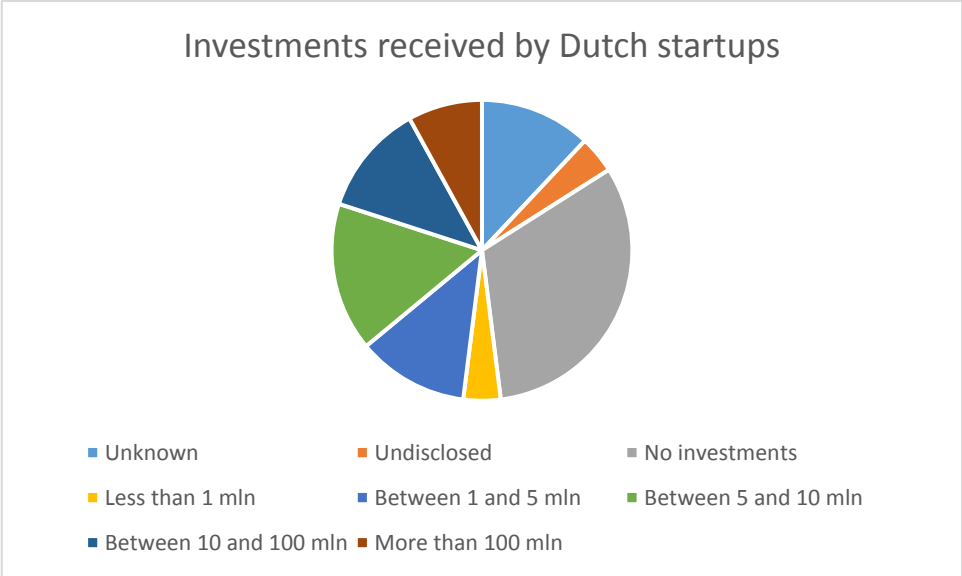
Currently, about 26 knowledge-intensive Dutch startups can be identified in Silicon Valley. Startups are defined as companies that are still trying to gain venture capital; they are thus not identified by their age. A Dutch startup is defined as a startup with a Dutch CEO or a Dutch co-founder that is still involved with the company. A more extensive overview of these Dutch startups can be found in appendix II. This list of Dutch startups is mostly compiled based on information from the Dutch consulate in San Francisco, previous research on Dutch startups in Silicon Valley conducted by Ester and Maas (2014), and information from the website StartupJuncture[1], three sources that all provide a partial overview of knowledge-intensive Dutch startups in Silicon Valley. These sources have been supplemented with several media articles on the Dutch presence in Silicon Valley. Because of the high turnover rate and lack of complete overviews of Dutch startups in Silicon Valley, it is hard to provide an exact overview, although according to the researcher, this list provides the most complete overview. Note that Dutch startups that are not active in a knowledge-intensive sector are not included in the overview.

Among the Dutch startups in Silicon Valley we can distinguish one startup that is active in the life sciences sector, and a second one that focuses on 3D printing. All other startups are creating software-based products, applied to many different domains. Examples of these domains include television, health care, cloud computing, photography, finance, security and virtual reality.

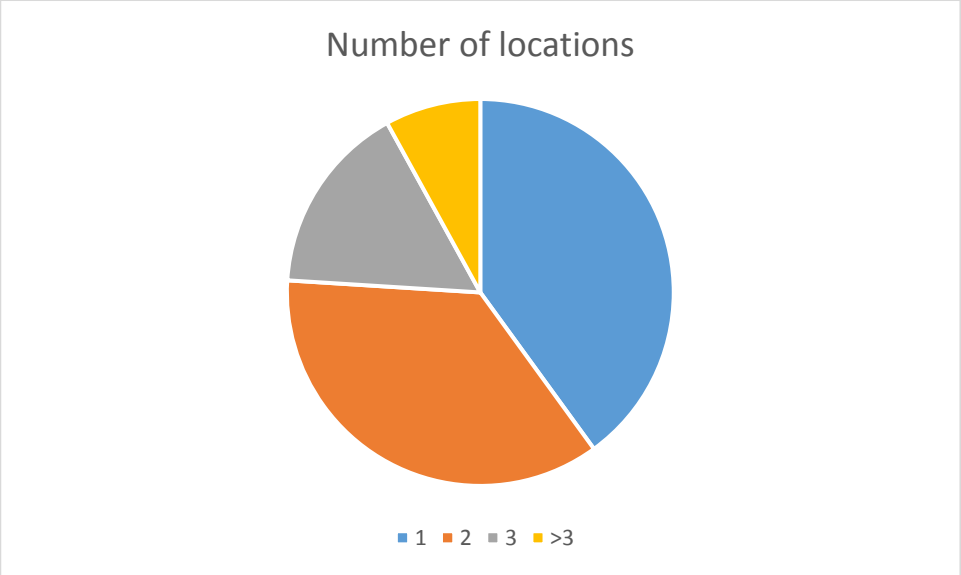
[1] StartupJuncture is a website on anything related to Dutch startups. The website can be reached via www.startupjuncture.com



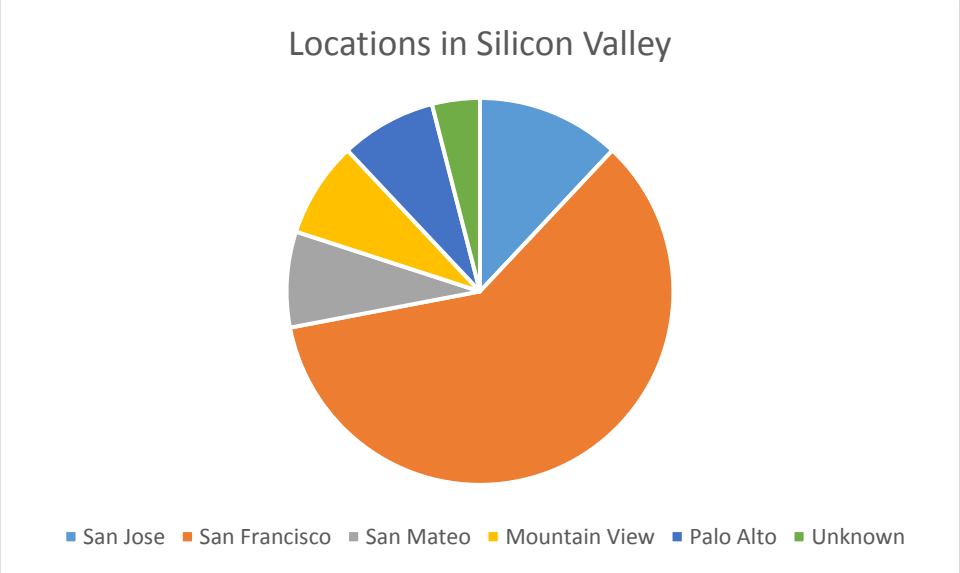
Dutch startups in Silicon Valley are between 1 and 9 years old. Of the Dutch startups that are located in Silicon Valley, 75% is less than 5 years old. Note that the age of a Dutch startups does not always correspond to the number of years a startup has been located in Silicon Valley, as startups may have relocated after being founded.



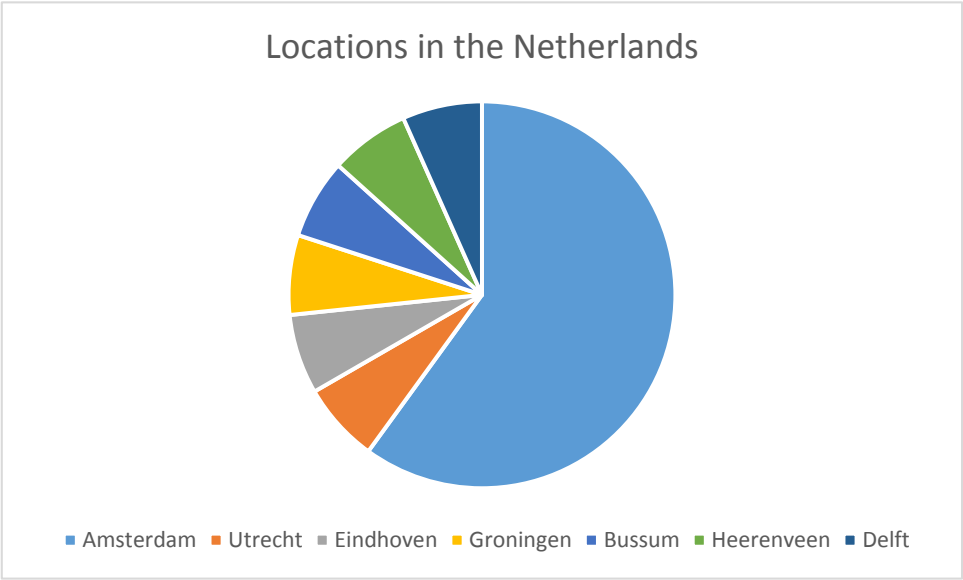
Most Dutch startups located in Silicon Valley have not received any investments yet. As investments are often a reason to open an office in Silicon Valley, still a relatively high percentage of the Dutch startups did receive investments. 3 out of 26 startups have received investments summing up to more than 100 million dollar in investment, a seemingly high percentage when compared to the percentage of all startups located in Silicon Valley to have received investments of this size.



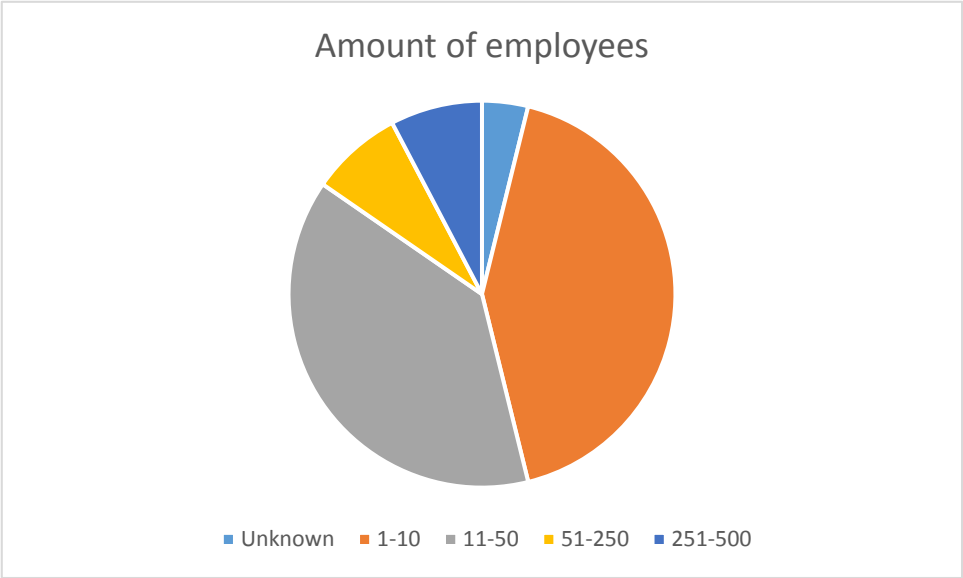
A little less than half of the Dutch startups have offices solely in Silicon Valley. If startups have more than one location, they always have a second office located in the Netherlands. Other locations for offices include South East Asia and Brazil. The two companies that are located in more than three locations are Adyen and Elastic, two of the three startups to have received over 100 million dollar in investments.



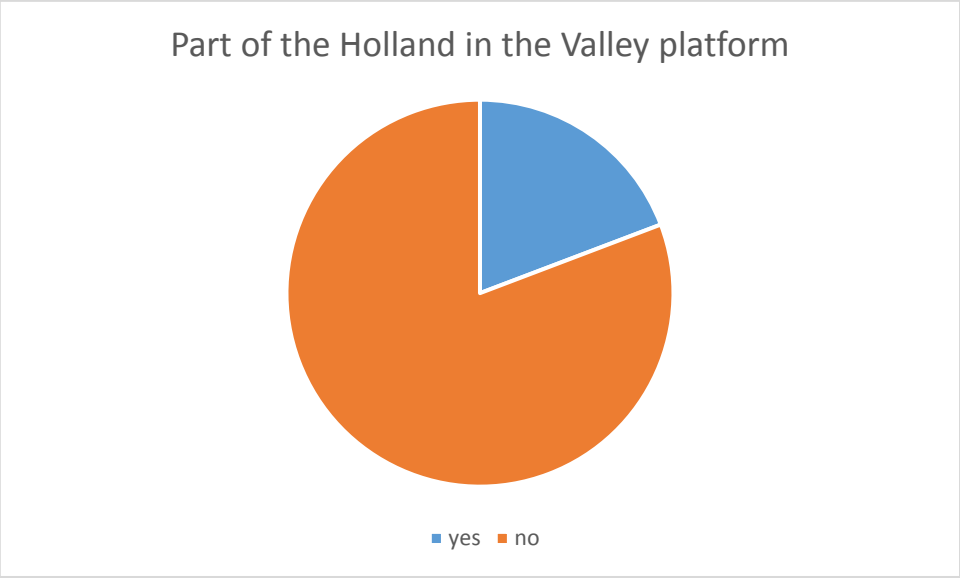
Within Silicon Valley, most of the 26 Dutch startups are located in San Francisco. This corresponds with the recent expansion of Silicon Valley towards San Francisco, as we have discussed before. The other six startups are located in San Jose, or between San Jose and San Francisco.



Of the 16 startups that have offices both in Silicon Valley and in the Netherlands, nine have their office located in Amsterdam. The other startups have their offices scattered throughout the country, ranging from Groningen to Eindhoven.



The two startups that employ more than 250 employees are the startups with the most locations, Adyen and Elastic. These are also two out of three startups to have received more than 100 million dollar in investments. However, most startups have fewer employees. 21 startups have less than 50 employees, and of these startups 10 companies employ less than 10 people.



The Holland in the Valley platform, which is part of the Dutch consulate in San Francisco, offers specific services to Dutch entrepreneurs that are located in Silicon Valley. The Holland in the Valley platform has been created to assist Dutch startups with building a network, and to provide business advice. Once a year a boot camp week is organized to give Dutch startups information on the Silicon Valley ecosystem, as well as advice, exposure and connections within the region (Donker). Only 5 out of the 26 Dutch knowledge-intensive startups in Silicon Valley are part of the Holland in the Valley platform, which is a relatively small number.

4.5 The participants

Eleven Dutch startups that are located in Silicon Valley have participated in this research. These participants have been found through the Dutch consulate in Silicon Valley, through research conducted by Ester and Maas (2014), and through the website of StartupJuncture. Also, some participants have been found through participants interviewed earlier. The following section will provide descriptions of these companies, as well as a detailed overview of their general characteristics, their reasons for selecting Silicon Valley, and their experiences with the Silicon Valley culture. These overviews will be (partially) based on the information gained from the interviews. An overview of the interviews, the interviewees, and the dates of the interviews can be found in appendix I. All interviews have been conducted in 2015.

Cloud9 IDE

Cloud9 IDE provides an environment for software developers. Because this environment is based in the 'cloud', the platform is able to offer developers the ability to access their code anywhere, and to collaborate with other developers. The company was founded in 2010 by CEO Ruben Daniels. In 2011, the privately held company raised 5.5 million dollar in a series A investment round from venture capitalist Accel Partners and software developer Atlassian. In 2014, Balterton Capital invested an undisclosed amount in a Series B round[2].

[2] Unless stated otherwise, the database of Crunchbase is the source of information on investments in the participating Dutch startups: www.crunchbase.com

Although the company hosts most of its developers in an office in Amsterdam, Cloud9 IDE has its main office based in San Francisco (Ester and Maas, 2014). Reasons for opening up an office in San Francisco include the presence of many of their business partners, as well as the stimulating ecosystem present in Silicon Valley. Also, Ruben Daniels already had some local connections and exposure due to previous entrepreneurial activities (Daniels).

DataFox

DataFox has automated the process of finding and analyzing information on companies, when collecting support for investment decisions. The company searches for online information of companies, such as information that can be accessed through LinkedIn or press releases, and uses big data methods to predict a company's value based on this information. The product not only provides information and predictions, it is also capable of giving its users suggestions for their next investments.

DataFox was founded in 2013 in Menlo Park, by CEO Bastiaan Janmaat, Ben Tromble, Mike Dorsey and Alden Timme. Bastiaan Janmaat is the only co-founder of Dutch origin, although he only spend time in the Netherlands during his bachelor International Business. The co-founders met at Stanford (Janmaat). It is therefore not surprising that DataFox has participated in StartX Incubator, an incubator program focused solely on students and employees of Stanford University.
Currently, the privately held company has moved to San Francisco. DataFox has raised at least 6 million euros in seed investments from multiple investors, among which Google Ventures, Goldman Sachs and Stanford University.

Elastic

Elastic combines three separate products, Elasticsearch, Logstash and Kibana, into a successful search algorithm. The company offers an open source datamining algorithm, and sells specific adjustments of its product to clients such as the Rijksmuseum in Amsterdam, Facebook, and the Guardian. Elastic was founded in 2012 by CEO Steven Schuurman and CTO Shay Banon, and quickly drew attention from venture capitalists. During three investment rounds, Elastic has raised over 100 million dollar from investors such as Benchmark, New Enterprise Associates and Index Ventures.

The company currently has headquarters in both Silicon Valley and Amsterdam, as well as many other countries, and has 260 employees. Steven Schuurman had previously founded multiple companies such as Orange11 and SpringSource, both of which have made successful exits. These previous entrepreneurial activities had provided Elastic with connections and exposure in Silicon Valley, both of which contributed to being able to set up an office and find investments very quickly in Silicon Valley after the founding of Elastic (Schuurman).

GROM

GROM (previously known as UCreate3D) offers the opportunity to design individual smartphone cases, by combining 3D-printing techniques with mass production business strategies. The company was founded in 2012 by Vincent van de Poll and Koen Munneke. GROM is headquartered in San Francisco, where Vincent works on sales and customers. Koen Munneke is production chief and works from the office in Hong Kong. Four other employees of GROM are located in San Francisco (van de Poll).

GROM has raised 25 thousand dollar in a crowd funding campaign in 2013, and has subsequently raised 225 thousand dollar in seed investments. The privately held company has joined the 500 startups family, which offers seed investments and an accelerator program for startups.

HackerOne

HackerOne provides a platform to bring ethical hackers and companies together, and to facilitate the collaboration between these two actors. The platform provided by HackerOne for example facilitates the building of trust between hackers and companies, helps hackers to set up an effective reporting of bugs, and facilitates companies that would like to reward hackers financially. It customers include Yahoo!, AirBNB and Adobe.

HackerOne was founded in 2012 by Merijn Verheggen, Jobert Abma and Michiel Prins. After these ethical hackers approached Facebook to report a security bug, the head of product security of Facebook, Alex Rice, decided to join the HackerOne team as a co-founder (Borsboom). Currently, the privately held startup is based in San Francisco, and has raised over 30 million dollar in investments from Benchmark and New Enterprise Associates, among others.

Mobtest

Mobtest offers mobile app developers a platform for beta testing, or the ability to get feedback from the experiences of end users in a very early stage of development. The company was founded in 2011 by CEO Dirk de Kok. Dirk has studied psychology in Amsterdam. During the time Dirk was setting up his previous startup HelloInbox, he became very disappointed with the entrepreneurial opportunities in the Netherlands. After a business trip to Silicon Valley, he decided that the Valley would be a much better place to start his next company. Mobtest is currently located in San Francisco (de Kok).

RFIsoft

RFIsoft integrates RFID systems, and provides both market and product consultancy on this topic. RFIsoft was founded in 2007 by CEO Pieter Noordam. Pieter has a degree in Computer Science from the Delft University of Technology. Pieter moved to Silicon Valley as an expat for Philips. After having worked for Philips for some years, before he decided to start his own company. The company is currently based in San Jose (Noordam).

Taptalk

Taptalk was founded in 2013, by CEO Onno Faber, CTO Leonard van Driel and Jorn van Dijk, and provides a mobile app for sharing photos. Their previous startup Dingdong got a lot of attention from German venture capitalists, which brought them from the Netherlands to Berlin. Their product however didn't take off as they had hoped. Taptalk meant a successful fresh start for their mobile app. Interest from American venture capitalists has lead the company to move to San Francisco (van Dijk). Taptalk has raised an undisclosed amount of seed money in 2013 from investors such as SV Angel, a San Francisco-based investment firm that is focused on information technology markets, and Earlybird Venture Capital, an investments firm based in Berlin. In 2015, Taptalk raised 5 million dollar in a Series A round.

Transcense

Transcense offers software that converts conversations real-time into text. The product thus makes it possible for deaf people to follow group conversations, without relying on sign language or lip reading. The company was founded in 2013, by CEO Thibault Duchemin, COO Pieter Doevendans and CTO Skinner Cheng. These co-founders are originally from France, the Netherlands and Taiwan respectively, and met as international students during a startup weekend at UC Berkeley (Doevendans).

In 2014, Transcense raised 44 thousand dollar through a crowdfunding campaign set up via Indiegogo, a crowdfunding website.[3] Currently, this privately held company is located in San Mateo where they joined the Boost VC Accelerator Programme. This program offers Transcense workspace, funding, mentors and access to their network, in exchange for a share in the company.[4]

Utomik

Utomik offers an online streaming service for games. For a fixed amount per month, it provides its customers with unlimited online gaming. It distinguishes itself based on the fact that the game downloads while playing, ensuring that the gamer only has to wait until a small portion of the game is downloaded before he can start playing. The service is based on the technology of Kalydo, a previous startup of the co-founders (Tweakers, 2015).

The privately held company was founded in 2014 by Chris van der Linden, Rob van Gulik, Richard Barneveld, Doki Tops and Mark Schroders. Their programmers are located in Eindhoven, while their headquarters are located in Palo Alto. Programmers are more affordable in the Netherlands, keeping down the costs. However, many of their content partners are located in Silicon Valley, and the entrepreneurial climate in Silicon Valley makes it easier to extend the company (van Barneveld).

Yobble

Ronald Mannak started 1upToys in the Netherlands. The company went bankrupt in 2010, after an investment from a venture capitalist was blocked by the bank. Ronald has been held personally liable for this bankruptcy, which left him unable to continue working as an entrepreneur. Therefore he decided to move to Silicon Valley in 2011. There he set up another startup, Yobble, to continue developing his product (Mannak; Ester and Maas, 2014).

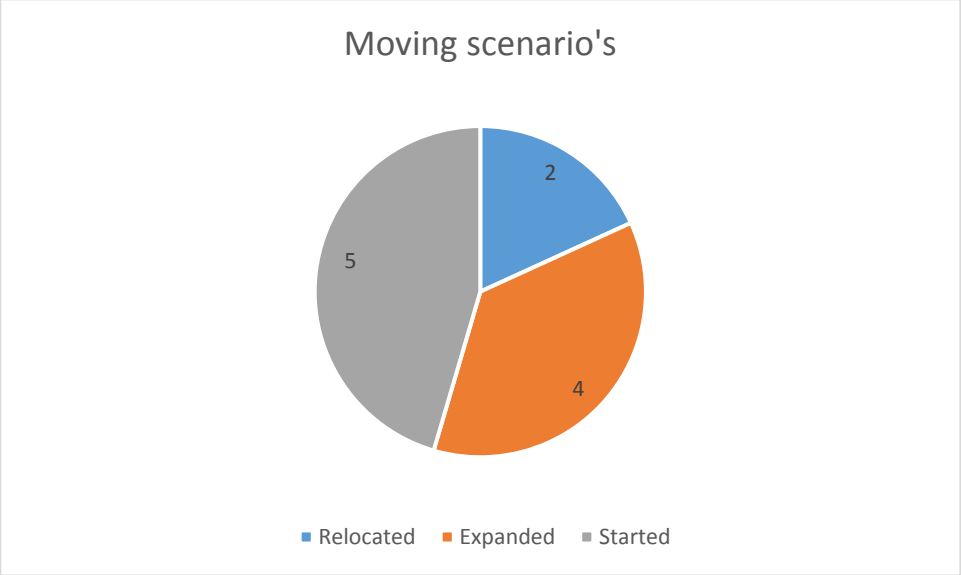
Yobble offered smart phone accessories that allows the user to use their phone as a guitar or a drum. Despite having raised an undisclosed amount of seed investment in 2011, the market had changed in such a way, that the product was no longer viable. In 2012 the plug was pulled from the startup. Ronald Mannak now works as the lead iOS engineer for another startup, JumpCam (Ester and Maas, 2014). Although the startup no longer exists, the questions in the interview were aimed at the experiences of Mannak during his time as a Dutch entrepreneur in Silicon Valley.

[3] Information on the crowdfunding campaign can be found via https://www.indiegogo.com/projects/ava-group-conversations-made-accessible#/

[4] More information on the Boost VC Accelerator program can be found via https://www.boost.vc/

4.5.1 Overview of participating startups

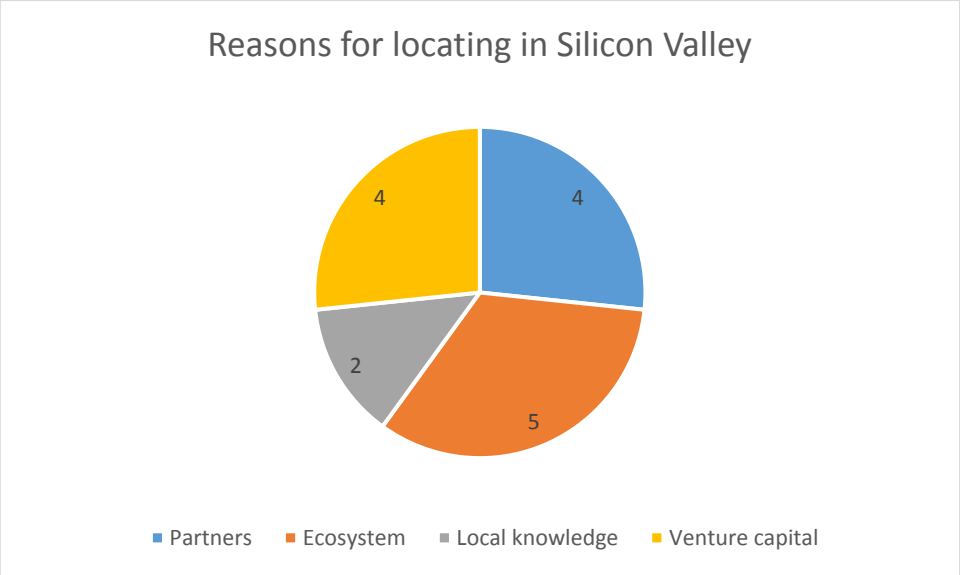
All participants are active in knowledge-intensive sectors. Almost all startups provide software products; one startup provides 3D-printing services, another one provides support in RFID projects. One participant no longer runs his own startup, but is an employee at an American startup. All companies have been founded between 2011 and 2014, except for RFIsoft, which was founded in 2007. The startups vary in number of employees from one (including the entrepreneur) to 260. Six of the startups are located in San Francisco; other locations within Silicon Valley include Mountain View, Palo Alto and San Jose.



Different scenarios have been indicated by Dutch entrepreneurs, which have led them to Silicon Valley (Maskell, 2001). A startup may have expanded and opened another office in Silicon Valley (e.g. Borsboom; van Barneveld). Also, an entrepreneur may have relocated his startup to Silicon Valley (e.g. Van Dijk). Last, an entrepreneur may have moved to Silicon Valley, before he started his startup there. These entrepreneurs may have moved to Silicon Valley as students (e.g. Doevendans; Janmaat), expats (e.g. Noordam) or because of family matters (e.g. van de Poll)

In general, we can see that the startups that have expanded to Silicon Valley differ in many ways from the startups that have either started in Silicon Valley or have relocated to Silicon Valley. These startups include Cloud9 IDE, Elastic, Utomik and HackerOne, and will be referred to as the expanded startups. We can see that these expanded startups have more employees than the startups that didn't expand to Silicon Valley. Chance has played a much smaller role in the location of their startup, as these companies have deliberately selected Silicon Valley as location for their expansion. We also see that they often have secured larger investments. Although we may expect age to play a role in this dichotomy, it is of no importance. RFIsoft is the only company to not fit in with this dichotomy of Dutch startups in Silicon Valley, as it is active in the Silicon Valley service sector, and does not have strong intentions of becoming a global player in its field. The success of the startups differs between 100 million investments and startups that have exited.

4.5.2 Reasons for locating in Silicon Valley



The Silicon Valley ecosystem is the most often mentioned reason by Dutch startups for relocation to Silicon Valley. 5 out of 11 startups have indicated the ecosystem as a reason for relocation. However, when asked to specify the components of this ecosystem, several different components within the Silicon Valley ecosystem where indicated as being important in their decision about relocation, namely venture capital, business partners, and local knowledge.

The large amount of money that is present in the region, and the willingness to spend that money on startups, has been indicated by most startups as an important component of the Silicon Valley ecosystem in their decision to go to Silicon Valley (e.g. Schuurman; de Kok; Doevendans). 4 out of 11 startups have indicated venture capital as a reason to relocate. Participants have indicated that the amount of opportunities to receive investments for their startups is significantly higher in Silicon Valley (Borsboom), and that the investments are often higher than one would receive from investors in the Netherlands (van Dijk). However, investors in Silicon Valley prefer to invest in local companies (van Barneveld; Laanen), which means that being located in Silicon Valley significantly increases the chances of that startup to access investments from Silicon Valley.

Another component in the ecosystem for which startups go to Silicon Valley is the fact that many of their business partners are also located in Silicon Valley (e.g. Daniels; Schuurman). These business partners may include content partners (van Barneveld), collaboration partners (Daniels), and early adopters or customers (Schuurman; Borsboom). Also the enormous support sector is mentioned as a motive to move to the region, such as accountancy, legal, press and PR (Daniels; Schuurman). This reason has been mentioned by all and only by the expanded startups.

A third reason why Dutch startups decide to move to Silicon Valley is the fact that Silicon Valley hosts a lot of specific knowledge on how to start a company and how to make it successful (Daniels; Mannak). More specifically, the region has more knowledge on specific business models, than can be found in the Netherlands. For example, Elastic has indicated that there is more experience in Silicon Valley with making open access products profitable, which has been an important reason to open their main office in Silicon Valley.

However, for many Dutch startups chance has also played a big role when explaining why they came to Silicon Valley. Some startups indicated that previous entrepreneurial activities had already

provided them with connections in Silicon Valley. These connections may be venture capitalists that had invested in previous startups (Schuurman), or people from the industry met at conferences or fairs (van Barneveld). Other entrepreneurs have moved to Silicon Valley for other reasons, and stayed there to start up their business. For example, the co-founders of both DataFox and Transcense met while studying at universities in Silicon Valley (Janmaat; Doevendans). Other entrepreneurs have moved to Silicon Valley along with family or work (van de Poll; Noordam).

4.5.3 Experiences in Silicon Valley

Dutch entrepreneurs perceive the Dutch ecosystem often as demotivating for entrepreneurship. Some have even described the startup ecosystem in the Netherlands as depressing (Mannak). The entrepreneurial culture in Silicon Valley is perceived as much more stimulating for startups and innovation (van Barneveld), as the people in Silicon Valley are driven to be the best (van de Poll). They are willing to work hard to achieve the highest possible outcomes (Daniels). This also means that nobody in Silicon Valley is interested in companies that are average; it is either all or nothing (de Kok).

To become the best, big risks have to be taken. Dutch entrepreneurs in Silicon Valley have described the mindset in Silicon Valley to be appreciative towards taking risks (e.g. Schuurman; van Barneveld). It is an accepted fact in Silicon Valley that an entrepreneur learns from earlier experiences, increasing his chance of success if he has had previous startups (de Kok). The fact that someone tried is thus regarded as more important than whether or not he succeeded, and failure is accepted in Silicon Valley (Janmaat). Furthermore, this attitude towards risk-taking also manifests itself in the ease with which money is spent in Silicon Valley (Daniels; Doevendans), specifically for venture capitalists investing in startups (e.g. Schuurman; van Dijk). Third, risk-taking results in the fact that many companies in Silicon Valley experiment with their business operations, such as transparency or corporate structures (Daniels). Last, many employees in Silicon Valley take big risks, and it is therefore not uncommon for employees to give up a steady job for a less secure job at a startup (Janmaat). Combined with the high demand for talented engineers (Doevendans; van Dijk), this creates a very mobile labor market where people often do not work for the same company for more than a few years (Noordam).

Dutch entrepreneurs also pointed out the speed with which both technology and companies develop in Silicon Valley. As one entrepreneur put it, ‘two weeks in Silicon Valley is similar to six months abroad’ (van de Poll). Silicon Valley is the place where new technologies are developed, which means there is a huge technological lead within the region (Mannak; van de Poll). Business are expected to develop with the same fast pace (e.g. Daniels; Schuurman); startups are to show exponential growth (van de Poll). Companies such as Google and Facebook have set a high bar for startups; these so-called ‘unicorns’ are worth over a billion dollar within a few years. In order to be able to manage such fast development, it is necessary for new products to be able to handle large numbers of users with little adjustments (van de Poll; de Kok). In other words, the technology needs to have a viral component. Software, one of Silicon Valley’s core sectors, is an example of such a scalable technology; once written well, it is capable of serving large numbers of users (de Kok).

Furthermore, Dutch entrepreneurs experience the Silicon Valley culture as very open, and find this openness to be very positive for their startup. There exists a pay-it-forward mentality (Mannak), thus people help each other in succeeding with their startups. Examples of this mentality include the openness in sharing of previous experiences (Mannak), successful entrepreneurs investing their profit in new startups (van Dijk) and helping people to make new connections (e.g. Daniels; Noordam).

Last but not least, some Dutch entrepreneurs have described living and working in Silicon Valley as living in a 'bubble', a surrealistic world (e.g. Mannak; Doevendans). This experience has mainly been brought forward by the non-expanded companies. The vibrant and positive atmosphere is perceived by these startups as motivating to start something yourself, to do extreme things (Doevendans; Van de Poll). As one entrepreneur indicated, it is easy to get lost in the positive mindset of Silicon Valley, and to forget that many technologies are only available in Silicon Valley (Mannak).

In conclusion, these results show that the experiences of Dutch entrepreneurs in Silicon Valley largely correspond to earlier scientific research on Silicon Valley. Dutch entrepreneurs experience the high labor mobility, the pay it forward mentality, and the positive attitude towards startups and taking risks in Silicon Valley, as previously described by scholars. Moreover, Dutch entrepreneurs indicate that they experience a high speed of development, and that they experience living in Silicon Valley as living in a bubble.

5. Results

5. Results

The results of this research will be discussed in this section, based on the results gathered in the interviews with Dutch startups in Silicon Valley. According to the sub questions, we will first discuss what sources Dutch startups use to access the local knowledge of Silicon Valley. Then we will dive deeper into the role that networks have for Dutch startups in Silicon Valley. We will discuss which types of knowledge are perceived as specific to the Silicon Valley region, and which actors provide these types of knowledge to Dutch startups. We will also look at how Dutch entrepreneurs are able to build and maintain a local network. Last, we will look at the role that geographical proximity plays in the processes described earlier. We will use the framework as proposed by Boschma (2005), to make a clear assessment of this role.

5.1 Sources used by Dutch entrepreneurs to gain local knowledge

Dutch entrepreneurs have indicated several local knowledge sources that they have access to. These sources may be online or offline. Of the offline sources, their local networks as well as employees are the two most important sources.

5.1.1 Online…

Dutch entrepreneurs in Silicon Valley gather a lot of their information online. Several entrepreneurs have indicated that internet is an important source of information (e.g. Noordam; Daniels). Specifically online forums such as Twitter, YouTube and LinkedIn are used by entrepreneurs in Silicon Valley to exchange and discuss information (e.g. Doevendans; Mannak). Furthermore, information exchange during projects is often done over the internet, by using tools such as email or Skype (de Kok), or over the telephone (Noordam).

5.1.2 …Vs. offline

Next to online sources, Dutch entrepreneurs use offline information sources as well. The many events that are organized in Silicon Valley are an example often mentioned (e.g. van Dijk; Mannak; Noordam). At these events many entrepreneurs and engineers come together to discuss a wide range of topics. These events are easily accessed, as they are often for free, and are held multiple times a week throughout the entire region of Silicon Valley (Mannak). Many entrepreneurs have indicated to visit these gatherings (e.g. Doevendans; van Dijk; Noordam; Daniels), although some have expressed they no longer feel the need to go to these events (Noordam; Doevendans; Mannak), because their network has grown big enough to substitute as the main information source. This is also shown in the fact that the startups with the most investments (i.e. Elastic and HackerOne) have not mentioned these events as a source of local knowledge.

A more important offline source of local knowledge for Dutch entrepreneurs are their local connections (e.g. Doevendans; de Kok), although HackerOne has indicated that these connections have become less important as the startup grew bigger (Borsboom). More information the role that networks play in the access to local knowledge in Silicon Valley will be discussed in later sections.

Local networks in Silicon Valley consist of business relations, but also the connections based on friendship or family can be important sources of information (e.g. Noordam; van de Poll). As indicated by GROM, every situation is a possible networking opportunity. For example, many of their connections have been made at the local soccer club (van de Poll). This may be why connections in Silicon Valley are regarded as very informal (e.g. Noordam; Janmaat). Examples of this informality include the fact that most people wear jeans and a t-shirt to work, no matter their position (van de

Poll), or the fact that business meetings are not held in a business meeting room, but mostly in informal places such as a café (Noordam).

Entrepreneurs have indicated that subnetworks exist within the extended networks of Silicon Valley. These subnetworks can for example be found among European and Dutch entrepreneurs in Silicon Valley (e.g. Mannak; Doevendans). These European subnetworks apply mostly to the non-expanded startups. Another example of such a subnetwork is the networks formed between alumni of American universities, such as Stanford University or UC Berkeley (Janmaat; Doevendans). These networks however cannot be accessed by all Dutch entrepreneurs, except those that have studied at these universities.

Last, most of the participants have indicated to employ people in their Silicon Valley office, whether on a permanent (e.g. Borsboom; van Dijk), temporary (e.g. Daniels) or intern basis (Doevendans). Employees can be a valuable source of information to Dutch startups. Because of the high labor mobility of engineers in Silicon Valley, engineers only stay a few years with a company or project. Because of these many environments they work in, they gain a lot of experience and knowledge. Engineers employed by Dutch startups will bring with them their extensive knowledge (Noordam; Daniels). Employees may be found via online (Doevendans), via events (Doevendans) or via a headhunter (Borsboom).

However, employees are hard to find in Silicon Valley. The fact that there are so many more job openings than engineers (Doevendans; van Dijk), means that Dutch entrepreneurs need to find a way to distinguish themselves from other Silicon Valley employers. This may for example be achieved through their product (van Dijk), or by having other employees or co-founders that are interesting for engineers to work with (Borsboom).

Thus, Dutch startups in Silicon Valley use both sources of local knowledge that can be accessed from a distance, as well as knowledge sources for which physical proximity is required. Of these 'offline' sources, the local networks in Silicon Valley, and specifically employees, are the most important sources of local, Silicon Valley knowledge for Dutch startups.

5.2 Access to local knowledge through a Dutch startup's network

The types of knowledge that Dutch startups have identified as being specific to the Silicon Valley region can be grouped into four main categories. Of these categories, the business related and technological knowledge are of the most interest to Dutch startups. Other than these types of knowledge, also legal and market related knowledge and knowledge on the Silicon Valley business culture is specifically found in Silicon Valley. Each type of knowledge is provided by specific actors in the networks of Dutch entrepreneurs.

5.2.1 Business related knowledge

Business related knowledge is the knowledge on business operations that are best suited to set up a company and to achieve high growth rates. Several Dutch startups have indicated that this type of knowledge is lacking in the Netherlands (e.g. Mannak), but is abundant in Silicon Valley (e.g. Daniels). Examples include knowledge on business processes (Daniels), knowledge on identifying and reaching markets (de Kok) or the knowledge on how to develop a business model based open source products (Schuurman). A specific example of business related knowledge is the technique of growth hacking, which aims to gain exposure and sell products by using low-cost analytical tactics such as search engine optimization and social media. Cloud9 IDE has indicated that the knowledge brought in by the growth hacker they have hired in Silicon Valley makes the difference between being

successful and being unsuccessful (Daniels). Business related knowledge is thus regarded as being very important for a Dutch startup's chances of success.

Business related knowledge is created from experiences from entrepreneurial activities. These activities are often done by other entrepreneurs. We have seen that experimenting is encouraged in Silicon Valley. The outcomes of these experiences are than shared with other entrepreneurs at events or online (Daniels), which makes this type of knowledge spread through Silicon Valley. This way, Dutch entrepreneurs gain knowledge on what does and doesn't work in terms of business operations (Daniels). The pay it forward mentality that has been discussed before means that Silicon Valley entrepreneurs are very open and honest about their own experiences (e.g. de Kok; Mannak; Doevendans). Company secrecy is thus regarded as far less important for Silicon Valley companies (de Kok). This is not only true for beginning entrepreneurs with small startup companies, but also for big companies such as Facebook or Google (van Dijk). Because of the large amount of entrepreneurs in Silicon Valley (de Kok; Mannak), an entrepreneur can always be found that has faced the same kind of problems Dutch entrepreneurs may be facing (Doevendans).

Other Silicon Valley entrepreneurs are not the only source of business related knowledge for Dutch startups. Business related knowledge may also be brought in by experienced employees or co-founders (Borsboom). Other actors exist in Silicon Valley that act as an intermediary in the knowledge diffusion process. Some Dutch startups have a mentor who plays a similar role in their access to local knowledge (Doevendans; van Dijk). Second, specifically venture capitalists are an important source for business related knowledge (e.g. Daniels; Schuurman). Not only do venture capitalists in Silicon Valley often have experience as an entrepreneur, they also collect the experiences of the companies in their portfolio and distribute this knowledge among them (Daniels). It is important to note that Dutch entrepreneurs have described the communication with venture capitalists are being more formal than the communication with other types of actors (e.g. Schuurman; Doevendans).

5.2.2 Technological knowledge

Dutch entrepreneurs indicate that technological knowledge has a strong presence in Silicon Valley (e.g. Noordam; Janmaat), and is several months ahead of technological knowledge local to other places (van de Poll). Technological knowledge can be shared online (Doevendans), but this knowledge is mostly embodied in the developers that are local to Silicon Valley. Several Dutch startups have indicated that engineers in Silicon Valley are more talented (Janmaat), and that engineers in other places are far behind on Silicon Valley engineers with regard to being up to date with their knowledge on technology (van de Poll). However, some startups have indicated that developers in the Netherlands are just as technologically qualified as Silicon Valley developers (Doevendans; van Barneveld; Borsboom).

Transcense is the only Dutch startup that has indicated that big companies such as Google and Facebook are an important source of technological knowledge. Technologies developed at these companies are brought in via licenses or open source distribution, and are then adjusted to fit their own product (Doevendans).

The universities in Silicon Valley are frontrunners in the technological fields specific to Silicon Valley, such as information technology. Strikingly, these universities, as well as research institutes in Silicon Valley, are rarely mentioned by Dutch startups as a source of technological knowledge. Elastic has indicated that they develop with such a speed, that there is no time for collaboration with universities (Schuurman). RFIsoft indicated that an American passport is required for access to research institutes (Noordam). Some links between Dutch startups and Silicon Valley universities can be identified, although they are mostly indirect. Engineers graduated from Stanford may for example

be hired by Dutch startups (Janmaat). One direct link has been pointed out by Taptalk, as the interviewee has indicated to watch online classes on directly relevant topics, provided by Stanford University (van Dijk).

5.2.3 Other types of knowledge

Legal knowledge is concerned with the legal sides of setting up a business or office in Silicon Valley. Taptalk has indicated that there is a lack of legal knowledge on startups in the Netherlands, and that this lack has caused problems for their startup (van Dijk). Knowledge on visa issues is of course important to entrepreneurs themselves (e.g. de Kok; Doevendans), but on a business level legal knowledge comprises for example knowledge on investments (van Dijk), shares (van Barneveld) and legal protection against all sorts of events (Daniels). This type of knowledge only becomes relevant when a startup has grown significantly to start thinking about employees and investments. This is shown in the fact that this type of knowledge is only mentioned by startups that have already received investments. Lawyers are the most important source of legal knowledge (van Dijk; Daniels; Utomik).

Industry related knowledge is knowledge on the developments within a specific domain. This type of knowledge is mostly of interest for venture capitalists that need to be able to predict a startup's growth rate (Schuurman; Daniels). The companies in their portfolio as well as the engineers in their network keep venture capitalists up to date on the developments within an industry and the up and coming technologies. Cloud9 IDE however has indicated that this type of knowledge is also important for an entrepreneur if he wants his startup to become successful (Daniels).

Last, Yobble has indicated that knowledge on the American business culture can be found in Silicon Valley. This knowledge can be provided by the Dutch consulate in San Francisco and Dutch immigrants (Mannak).

Thus, Silicon Valley hosts many different types of knowledge, of which business related knowledge and technological knowledge are the most important. These different types are often provided by different types of local actors in Silicon Valley. Relations with these actors may differ per type of actor, and thus also per type of knowledge. The relevance of the different types of knowledge may differ based on certain characteristics of the Dutch startups.

5.3 Building, strengthening and maintaining contacts

Because local networks have been indicated as the most important source of local knowledge for a Dutch startup (e.g. Noordam; de Kok), the process of creating this local network will be discussed in more detail here. We can distinguish between three phases in the creation of a connection. First, the initial contact is made. Then, the relation is strengthened and trust is built between two actors. Last, the contact has to be maintained.

5.3.1 Meeting people

Many Dutch startups have described the process of making connections as being easy and fast (e.g. de Kok; Daniels). As one entrepreneur described, every opportunity is used to make new connections in Silicon Valley (van de Poll). Connections are made easily with different types of actors, such as entrepreneurs and potential employees (van Dijk). On making connections with venture capitalists Dutch entrepreneurs disagree. GROM has indicated that it is easy to get initial contact with venture capitalists (van de Poll), whereas Elastic has indicated that making connections

with venture capitalists is a more formal process; it doesn't happen naturally, but requires an active approach (Schuurman).

One reason why it is easy to establish new connections in Silicon Valley is because of the huge amount of relevant actors that is present in the region, such as entrepreneurs and developers (Van de Poll). Dutch entrepreneurs often just run into the person they were looking for, because they run into so many relevant people (Noordam). Another reason that making new connections is perceived as such an easy process, is because people in Silicon Valley are perceived as being very open for connection (e.g. Daniels, de Kok; Doevendans).

Several places or mechanisms can be identified on how people meet each other in Silicon Valley. Initial contact can be made at a distance. Websites such as LinkedIn (Daniels), or email can be used to approach people of interest (Janmaat). However, some methods to make contact at a distance are not applicable for Silicon Valley startups. As RFIsoft has stated, calling people without any previous contact is an inefficient way of creating connections, as is makes people suspicious about your intentions. Also, advertising or attracting connections via websites is regarded as an inefficient method for startups that sell to other businesses (Noordam).

A better way to meet people in Silicon Valley is at organized events. The events we have seen previously as a source of information, are also an important source for connections. Examples include startup weekends (Doevendans), co-working spaces (van de Poll), industry fairs (van Barneveld) and networking events (e.g. Noordam; Mannak). Also less formal events, such as parties (Daniels) and soccer clubs (van de Poll) can be a source of new connections. As we have seen with events as a source of information, some Dutch entrepreneurs have indicated that visiting these types of events have become less important as their local network has grown large enough to substitute as a source of connections (Noordam; Doevendans).

Furthermore, Silicon Valley employees can bring many local connections with them when they are hired by Dutch startups (van Dijk). Last, many participants have indicated that local connections can literally be made anywhere. It is very common in Silicon Valley to have a chat with strangers, whether in the elevator (Daniels), in a café, on the train (Mannak), or just in the streets (van Dijk). This phenomenon of random encounters and its implications will be further discussed later in this report.

A startup's local connections are themselves also an important source of connections, and therefore networking has been indicated as the most important and efficient method for Dutch entrepreneurs to make new contacts (e.g. Daniels; Noordam). The pay it forward mentality in Silicon Valley makes that Silicon Valley people are open to introducing their contacts to other actors of interest in their network, whether these connections are on a business or a social level. As Transcense described, introductions are a very powerful way of achieving goals (Doevendans). The Dutch consulate in San Francisco plays a specific role in the creation of local connections, as they are able to provide introductions specifically for Dutch entrepreneurs in Silicon Valley (Mannak; Noordam).

We thus see that networking is the most important source of connections for Dutch entrepreneurs. However, other methods should not be disregarded as they play an important role in setting up the first local contacts in Silicon Valley, that are required for introductions to take place. Furthermore, for people to be willing to make an introduction, a certain amount of trust is required (e.g. Noordam). One wants to be certain that the two people they are introducing to each other will benefit from the connection, and that the introduction will not be a waste any time (e.g. Mannak). How this trust is built will be discussed in the following section.

As effortless as it is to create new connections, making these connections is mainly a functional process for Dutch startups. As Transcense pointed out, they specifically search for connections that are able to help them reach their goals (Doevendans). It is easier to reach these people when an entrepreneur has proven himself before (e.g. Doevendans; de Kok; Schuurman). For example, it makes people come to you, instead of having to go out and actively search yourself (Borsboom; Schuurman).This track record can for example be built by having passed an education at a top university (de Kok), or by having set up previous successful startups (e.g. Schuurman). Being able to employ top employees can also bring a certain credibility to a startup (Borsboom; van Dijk).

5.3.2 Strengthening relationships

After the initial contact has been made, some form of trust needs to be created between two people for further collaboration. We have seen for example that introductions require a certain amount of trust, but trust between collaborative partners is also required during projects. It is important to note that Dutch entrepreneurs in Silicon Valley meet so many people, that it is impossible to strengthen the connections with all these people (Doevendans).

Trust between two people may be on a social or a business level. Dutch entrepreneurs have indicated that they prefer to keep their social and their business network separated (van Dijk; Doevendans), but have also indicated that in Silicon Valley these networks often overlap (van Dijk; Noordam). Introductions may for example come from an entrepreneur's business or social relations (Noordam). It is therefore difficult to assess the exact level of overlap between the two types of networks.

Several factors can stimulate the creation of trust between two actors. Dutch entrepreneurs have indicated that being introduced to someone leads to more trust between the two parties being introduced (e.g. de Kok). RFIsoft for example indicates that an introduction creates enough trust for an initial conversation to explore the possibilities for collaboration (Noordam). HackerOne has also indicated that the chances of getting an investment are higher when connections with venture capitalists are based on an introduction (Borsboom).

A second factor that stimulates the creation of trust is knowledge. Several entrepreneurs (e.g. Noordam; Mannak) have stated they trust actors more easily when they have a large amount of technological knowledge. Because most people have a technological background, it is easy to spot the people lack technological knowledge (Noordam). Elastic has indicated that this is also true for venture capitalists and the amount of industry related knowledge they possess (Schuurman).

A third factor that Dutch entrepreneurs have identified as stimulating to creating trust is previous collaborations between the startup and their local connections (e.g. de Kok). Elastic has stated that previous positive experiences made it easier to make a second deal with the company's investors (Schuurman). RFIsoft has stated that trust is built by properly executing a project together (Noordam).

Fourth, similar backgrounds have been pointed out as being a factor in the creation of trust. For example, having studied at the same university (Janmaat), or both being immigrants in Silicon Valley (Daniels) creates a bond between two people. Also, being from the same geographical location creates a certain understanding between two people, as there often exists cultural overlap, which facilitates further communication (Mannak).

Last, many Dutch entrepreneurs have indicated that face-to-face contact has a positive effect on the level of trust in a relationship. Many contacts that have been made over the internet, are followed

by face-to-face meetings (e.g. Daniels; Janmaat; Noordam). Face-to-face contact is believed to be necessary to make deals (Daniels), and to gain a basic understanding of people (de Kok).

However, building trust may be hold back by cultural differences between the Netherlands and Silicon Valley. An example of such a cultural difference is the self-confidence of entrepreneurs in Silicon Valley and the modesty of Dutch entrepreneurs. As we have seen before, Silicon Valley is only interested in entrepreneurs that want to become the best in the world. Dutch entrepreneurs really need to practice to have this level of confidence in their product (Laanen), if they want to be taken seriously by Silicon Valley venture capitalists (van de Poll).

Another difference that has been mentioned by almost all Dutch startups is the contrast between the straightforwardness of the Dutch culture and the politeness of the Silicon Valley culture (e.g. Daniels; Noordam; de Kok). The difference in culture makes the Dutch being perceived as blunt, whereas some Dutch entrepreneurs perceive the people in Silicon Valley as hard to read (e.g. Mannak). This cultural incompatibility is mostly experienced by non-expanded startups.

On a business level, this makes that American people can come over as very positive about a product or collaboration, whereas they just want to be polite to the Dutch entrepreneur. It thus needs some understanding of the American culture to not interpret these positive remarks as an agreement on further collaboration (Mannak; Laanen). Thus, one Dutch entrepreneur has indicated that building trust on a business level is accompanied with documentation of conversations (van de Poll). On the other hand, Americans sometimes appreciate the straightforwardness of Dutch people, which may even add to the amount of trust between two people (van de Poll; Noordam).

The mismatch in cultures also has its effect on the connections on a social level. It leaves some Dutch entrepreneurs unable to connect on a deeper level with American people (e.g. de Kok; Doevendans; Mannak). Some have even indicated that their local social contacts are mostly Dutch or European people (Doevendans). However, even though Dutch entrepreneurs have stated that they would rather separate their social and business networks, the inability to create deep relations with American people also has its effects on their business network. As one entrepreneurs has indicated, he prefers to work with European developers and mentors, because of the deeper connections he can build with European people (Doevendans).

5.3.3 Keeping in touch

Once a strong relationship is established, this relation can be maintained in several ways. At a distance, Dutch entrepreneurs make use of email and telephone to keep in touch with their connections (de Kok; Noordam). Face-to-face meetings may also be used to maintain contacts, such as having lunch together (Noordam). A strong relationship may for example lead to a collaborative project. Dutch entrepreneurs have indicated that once a project is set up, telecommunication such as telephone and Skype, is sufficient to collaborate effectively during the project (de Kok; Noordam).

Thus, we see that there exist multiple phases in the creation of a connection, which are making the first contact, strengthening the relationship and keeping in touch with the relation. It is the phase of strengthening the relationship, where Dutch entrepreneurs experience the most difficulties, though these difficulties may depend on startup characteristics and the nature of the relation.

5.4 The role of geographical proximity in the access to local knowledge

Geographical proximity plays a role in the processes we have described above. As one participant stated, companies can only get access to the Silicon Valley lead in technological developments if they

are physically present in the region (Mannak). As we've seen before, Boschma (2005) argues that geographical proximity not only has a direct role in knowledge diffusion, but also plays an indirect role via the four other dimensions of proximity, namely the social, the cognitive, the institutional and the organizational dimensions. The role of geographical proximity according to the proximity dimensions framework is visualized in figure 5.1.

In the following section we will use the framework of the proximity dimensions as the structure for the results. We will first discuss the direct role of geographical proximity in the access of the participants to local knowledge in Silicon Valley, and then the indirect roles of geographical proximity via the other four dimensions. The results will not only discuss positive effects of geographical proximity, but will also discuss where geographical proximity may have negative effects. Moreover, the discussion of the results will also present where geographical proximity has no effect, contrary to what may be expected based on intuitions.

It is important to note that the social, cognitive, institutional and organizational dimensions may also have interdependencies between them. This makes that some effects of geographical proximity are hard to categorize in just one proximity dimension, as they may affect multiple dimensions of proximity. This section will categorize these multiple dimensional effects based on the direct link with geographical proximity.

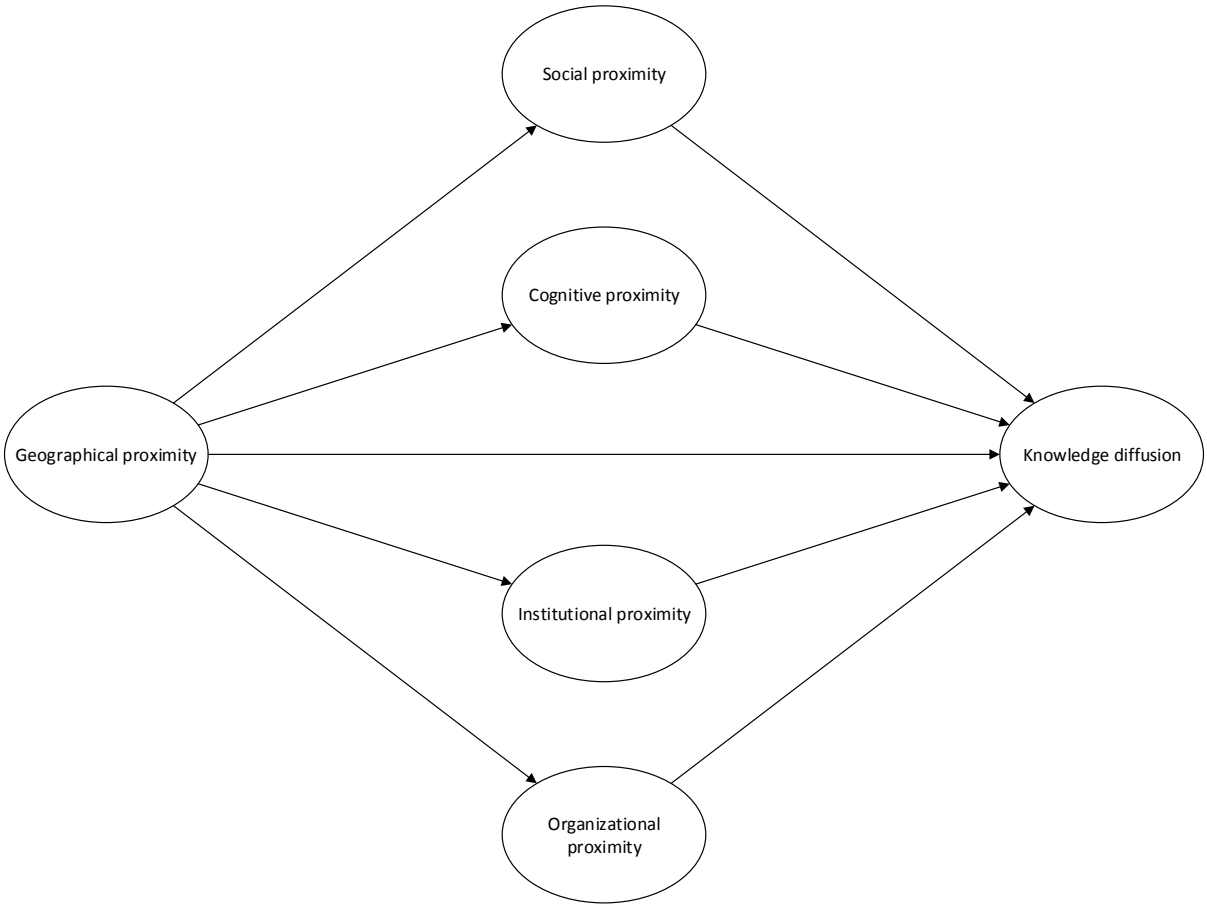


Figure 5.1: Boschma (2005) on the role of geographical proximity in knowledge diffusion (interdependencies between the social, cognitive, institutional and organization dimensions not shown)

We will see that geographical proximity has positive effects on the access to the local labor pool of Silicon Valley, to local events and to the local Silicon Valley networks. It is important to note that these three local sources may play a role in multiple dimensions of proximity for Dutch entrepreneurs. Their role will thus discussed distributed over the multiple subchapters of this section.

5.4.1 Direct role of geographical proximity

Dutch entrepreneurs have pointed out several options to access the local knowledge of Silicon Valley. The following section will first discuss the sources for which geographical proximity is necessary. These will be followed by the sources for which geographical proximity is a facilitating factor, but is either not enough or not necessary to establish complete access.

First, Dutch entrepreneurs have indicated that geographical proximity facilitates face-to-face contact, which is believed to make communication with local actors more effective. As one Dutch entrepreneur indicated, he would prefer to have all his employees in the same office, as he argues that face-to-face communication is essential in getting the complexity of their product across (Doevendans). Thus, it is believed that face-to-face contact facilitates the effective transfer of tacit knowledge.

Second, geographical proximity is required for access to local events. We have seen before that these events have been identified as an important source of business related and technological knowledge for Dutch entrepreneurs. Physical presence in Silicon Valley is required for Dutch entrepreneurs to have access to the many events organized in Silicon Valley. As one participant indicated, at the end of the day he walks a few blocks to hear someone speaking on any technical subject (van Dijk). This would only be possible when being physically close to the location of this event.

Third, being physically present in the Silicon Valley region facilitates the access to the local knowledge stock of Silicon Valley via employees. Silicon Valley employees bring with them a lot of business related experience, as well as technological knowledge (e.g. Daniels; van de Poll; Janmaat; Schuurman). However, between the interviewees no consensus exist on whether the technological knowledge provided by employed engineers in Silicon Valley is of a higher quality that the technological knowledge provided by Dutch engineers (Doevendans; van Barneveld).

Fourth, geographical proximity facilitates learning from the experiences of other entrepreneurs in Silicon Valley, as geographical proximity gives access to the local networks of Silicon Valley through which this business related knowledge spreads. One participant stated that being close together allowed them to see what did and didn't work in other startups, which he would then apply to his own company (Daniels). These experiences are not only accessible through local network, but this business related knowledge also spreads online. Entrepreneurs in Silicon Valley make use of internet forums, such as Twitter, Medium and YouTube, to discuss business related problems (e.g. Daniels). Accessing the local business related knowledge of Silicon Valley may thus be achieved without any proximity in the geographical dimension.

Geographical proximity can thus make communication more effective, as it facilitates face-to-face contact. Moreover, geographical proximity is often required for access to local knowledge sources, such as local events. However, geographical proximity is not always necessary to gain access to local knowledge sources.

5.4.2 The effects of geographical proximity via the social dimension

Social proximity between Dutch entrepreneurs and actors in Silicon Valley is regarded as important for access to local knowledge by the participants, in two different ways. First, having more connections is believed to provide a startup with more potential knowledge sources (Daniels). Second, it is essential for these connections to be honest and to make time for someone to be able to reap these opportunities (Mannak).

First, we have seen that the face-to-face contact facilitated by geographical proximity has a direct positive effect on tacit knowledge transfer. Dutch entrepreneurs have indicated that face-to-face contact also contributes indirectly to effective knowledge transfer, as it allows them to build trust. Both Cloud9 IDE and Mobtest regard face-to-face contact as essential to assess a recently met person. Mobtest finds this trust to be impossible to build over a distance, by using internet or telephone (de Kok).

Geographical proximity is also believed to facilitate making new local connections in Silicon Valley, as it facilitates access to local events, access to the local knowledge pool and access to local networks. First, the local events of Silicon Valley are not only an important knowledge source, they may also serve as a source of new connections (e.g. Daniels; Noordam). Events as a source of new connections have been indicated as more important by startups that have been located in Silicon Valley for a shorter period of time (Doevendans; Noordam). Second, we have seen that local employees may be a source of new connections for a startup (e.g. van Dijk). Third, the local connections of a startup in Silicon Valley have been indicated by Dutch entrepreneurs as the most important source of new connections, as they may introduce Dutch startups to other local actors.

However, Dutch entrepreneurs have indicated that making new connections may also be done at a distance, for example by sending an email or giving someone a call (Daniels; Janmaat). This is also true for maintaining contact with connections in Silicon Valley (Doevendans; de Kok). Moreover, some Dutch entrepreneurs have indicated that they had built local relations in Silicon Valley, before their relocation to the region, based on previous entrepreneurial experiences (e.g. van Barneveld; Schuurman). These are mostly the startups that have expanded their business to Silicon Valley. This tells us that geographical proximity is not required for building a network, but it does have a facilitating effect on expanding a startup's network. Previous results have shown that when trust needs to be built between two actors, geographical proximity is argued to be required.

Geographical proximity is thus facilitating, but not always necessary when making and maintaining local contacts in Silicon Valley. However, geographical proximity is regarded as necessary when strengthening a relation, as face-to-face contact is required for building trust between two actors.

5.4.3 The effects of geographical proximity via the cognitive dimension

Cognitive proximity has been identified by Dutch entrepreneurs as being important for technological and business related knowledge to transfer. Participants have indicated that they learn the most from people in Silicon Valley who are in the same situation (Daniels), who think like they do (Doevendans), who do the same things (Noordam; van Dijk), or who have encountered the same problems (Doevendans).

The proximity in the cognitive dimension affects mostly the appreciation of the track records of Dutch startups in Silicon Valley. Dutch entrepreneurs have indicated that track records that have been built up in the Netherlands are hard to assess for Silicon Valley actors, as many Dutch institutions are unknown in Silicon Valley (Borsboom; de Kok). It is thus impossible for Silicon Valley actors to fully grasp the specific skills one has gained at a particular university, or the reputation of a Dutch institution where one has worked. Geographical proximity is believed to close this gap over

time, as it is argued that the longer one is located in Silicon Valley, the more one experiences one has in the Silicon Valley region, which are more easily appreciated by Silicon Valley actors (de Kok). This process may be sped up by hiring employees with impressive track records, as their track records may rub off on the Dutch startup that has hired them (Borsboom).

Geographical proximity is however incapable closing the cognitive gap at once. Rather, the process of closing the cognitive gap takes time. The initial gap in the cognitive dimension that arises right after a startup's relocation, may lead to difficulties in accessing the local labor pool of Silicon Valley, as the reputation of a startup and its product are important in attracting developers (van Dijk; Borsboom).

Thus, geographical proximity is not capable of making reputations that were built in the Netherlands easy to interpret for Silicon Valley actors. Relocation does thus not immediately lead to an increase in cognitive proximity. This may have negative effects on the direct role of geographical proximity, as it may have negative effects on a startup's access to the local labor pool. However, over time geographical proximity may flay a facilitating role in closing the cognitive gap.

5.4.4 The effects of geographical proximity via the institutional dimension

Geographical proximity is argued to have positive effects on closing the institutional gap, which has positive effects on social proximity and trust. The gap between the Dutch and Silicon Valley cultural institutions is not perceived as very big by Dutch entrepreneurs (e.g. Schuurman), although one entrepreneur has indicated that the cultural differences are large enough to be able to cause some irritations between Dutch actors and Silicon Valley actors (van de Poll). Dutch entrepreneurs have indicated that being located in Silicon Valley for a certain amount of times makes them understand the Silicon Valley culture better. For example, one entrepreneur has indicated that being located in Silicon Valley has created awareness of cultural sensitivities (Schuurman).

Moreover, participants have indicated that being located in Silicon Valley even makes them regard the cultural institutions of Silicon Valley as normal, and take over aspects of the Silicon Valley culture themselves (Mannak; de Kok). Many interviewees have stated that it is easy to take over de ambitious and active Silicon Valley attitude with regard to entrepreneurship, while being located in Silicon Valley (Daniels). Some Dutch entrepreneurs have indicated that the positivity that is regarded as distinctive for Silicon Valley is very contagious (e.g. de Kok), and makes them motivated to start something for themselves (Doevendans) or to do extreme things (van de Poll).

As is the case with the relation between the geographical and the cognitive dimension, it takes time for geographical proximity to close the institutional gap. In the meantime, the lack of institutional proximity may have negative effects on the social dimension, and thereby on a Dutch startup's access to local knowledge in Silicon Valley. We have seen that the over the top politeness of the Silicon Valley culture makes that some Dutch entrepreneurs experience Silicon Valley actors as hard to read (e.g. de Kok; Doevendans; Mannak). This makes it harder for Dutch entrepreneurs to establish trust between them and Silicon Valley actors. This negative effect may be partially overcome through face-to-face contact. Face-to-face contact, which is facilitated by geographical proximity, has been indicated as a requirement for nonverbal communication to transfer effectively, which may increase the readability of Silicon Valley actors for Dutch entrepreneurs (Mannak).

Geographical proximity has a positive effect on proximity in the institutional dimension, but also this process takes times. Relocation thus does not immediately solve problems based on a lack of institutional proximity, such as the difficulties in building trust between Dutch and Silicon Valley actors. Face-to-face contact may provide a partial solution to these difficulties.

5.4.5 The effects of geographical proximity via the organizational dimension

Organizational proximity has not been specifically mentioned by the participants when talking about access to local knowledge in Silicon Valley. However, one link between geographical and organizational proximity may be distinguished on basis of the interviews held during this research. As we have seen, people in Silicon Valley are perceived as being very open for connection. We have also seen that there are so many people in Silicon Valley that are relevant for Dutch entrepreneurs, that Dutch entrepreneurs have indicated that it is very common to meet total strangers anywhere, whether in the elevator, the café or just in the streets (Mannak; van Dijk). These random encounters give Dutch entrepreneurs easy access to random, explorative information (Mannak).

Geographical proximity thus has a negative effect on proximity in the organizational dimension, though this increase in organizational distance has a positive effect on the startups' access to local, explorative knowledge.

5.4.6 Additional remarks

Links between dimensions

As we have seen before, and as the results have shown, interdependencies may also exist between the other four dimensions. We can identify two links between the other four dimensions based on the results that also exists without geographical proximity. First, cognitive proximity may facilitate social proximity. We have previously seen that an impressive amount of knowledge is necessary to gain the trust of someone else (Noordam; Mannak). Second, institutional proximity may also facilitate social proximity, since we have seen that the gap between the straightforwardness of Dutch entrepreneurs and the politeness of Silicon Valley entrepreneurs may be wrongly interpreted, and therefore inhibit the formation of trust.

Lock-in situation

As the results indicate, it is not always believed that a high level of proximity in the different dimensions has only positive effects on the performance of a startup. For example, an increase in cognitive proximity has been indicated to possibly lead to a smaller pool of local knowledge that a startup has access to. One of the participants has expressed concerns about too much cognitive proximity leading to a lock-in situation. He argued that when everybody has the same ideas, and ideas are easily spread and adopted throughout Silicon Valley, this may lead to a situation in which everybody does the same thing (van Dijk).

International links

Although the non-regional links are not the aim of this research, it is important to not leave these links unmentioned, as they may play an equally important role in a startup's access to knowledge (e.g. Breschi and Malerba, 2001; Lorentzen, 2008). During the interviews, Dutch entrepreneurs have indicated that their links to Europe and to the Netherlands specifically still play a role for them. For example, one entrepreneur has pointed out that besides his local network, he also has many relations in Europe and the Netherlands (van de Poll). Other Dutch startups have expanded to Silicon Valley, and also still have an office in the Netherlands (e.g. Daniels; van Barneveld). This way they are able to provide international links to between Silicon Valley and the Netherlands.

6. Conclusions

6. Conclusions

This section will discuss the conclusions that can be drawn from the results presented in the previous section. It will first answer the main research question. It will then present the implications these conclusions have for the theories on the role of geographical proximity, as well as the implications for regional policy makers. Last, it will reflect on the present research, and some suggestions for further research will be presented.

6.1 Answering the main research question

First, we will look at the first goal of this research, which was to construct an overview of Dutch knowledge-intensive startups in Silicon Valley. Then, we will provide an answer to the main research question: how do Dutch startups in Silicon Valley get access to the knowledge that is present in that specific region and what role does their geographical location play in the knowledge access of these firms? We will answer the first part of the question by answering the sub questions of this research question. Thus, we will discuss (1) the sources Dutch startups use to gain access to local knowledge in Silicon Valley, (2) the local actors of Dutch startups in Silicon Valley and the knowledge they provide, and (3) the methods Dutch startups use to build, strengthen and maintain their local network in Silicon Valley. Last, we will answer the second part of the question on the role of geographical proximity in these processes.

6.1.1 Dutch startups in the Valley

As no overview did yet exist of Dutch startups in Silicon Valley before this research was conducted, an overview had to be compiled. Based on this overview, some conclusions can be drawn. Knowledge-intensive startups that go to Silicon Valley are mostly active in the software sector, which is the main sector in Silicon Valley. These startups are relatively often 'transnational' companies, as they are often located in multiple countries. Most Dutch startups are located in San Francisco, which supports the notion of the expanding geographical area of Silicon Valley towards San Francisco.

Based on the interviews, three different moving scenarios have been distinguished, which are relocating as an expat, a student or an entrepreneur. These scenarios support the theory on immigration towards Silicon Valley. The results however indicate that more attention should be focused on relocation as an entrepreneur, as most entrepreneurs had started their company before they went to Silicon Valley. Based on these moving scenarios, the results indicate two types of startups in Silicon Valley that can be distinguished. Expanded startups move to Silicon Valley because of economic opportunities, which are often investment opportunities. This results in these Dutch startups having received relatively high investments when compared to other startups in Silicon Valley. It also means that chance has played a smaller role in the decision of expanded startups to go to SV than for relocated startups and startups that were founded in Silicon Valley. Last, they also employ more people than non-expanded startups. For these companies knowledge is more significant as reason to move to SV, as they know from experience specifically what knowledge is lacking in the Netherlands.

For startups that have been started in Silicon Valley, by for example expats or international students, chance more often plays a role in their choice of Silicon Valley as location. Because these startups make up a significant share of the Dutch startups in Silicon Valley, chance still plays an important role in the relocation of startups to Silicon Valley. Moreover, the founders of these startups have indicated to experience Silicon Valley as a bubble. We thus see that the differences between these

two types of startups have effects on the motivation for relocation, as well as their experiences of Silicon Valley.

6.1.2 A Dutch startup's access to local knowledge of Silicon Valley

Dutch entrepreneurs have indicated to use both online and offline sources of local knowledge in Silicon Valley. Local events, local networks and employees in Silicon Valley have been pointed out as the most valuable offline sources of local knowledge. However, the value of these different sources may depend on the characteristics of the startup. As we have seen, one entrepreneur has indicated that the bigger the network of a startup, the more valuable it becomes as a local source of business related knowledge. The value of local events as a knowledge source of business related knowledge therefore becomes less significant. We may also conclude that the access to local technological knowledge is not always easy. Access to the local labor pool is challenging, due to a high demand and low supply of technological employees.

Most Dutch startups have indicated that their local network is the most important source of multiple types of local knowledge in Silicon Valley. We may conclude that access to the different types of knowledge specific to the Silicon Valley region is provided by one or two specific actors from the networks of Dutch entrepreneurs. We have for example seen that business related knowledge is provided by other entrepreneurs in Silicon Valley, as well as venture capitalists, whereas local technological knowledge is mostly provided by employees. Based on the results we may conclude that the value of certain types of knowledge depends on a startup's characteristics. For example, knowledge on the legal side of entrepreneurship is considered to be more important by startups that have already received investments. Remarkably, universities and research institutes seem to play no role in the access of Dutch startups to local knowledge.

Some entrepreneurs already had connections in Silicon Valley before locating in Silicon Valley. Other entrepreneurs have indicated they had to start building their network in Silicon Valley from scratch. We may conclude that meeting people in Silicon Valley takes little effort to no effort at all, due to the open culture in Silicon Valley. Initial contact can be made in different ways, such as online, at events, or via introductions. The preferred method of meeting people is dependent on characteristics of the startup. For example, when the network of a startup grows bigger, it becomes a more significant source of new connections. Startups with a network that is large enough thus no longer feel the need to visit local events to make new connections. Moreover, as startups gain more exposure, the need to go out and actively approach new connections becomes less, as people start approaching them.

After connections have been made, these relations need to be strengthened to become more valuable as a source of exploitative knowledge. We can conclude that the relations that Dutch entrepreneurs build in Silicon Valley may on a business or a social level, although in Silicon Valley these types of relations often overlap as they may both provide access to the same resources. Strengthening a relation can be stimulated by many factors. Dutch entrepreneurs have indicated that an introduction, an impressive amount of technological knowledge, a similar background or previous experiences may all contribute to strengthening a relationship. Face-to-face contact is regarded as necessary to build a relationship with another actor. Building trust may also be inhibited by some factors. Cultural differences between Dutch entrepreneurs and entrepreneurs from Silicon Valley may inhibit the formation of strong ties between these two actors. These stimulating and inhibiting factors of trust can have different effects on the business and the social level. For example, on a social level, the cultural differences between the Dutch straightforwardness and the Silicon Valley politeness results in Dutch entrepreneurs describing Silicon Valley entrepreneurs as hard to read, which inhibits them to connect on a deeper level with Silicon Valley actors. On a business level this makes Dutch entrepreneurs more inclined to document their agreements with Silicon Valley

actors. Non-expanded startups have indicated these cultural differences to be have more effect on their relations with Silicon Valley actors than expanded startups.

We have already seen that we may distinguish the Dutch startups located in Silicon Valley into two categories, based on the fact of whether they started or relocated to Silicon Valley, or that they expanded their business to Silicon Valley. Combined with the conclusions presented above, we may conclude that access to a specific type of local knowledge plays a more significant role in selecting Silicon Valley as a site for opening another office. Examples include the knowledge on how to make a business model based on open source products, or knowledge on achieving high growth rates for startups. These entrepreneurs often indicate that this knowledge is lacking in the Netherlands. As such, other types of knowledge are of more value to these expanded startups than for relocated startups or startups set up in Silicon Valley. Moreover, expanded startups often value their local network and employees as more valuable as a source of business knowledge than local events. They experience less pressure to actively search for new connections and experience less troubles in overcoming cultural differences in order to build a strong relationship.

Based on the results, it may be thus be concluded that knowledge can indeed be local and that this local knowledge can play a role in selecting a site for relocation or expansion, although the results have shown that for some startups this role is more significant than for others. But locating in Silicon Valley does not always automatically provide access to the local knowledge pool. We will now turn to the role of geographical proximity in the access of these Dutch startups to local knowledge in Silicon Valley.

6.1.3 The role of geographical proximity in a Dutch startup's access to local knowledge

In this section we will discuss the role of geographical proximity, and compare these conclusions to the different theories on the role of geographical proximity in knowledge diffusion. We will see that the results of this case study supports the arguments made by Boschma (2005), and the critiques on the direct and positive role of geographical proximity in knowledge diffusion. Last, the results show some room for improvement of the proximity dimensions framework.

One important note to make beforehand, is that the results show that geographical proximity cannot be used as a dichotomous variable, as has been argued by Shearmur (2001). We have seen that one of the participants in this research has moved within the Silicon Valley region to obtain better access to the local labor pool. This shows us that the access to local knowledge is not only dependent on being either inside or outside the cluster, but that this access may also be dependent on a firm's location within the cluster.

Positive and negative effects of relocation

The results support the notion that geographical proximity as a result of relocation does have positive effects on the access of Dutch startups to local knowledge. This is in line with the predictions of all previously discussed theories (e.g. Feldman, 1994; Maskell, 2001; Keeble and Wilkinson, 1999; Boschma, 2005). Several effects of geographical proximity have been described in the interviews. Dutch entrepreneurs in Silicon Valley for example indicate that geographical proximity grants them access to the local labor pool, as predicted by the local knowledge spillover theory (e.g. Jaffe, 1989). It also grants them access to local networks and facilitates face-to-face contact with Silicon Valley actors, which is in accordance with the embeddedness theory (e.g. Granovetter, 1985; Saxenian, 1994). Moreover, being located closely to other firms in Silicon Valley enables them to observe and learn from these firms, which is predicted by the evolutionary economists such as Maskell (2001). Last, being located in Silicon Valley for a longer period also closes the institutional and the cognitive gap between Dutch and Silicon Valley entrepreneurs.

Geographical proximity has also been indicated to facilitate random encounters. Dutch entrepreneurs have indicated these random encounters as an easy, less expensive way to gain access to explorative knowledge. As the costs of finding and selecting explorative knowledge are often high (Peeters, 2013; Ozman, 2009), this effect of geographical proximity may prove to be an effective strategy in a firm's search for external, explorative knowledge. This way, geographical proximity may help to avoid lock-in situations.

However, the results have indicated that geographical proximity may also have negative results. Although only indicated by one startup, it is believed that too much geographical proximity may lead to a lock-in situation. The many interactions facilitated by geographical proximity may lead to too much cognitive proximity, which in turn may result in a situation where everybody does the same thing.

The notion that geographical proximity may also be negative is in line with the theory of the proximity dimensions (Boschma, 2005), and stands in contrast with the theories that predict solely positive effects of geographical proximity (e.g. Maskell, 2001; Keeble and Wilkinson, 1999). This means that relocation of firms is not always as positive on their access to local knowledge as previous theories have predicted.

Not necessary nor sufficient

The results indicate that that geographical proximity is not always necessary to gain access to local knowledge. A significant share of the local business related and technological knowledge of Silicon Valley may easily be accessed online, through website such as Twitter or YouTube. Internet, as well as other telecommunications technologies, also allows Dutch entrepreneurs to make and maintain contacts from a distance. Some entrepreneurs even indicated they already had a local network in Silicon Valley before their relocation, which shows us that a local network may be built from a distance.

The results also indicate that geographical proximity is not always sufficient for local knowledge access. For example, although geographical proximity does have a positive effect on cognitive proximity, it is not enough to close the cultural gap between Dutch and Silicon Valley actors instantly. Several interviewees have indicated that this cultural gap may inhibit the formation of trust between these actors. Also, it is sometimes difficult for economic actors in Silicon Valley to interpret the track records of Dutch entrepreneurs, as these actors lack the tacit knowledge to be able to interpret these track records (Döring and Schnellenbach, 2004). Dutch companies or universities are for example unknown in Silicon Valley, which makes it hard to assess them correctly. This may have negative effects on the access of Dutch startups to the local knowledge sources, such as the Silicon Valley labor pool. As labor supply is significantly lower than demand, Silicon Valley engineers are able to choose where they would like to work based. Track records play a significant part in this decision making process. Being located in Silicon Valley is thus required, though may not be sufficient for access to the Silicon Valley labor pool. Last, being located in Silicon Valley is not sufficient to grant Dutch startups access to the many subnetworks that have formed within the Silicon Valley region, such as the subnetwork between alumni from Stanford University. These results are in line with the arguments made by Boschma (2005), that geographical proximity is neither necessary nor sufficient for access to local knowledge.

The results do show a more significant role for geographical proximity than earlier research based on the proximity dimensions framework. This may be attributed to the fact that this research focused solely on startup companies. As startups are often of a smaller size, they are more restrained by their physical location (Torre and Rallet, 2005). This makes that their geographical location plays a more significant role in their access to knowledge.

Isolated assessment of proximity dimensions

Third, the results have shown that there exist links between the five dimensions of proximity. This research has shown that proximity in the geographical dimension can have effects on the proximities in the other four dimensions. These effects are mostly positive. Furthermore, the results have also shown that interdependencies exist between the other four dimensions. Participants have for example indicated that it was easier to trust people with an overlapping cognitive base. Also, the results have shown us that the building trust may be inhibited by cultural differences. Thus, both the cognitive and institutional dimensions have effects on the social dimension.

The theories predicting a direct and positive role for geographical proximity (e.g. Feldman, 1994; Keeble and Wilkinson, 1999), only focus on one or two dimensions. This means that many interdependencies between the dimensions are neglected by these theories. Thus, many of these theories are only capable of explaining a small part of the whole knowledge access process. Only when all dimensions are assessed together, as proposed by the theory of proximity dimensions (Boschma, 2005), can all interdependencies be revealed, and the whole picture be grasped.

Suggestions to improvement on the proximity dimensions

Although the theory of proximity dimensions (Boschma, 2005) deals with many critiques, the results show that there is still some room for improvement. First of all, the results of this research demonstrate that the required proximities for effective knowledge transfer may dependent on different characteristics. Some scholars have already proposed that the required proximities may depend on the type of knowledge that is being transferred (e.g. Mattes, 2012). This research adds to that and shows that the required proximities may also depend on the characteristics of the actors involved in the knowledge transfer process, and on the type of relation between these actors. For example, this research seems to indicate that the geographical dimension becomes more important when firms are smaller. Also, the results indicate that relations with venture capitalists are much more formal, and may thus require less social proximity for effective knowledge transfer. Current research on the proximity dimensions do not take these distinctions into account. For example, Huber (2011) has showed that the few knowledge-providing relations that are based on deviating characteristics, showed deviating levels of proximity in the five dimensions. However, Huber has treated these relations as outliers in his research, instead of incorporating them into his results.

Second, the role of intermediaries in a firm's access to local knowledge should not be ignored, as is currently the case in the theory of proximity dimensions. Previous research has shown that intermediary actors play a significant role in a firm's access to knowledge (e.g. Howells, 2002). The results support this notion that not only proximity to the actual knowledge source, but also proximity to intermediary actors can increase a relocated startup's access to local knowledge. The participants have for example indicated employees and growth hackers as important intermediary actors in their access to Silicon Valley knowledge.

Last, the results show that the theory on proximity dimensions should be adjusted so that it is better able to reflect the dynamics in the knowledge access processes. We have seen that geographical proximity may increase the proximity in other dimensions, but these effects are processes that take time. Another example is that the results have shown that the more a firm's reputation is appreciated, the less active their search for new connections becomes. Last, we have also seen that the interdependencies between the dimensions may shift during different phases. For example, we have seen that in the closing of a social gap, geographical proximity plays a marginal role in both the initial contact, as well as the maintenance of that contact. Only in the phase where the relation is strengthened and trust is built is geographical proximity required. Relations between the different dimensions may thus be non-linear. Although the need for a dynamic approach has already been

argued for by Boschma (2005), little research on the dimensions of proximity has taken these dynamics into account. Research based on the proximity dimensions framework should thus not be focused on one point in time, but should approach the proximities that are required for effective knowledge transfer, and the interdependencies between the different dimensions as a process.

6.2 Policy implications of the research

As has been stated before, regional policy makers are increasingly trying to attract foreign startups to regional innovation clusters (Carmichael et al., 2010). The results have shown that startups may relocate or expand internally to innovation clusters. However, this research has also shown that many foreign startups have been set up by people that had originally moved as an expat or a student. In trying to attract foreign startups, this potential pool of future entrepreneurs should not be overlooked. Being open for expats and international students, or even actively trying to attract them, may lead to a larger pool of potential startup entrepreneurs. This may be achieved through for example easy visa procedures or financial compensation for universities accepting international students.

Furthermore, it has been stated before that relocation of startups is increasingly being viewed as an important method of knowledge access for firms (Sorenson et al., 2006). However, the results of this research have shown that relocation may not only have positive effects on local knowledge access, nor is it always necessary or sufficient. However, some measures may be taken to increase the benefits of startup relocation, both for the startup and the destination cluster of destination. When designing policy measures, it is important to keep in mind the characteristics of the region, the startups and the type of knowledge these startups are looking for, as the results have clearly indicated that the effects of relocation may be dependent on all these characteristics.

What the results have clearly shown is that it takes time for geographical proximity to create benefits for startups and regions. An example of a policy measure to speed up these processes is to specifically target foreign startups that are active in a similar technological field for moving to an innovation cluster will decrease the initial cognitive gap after relocation. It will thus take less time before these startups are fully able to contribute to the regional knowledge pool. The same holds for the startup companies, who will experience the benefits of geographical proximity faster when moving to an innovation cluster with a considerable overlap in knowledge base.

Moreover, policy makers should actively try to bring foreign and non-foreign startups together. This may speed up the process of closing the cultural gap between the foreign firms and the other actors in the innovation cluster. The results have shown that cultural proximity may be beneficial for the social interaction between startups within an innovation cluster, and thus to knowledge diffusion within a cluster. As non-expanded startups have indicated to experience more problems caused by a lack of social proximity, a policy measure such as this is likely to be more beneficial to non-expanded startups. However, these non-expanded startups have also indicated more often that they have benefitted from the subnetworks that may be formed among foreign startups when accessing local knowledge. Finding the right balance between connecting foreign startups with each other and with non-foreign firms is thus very important.

Last, policy makers and startups looking to relocate need to be aware of the possible negative effects of geographical proximity, as too much proximity in any dimensions may lead to a lock-in situation. The right balance between connecting local firms with each other and with non-local firms needs to be found, and kept in close attention.

6.3 Reflections on the research

Previously in this report, critiques on the research on the role of geographical proximity in knowledge diffusion have been discussed. This research has tried to deal with these critiques as to yield more valid results. However, due to the target group and the amount of time that was available to conduct this research, some critiques could not be answered. This section will first discuss the areas for improvement of this study, and will then move to the critiques it has been able to incorporate.

This research is of an exploratory nature on a small target group, and is therefore conducted as a case study. This means that this research does not take into account the critiques of among other Torre and Rallet (1999) and Breschi and Malerba (2001), who argue that the research focused on the role of geographical proximity in knowledge diffusion lacks empirical evidence, and is too much focused on individual case studies. However, due to time constraints it has not been possible to conduct a comparative case study.

The case study has focused on Silicon Valley as an innovation cluster, because of the relatively high number of Dutch startups that are located in that region. The research is therefore not in line with the critique uttered by Torre and Rallet (2005), who claim that research has too much focused on only one type of agglomeration model, such as Silicon Valley. The focus of this research on relocated startups and knowledge diffusion however required that the cluster be of the agglomeration type characterized by both geographical and organizational proximity.

The target group of eleven startups has been relatively small. Especially with the amount of variation found between the startups in terms of background, a larger target group would have produced more reliable results. However, the number of Dutch startups in Silicon Valley is already small, thus the participants in this research do make a reliable representation of the specific target group of this research. Furthermore, as predicted this target group turned out to be of specific interest in assessing the role of the different dimensions, due to the specific tradeoffs between the proximity dimensions they have implicitly made in relocating to Silicon Valley. Also, the target group has included startups in a range of success, ranging from startups that have made a quiet exit to startups that have received over a million dollar in investment. This is in response to the critiques argued by Breschi and Malerba (2001) and Ooms et al. (2015), that research has focused too much on the success stories.

This study has also tried to incorporate the critique by Shearmur (2011), who argued that the borders of a cluster are not a given starting point, but rather the result of the social processes within the innovation cluster. The specific geographical location of Silicon Valley has never been explicitly defined by the researcher when conducting interviews. This has made it possible for participants to adhere to the borders of Silicon Valley they have defined for themselves.

This research has also focused solely on links that are geographically close, due to time constraints. This is in contrast with researchers such as Lorentzen (2008) who argue that research has focused on local knowledge sources too much, even though links of national and international are just as important as local links. Although outside of the scope of this research, the results of the current research do seem to imply that non-local links may be important sources of knowledge.

6.4 Recommendations for further research

The conclusions and reflections presented above have implications that need to be taken into account when further research is conducted. We may also base some implications for further research on the literature study that was conducted as part of this research.

The literature study has shown that there is currently a lack data on relocated startups, which corresponds with the remarks made earlier in studies on relocated startups (e.g. Smit, 2015). The literature however also indicates that relocation of startups is receiving more attention in regional policy and that the relocation of startups may have many beneficial effects. Data on these specific startups should be gathered as a supporting tool for policy makers, as well as to be able to show empirically the effects of relocated startups.

We have seen in the literature study that the current research based on the theory of proximity dimensions often uses different combinations of dimensions. However, because of the interdependencies between the dimensions of proximity, research thus far has yielded incomparable results. To make the comparisons between the results of the research based on the proximity dimensions theory valid, scholars should establish consensus on the types of proximity that are relevant.

We have also seen that the research conducted of the dimensions of proximities has been mostly quantitative (e.g. Capaldo and Petruzzelli, 2014; Werker and Cunningham, 2012). However both the theory on proximity dimensions and the results of this research indicate that knowledge transfer is often a social process. Social processes are however hard to capture in quantitative research (e.g. Moses and Knutsen, 2007; Yin, 1989). More qualitative research should thus be conducted to fully understand the dimensions of proximity and their interdependencies.

The results of this research have indicated that local knowledge is an important incentive in the selection of Silicon Valley as a location for a startup. Current research on startup relocation often undervalues this significance, as this research has shown that local knowledge is more than just a local labor pool (e.g. Smit, 2015). Local knowledge should thus not be disregarded in further research on the relocation of (startup) firms.

A last recommendation for further research are the international links that are established when startups relocated internationally. Previous research has shown that non-local links are also significant in a firm's access to knowledge (Lorentzen, 2008). Although not the focus of this research, the results of the interviews have indicated that some relocated entrepreneurs still have an extensive network in their home country, thereby connecting this network to the networks in Silicon Valley. We have also seen that some startups have their main office in Silicon Valley, but keep their developers in their home country. Further research could further disentangle the different ways in which relocated startups establish international links between innovation clusters.

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Appendix I: Interviews

Interviews with Dutch entrepreneurs

Name	**Company**	**Position**	**Date**
Ruben Daniels	Cloud9 IDE	Founder and CEO	July 29, 2015
Bastiaan Janmaat	DataFox	Co-founder	August 13, 2015
Steven Schuurman	Elastic	Founder and CEO	July 16, 2015
Vincent van de Poll	GROM	Co-founder and CEO	July 16, 2015
Richard Borsboom	HackerOne	General manager	September 14, 2015
Dirk de Kok	Mobtest	Founder	July 17, 2015
Pieter Noordam	RFIsoft	Founder and CEO	July 14, 2015
Jorn van Dijk	Taptalk	Co-founder	September 16, 2015
Pieter Doevendans	Transcense	Co-founder and COO	August 1, 2015
Richard van Barneveld	Utomik	Strategic Director	*Over email*
Ronald Mannak	Yobble	*Company no longer exists*	September 14, 2015

Interviews with key informants

Name	**Position**	**Date**
Anne Donker	Senior Economic Officer at the Consulate General of the Netherlands	June 1, 2015
Arne Maas	Professor of Marketing and Innovation at the Hogeschool Rotterdam	May 11, 2015
Peter Laanen	Former International Trade Director at the Netherlands Business Support Office	September 23, 2015

Appendix II: Overview of Dutch startups in Silicon Valley

Name	Sector	Type of company	Founder(s)	Location(s)	Founded in	Investments	Employees
Adyen	IT	Internet payment provider	Pieter van der Does	Among others in Amsterdam and San Francisco	2006	266 mln	250-500
AppMachine	IT	Software to build apps	Siebrand Dijkstra	San Francisco, Heerenveen and Sao Paulo	2012	15 mln	11-50
Brains On-line	Life sciences	Preclinical testing of drugs	Ben Westerink	Silicon Valley, Groningen and Japan	Unknown	Unknown	Unknown
Bright Computing	IT	Database management software	Matthijs van Leeuwen	San Jose and Amsterdam	2009	17 mln	51-200
Cloud9 IDE	IT	Cloud service for programming	Ruben Daniels and others	San Francisco and Amsterdam	2011	8 mln	11-50
DataFox	IT	Automated collector of investment information	Bastiaan Janmaat	San Francisco	2013	7 mln	11-50
Ejenta	IT	Intelligent personal virtual assistent platform	Maarten Sierhuis, Rachna Dhamija	San Francisco	2012	-	1-10
Elastic	IT	Data search algorithms	Steven Schuurman	Among others in Amsterdam and Mountain View	2012	104 mln	250-500
Fileboard	IT	Customized sales demo	Khuram Hussain and Waseem Sadiq	Mountain View and Amsterdam	2011	Undisclosed	11-50
Fitmo	IT	Fitness platform app	Dave Roeloffs and Steijn Pelle	San Francisco and Amsterdam	2014	1.5 mln	1-10

Four53	IT	Tool to make presentations online	Faruk Ates, Justin Hileman	San Francisco	2012	-	1-10
GitLab	IT	Open code collaboration platform	Sytse Sijbrandij, Dmitriy Zaporozhets	Utrecht en San Francisco	2014	7.5 mln	11-50
GROM	High-tech	3D printed smart phone cases	Vincent van de Poll en Koen Munneke	San Francisco, Hong Kong and New York	2012	250k	1-10
HackerOne	IT	Platform to bring hackers and companies together	Merijn Verheggen, Jobert Abma, Michiel Prins and Alex Rice	San Francisco	2012	34 mln	11-50
Human.co	IT	App to help people move and track calories	Paul Veugen	San Francisco	2012	-	1-10
Jaunt	IT	Software tools to create virtual reality	Arthur van Hoff, Jens Christensen and Tom Annau	Palo Alto	2013	100 mln	51-200
Mobtest	IT	Early-stage user tester	Dirk de Kok	San Francisco	2011	-	1-10
Prolin	IT	IT service management	Jerome Mol, Jan Maarten van Dongen, Sjaak Koole	Menlo Park and Amsterdam	2011?	Unknown	11-50
RFIsoft	IT	Provides control and management software	Pieter Noordam	San Jose	2007	-	1-10
Silk	IT	Tool for data visualization	Salar al Khafaji, Lon Boonen	Amsterdam and San Francisco	2010	3.5 mln	11-50
SkyGeo	IT	Software to monitor infrastructure	Pieter Bas Leezenberg	Delft and San Mateo	2007	Unknown	11-50
Taptalk	IT	Photo sharing app	Onno Faber, Jorn van Dijk, Leonard van Driel	San Francisco	2012	5 mln	1-10

Transcense	IT	Real-time textualization of conversations	Peter Doevendans, Thibault Duchemin, Skinner Cheng	San Mateo	2014	-	1-10
Utomik	IT	Game-streaming service	Doki Tops, Richard van Barneveld, Mark Schroders, Chris van der Linden, Rob van Gulik	Eindhoven and Palo Alto	2014	-	11-50
Wercker	IT	Cloud service for programming	Mischa Hernandez van Leuffen	San Francisco and Amsterdam	2012	3.4 mln	1-10
ZappoTV	IT	App to play media on smart TVs	Neal Blaak and Jan van Ottele	San Jose, Bussum, India	2009	-	1-10

Appendix III: Overview of participants

Company	Founded in	Employees	Located in	Sector	Choice for Silicon Valley	(Re)location?
Cloud9 IDE	2011	11-50	San Francisco; Amsterdam	Software	1) Business partners in Silicon Valley 2) Mature ecosystem	Expansion
DataFox	2013	11-50	San Francisco	Software	1) Coincidence 2) Specifically San Francisco to access labor pool	Started in Silicon Valley
Elastic	2012	200-500	Mountain View; Amsterdam; 16 other countries	Software	1) Ecosystem 2) knowledge on open source as business model 3) Previous connections 4) Investments 5) Early adopters	Expansion
GROM (Formerly UCreate3D)	2012	1-10	San Francisco	3D printing	1) coincidence	Started in Silicon Valley
HackerOne	2012	11-50	San Francisco	Software	1) Investments 2) Customers	Expansion
Mobtest	2011	1-10	San Francisco	Software	1) Investments 2) Ecosystem	Started in Silicon Valley
RFIsoft	2007	1-10	San Jose	RFID	1) Coincidence	Started in Silicon Valley
Transcense	2013	1-10	San Mateo	Software	1) Coincidence	Started in Silicon Valley

Utomik	2014	11-50	Palo Alto	Software	1) Business partners 2) ecosysteem	Expansion
Taptalk	2013	1-10	San Francisco	Software	1) Investments 2) Ecosystem	Relocation
Yobble	*n.a*	*n.a*	*n.a*	*n.a*	1) Knowledge on starting companies 2) Investments	Relocation

Appendix IV: Output of coding and sorting process

What sources do Dutch startups use to gain access to local knowledge in Silicon Valley?

Green text refers to different types of knowledge specific to Silicon Valley.
Brown text refers to the process of making new connections.
Blue text refers to the context of the Silicon Valley startup ecosystem.

Via internet business development
'Ja, de first informatie bron zijn natuurlijk de websites en fora en dat soort dingen, communities, waar mensen dingen delen, wat er gebeurt in de industrie' (Cloud9)
'Twitter is natuurlijk een ding waarmee mensen zaken delen, Medium is nu even het belangrijkste blogging platform waar je heel veel van dat soort informatie ziet en krijgt in beeld' (Cloud9)
Youtube (Cloud9)
Email (Cloud9)
'Het enige formele is laten we zeggen het internet, wat iedereen heeft, waar natuurlijk een gigantische hoeveelheid informatie is, laat ik het zo zeggen. Heel veel is natuurlijk non-informatie, maar ook heel veel informatie op allerlei dingen' (RFIsoft)
Email (RFIsoft)
'Als je echt projecten hebt, natuurlijk, doe je een hoop over de telefoon' (RFIsoft)
'Maar ik had op een gegeven moment in Nederland had ik bestaande klanten uit Amerika die ik bediende, nou ja, dat werkt dan wel. Maar dat zijn mensen die je kent, je weet van elkaar van, wij gaan in zee, dat gaat helemaal goed komen. Ja, een bepaalde basis van hoe je weet hoe de andere persoon in elkaar steekt. Dan werkt het om via Skype of via email dingen te doen' (Mobtest)
'Maar je hebt ook plekken zoals TechOverflow en dat is dan een digitale vraag- en antwoordplatform voor programmeurs' (Transcense)
'Het gebeurt ook online via Slack of andere chat apps bijvoorbeeld. We hebben allerlei chat apps waar mensen mee discussiëren en communiceren '(Yobble)
'Het meest directe is dat ik soms colleges kijk van Stanford' (Taptalk)

Netwerk moet opgebouwd worden
'Connecties zijn er altijd, van netwerken zijn er opportunities, dat weet iedereen' (Cloud9)
'En daarnaast heb je netwerken, je luncht met mensen, je emailt, en je krijgt heel veel informatie van VC's, van andere entrepreneurs, andere mensen die daar rondlopen, mensen die je misschien potentieel gaat hiren' (Cloud9)
Je rolodex, bij wijze van spreken (RFIsoft)
Voor grote bedrijven: Intern netwerk bij grote bedrijven (RFIsoft)
Kleine bedrijven moeten naar buiten (RFIsoft)
Voor investeerders, dus niet voor NL startups: 'dat gaat allemaal via hun developervriendjes, dus de software developers. Dus investeerders hebben gewoon een netwerk van techneuten' (Elastic)
Voor investeerders, dus niet voor NL startups: Investeerders kunnen ook gebruik maken van hun portfolio bedrijven (Elastic)
'Je moet gewoon een netwerk opbouwen' (Mobtest)
Netwerk, mensen die je kunnen helpen (Transcense)
'We moeten gewoon de juiste mensen om ons heen verzamelen die ons kunnen helpen en adviseren' (Transcense)
'Hoe groter je wordt, hoe minder belangrijk het netwerk. Tenminste, hoe groter je wordt, hoe meer je ook zaken van buiten je netwerk haalt' (HackerOne)
Subnetwerken

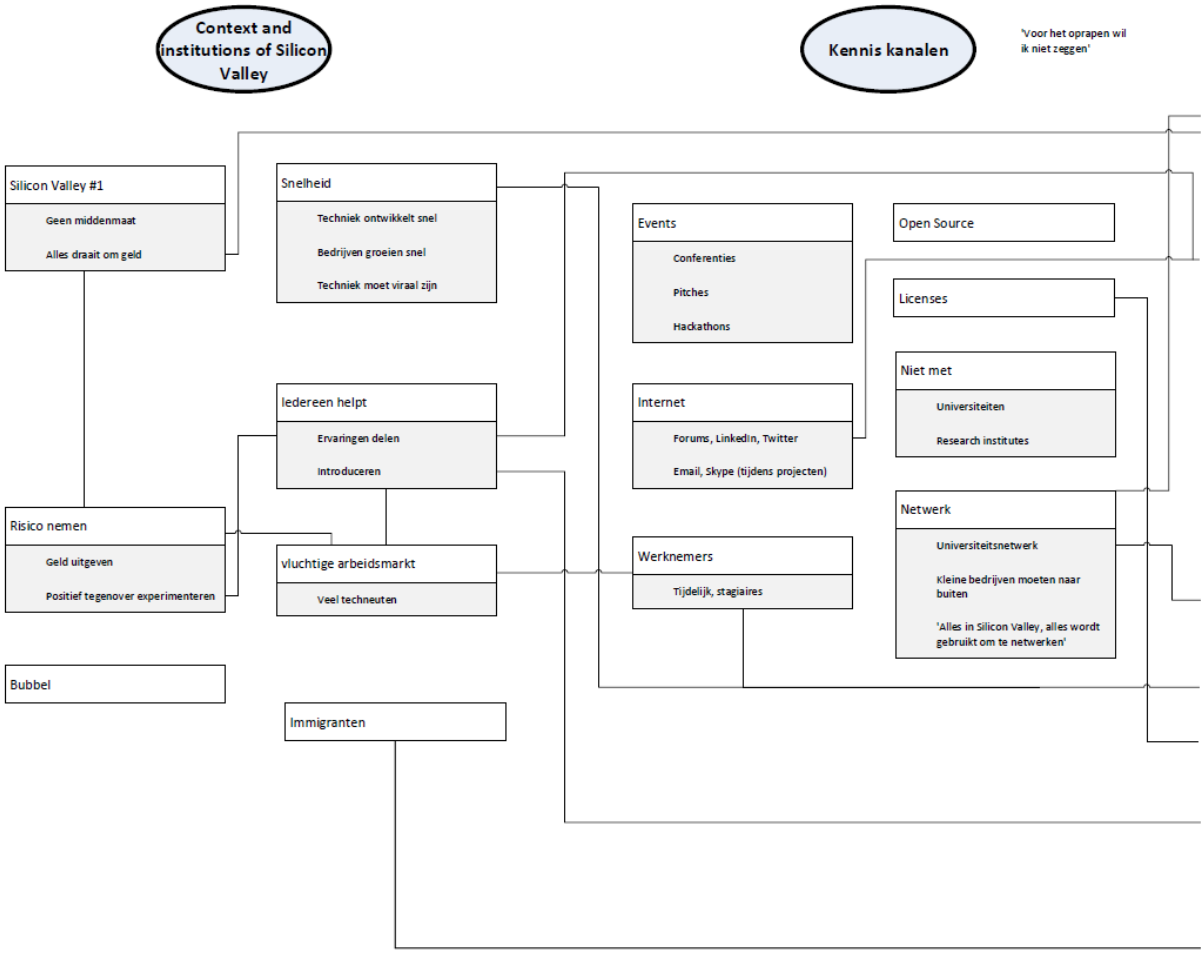
‘dus via de universiteit krijg je een fantastisch netwerk’ (DataFox)
‘Dus ja, mensen zijn hier wel gewoon heel erg trots en hebben een heel erg sterke band met de universiteit. En daardoor konden wij, gingen veel deuren voor ons open na het afstuderen’ (DataFox)
‘Nee, dat [specifiek binnen alumni netwerk zoeken] doe ik heel erg nadrukkelijk en vaak’ (DataFox)
‘Ja, dat [Europeanen] is absoluut een subnetwerk’ (Yobble)

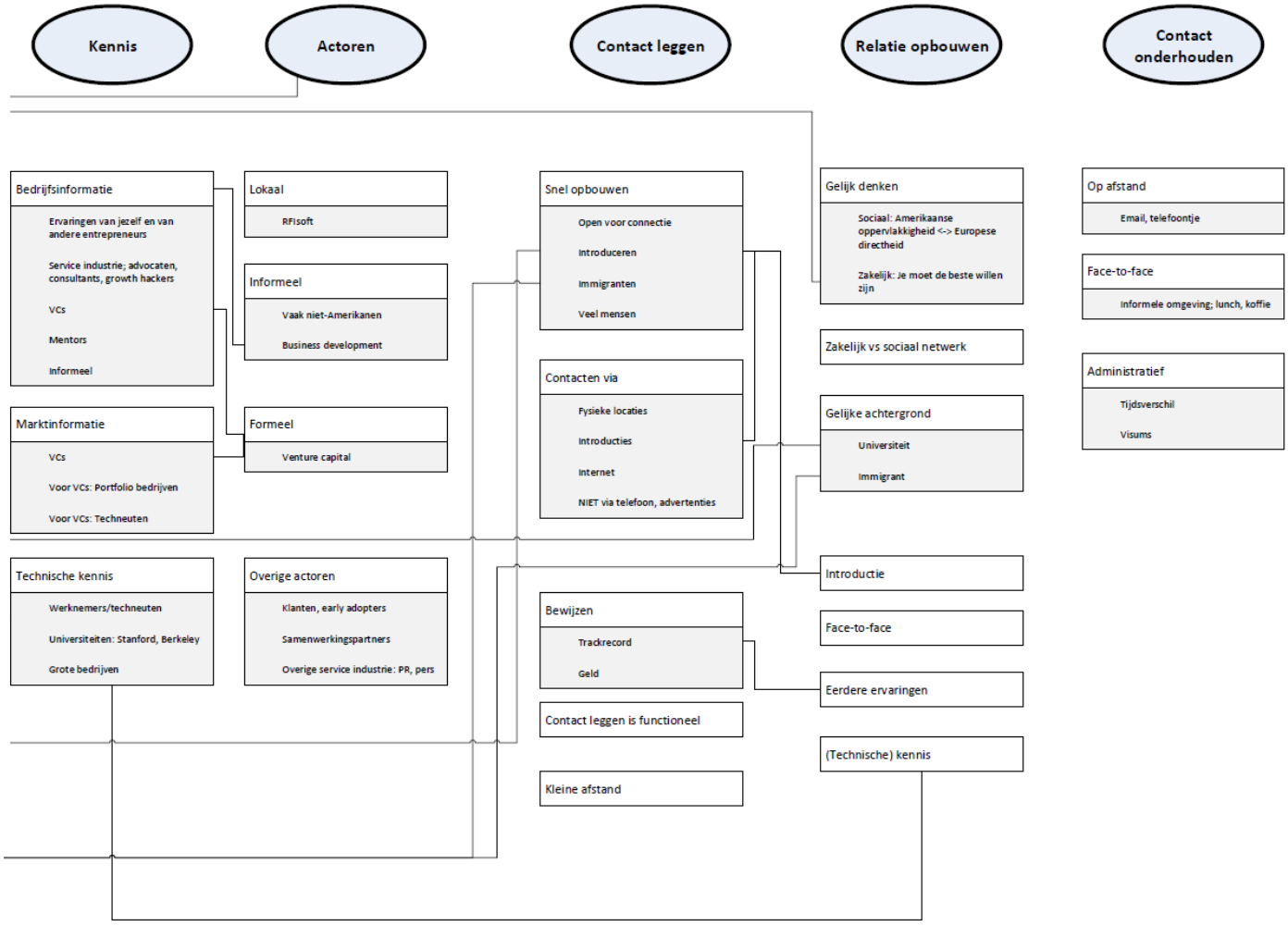
Events
‘Best practices, er zijn een heleboel meetups en dergelijke waar je dingen hoort, waar mensen ook over praten’ (Cloud9) Meetups, conferences (Cloud9)
‘Trouwens tegenwoordig ga ik er veel minder naar toe, maar in het begin, laten we maar zeggen, ja, naar dat soort groepen ging en gewoon iemand die geeft gewoon een lezing of wat dan ook of die vertelt wat of startups die proberen te pitchen naar VC’s wat ze kunnen doen, en daar leer je natuurlijk een hoop van’ (RFIsoft)
Semicon (RFIsoft)
‘En toen had ik na eigenlijk na een maand, ja, na een maand al, een startup weekend. En startup weekend waar je bedrijfje eigenlijk zijn begonnen als het ware. Dus op zich is dat wel grappig, omdat het zo’n evenement is waarmee ze dan proberen om startups bij elkaar te brengen’ (Transcense)
‘En toen kwam ik uiteindelijk bij het bootcamp terecht en dat bootcamp was helemaal gericht op entrepreneurship en daar waren dus superveel mensen die allemaal geïnteresseerd waren. En vanuit dat bootcamp waren er ook vakken opgezet, dus toen rolde ik ook in die vakken en dat soort dingen’ (Transcense)
‘Er waren ontzettend veel pitches en networking events, en dat is wel inspirerend’ (Transcense)
‘er zijn elke week letterlijk honderden startup events in Silicon Valley. Gratis events, vaak ook met eten, wat handig is. En gratis drinken. Met sprekers, met weet ik veel wat‘ (Yobble)
‘Het [kennis uitwisselen] gebeurt op events, de events waar ik in het begin elke dag heen ging, naar drie of hoeveel events dan ook ik aan kon’ (Yobble)
Meetups met talks: ‘Dus aan het einde van dag loop ik een paar blokken en dan kun je een talk meepakken over weet ik veel wat voor technisch onderwerp en dan zijn daar vijftig andere developers’ (Taptalk)
Lunch (RFIsoft)

Werknemers vluchtige arbeidsmarkt veel technisch talent in Silicon Valley
‘mensen die je aan kunt nemen die bepaalde kennis en kunde hebben die je hier niet hebt. Zo hebben we een growth hacker aangenomen’ (Cloud9)
‘mensen die je misschien potentieel gaat hiren’ (Cloud9)
‘dus via hires verspreidt die informatie’ (Cloud9)
‘Een van de dingen in de Valley is dat mensen maar een paar jaar bij een bedrijf zijn, dus een hoop kennis van een bedrijf is dat iemand die een paar jaar bij iemand anders heeft gewerkt, komt bij jou en neemt heel veel kennis mee (RFIsoft) = kruisbestuiving
‘Ja, we hebben nu dus drie co-founders, en we hebben nog geen officiële fulltime programmeurs aangenomen. We hebben wel een hoop stagiaires en mensen op contract basis, maar niet fulltime. Dus dat moet nog gebeuren’ (Transcense)
Personeel werven via een headhunter, dus niet via netwerk (HackerOne)
‘Dat is het makkelijkst, want die zitten gewoon in je bedrijf’ (Taptalk)

Onbewust
‘voor het oprapen wil ik niet zeggen’ (RFIsoft)

Appendix IV: Output of data integration process




Kennis
Actoren
Contact leggen
Relatie opbouwen
Contact onderhouden
Bedrijfsinformatie
Ervaringen van jezelf en van andere entrepreneurs
Service industrie; advocaten, consultants, growth hackers
VCs
Mentors
Informeel
Marktinformatie
VCs
Voor VCs: Portfolio bedrijven
Voor VCs: Techneuten
Technische kennis
Werknemers/techneuten
Universiteiten: Stanford, Berkeley
Grote bedrijven
Lokaal
RFIsoft
Informeel
Vaak niet-Amerikanen
Business development
Formeel
Venture capital
Overige actoren
Klanten, early adopters
Samenwerkingspartners
Overige service industrie: PR, pers
Snel opbouwen
Open voor connectie
Introduceren
Immigranten
Veel mensen
Contacten via
Fysieke locaties
Introducties
Internet
NIET via telefoon, advertenties
Bewijzen
Trackrecord
Geld
Contact leggen is functioneel
Kleine afstand
Gelijk denken
Sociaal: Amerikaanse oppervlakkigheid <-> Europese directheid
Zakelijk: Je moet de beste willen zijn
Zakelijk vs sociaal netwerk
Gelijke achtergrond
Universiteit
Immigrant
Introductie
Face-to-face
Eerdere ervaringen
(Technische) kennis
Op afstand
Email, telefoontje
Face-to-face
Informele omgeving; lunch, koffie
Administratief
Tijdsverschil
Visums