A space for new path development: Coworking Spaces in regional economic change

A case study of the Ruhr area, Germany

Caren Alexandra Braune
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1. Introduction

Structural change and regional innovation processes are central areas of interest within the field of economic geography. In particular, questions around the way in which regional economies develop over time and the kind of factors relevant to induce changes in regional economic structures is widely discussed. In evolutionary economic geography, path dependency is a concept utilized to describe the significance of existing regional structures for the way in which structural changes might occur. From a traditional perspective, firms are regarded as the drivers of economic change by inducing new development paths or contributing to the continuation and extension of existing paths. However, more recent contributions highlight the importance of acknowledging non-firm actors in this context (see Tripl & Grillitsch 2018, Hassnik et. al. 2019). In relation to that, the role of entrepreneurship in structural economic change was added to frameworks for regional innovation processes (see Lawton Smith 2018, Grillitsch 2017).

At the same time, the number of Coworking Spaces, shared office solutions which aim to provide a collaborative and creative work environment to entrepreneurial individuals, freelancers and start-up firms, significantly increased around the globe since the first contemporary Coworking Space was opened in 2005 (Gandini 2015). Hosting a dense concentration of knowledge-based professionals, Coworking Spaces are an interesting phenomenon to investigate from the perspective of economic geography with regards to social interaction and (localized) knowledge production taking place among individuals and eventually stimulating innovation processes. Following their significant increase in numbers, Coworking Spaces receive increasing attention in the academic literature. The rising adaption of Coworking models of work organisation within businesses or as public policy measures is receiving increased acknowledgement (see Moriset 2013, Montgomery 2007). The purpose of these adaptions is often to enhance innovation and entrepreneurship within a firm or a region. Often, entrepreneurs receive additional support for developing their entrepreneurial activities besides the provision of an open office space. The Coworking model of work organisation as it is found in Coworking Spaces is rather flexible than standardized. Thus, Coworking Spaces may vary in a range of dimensions and take different forms.

Following these attributes, one might suspect that Coworking Spaces, as localized support infrastructures for entrepreneurs, might play a role in promoting innovative entrepreneurial activities. By doing so, these activities might introduce new development paths to regional economic structures.
Aim and Research Question

Considering this background, this thesis project aims to add a further perspective to the role of entrepreneurship in new path development. Even more precisely, the purpose of this thesis project is to contribute to an understanding of the role of Coworking Spaces in enabling individuals to contribute to new development paths. Coworking Spaces in this context are defined as shared office solutions which enhance an innovative, collaborative and creative work environment. They are mostly targeted at entrepreneurial individuals and start-up firms and provide additional support in regards to the development of entrepreneurial activities and the creation of new ventures. To approach this, the research question was divided into two sub-research questions to structure the research process and represent the two gaps to be bridged from Coworking Spaces to potential new path development. The research question(s) of this thesis project therefore comprise the following:

• How do Coworking Spaces enable entrepreneurial individuals/new ventures to contribute to new path development?
  1. In which way do Coworking Spaces influence the development of entrepreneurial individuals/new ventures?
  2. How do entrepreneurial activities happening inside Coworking Spaces initiate new path development?

The first sub-question aims to understand how Coworking Spaces might motivate and foster entrepreneurial activities. Furthermore, this entails perceived opportunities and motives of entrepreneurial individuals for engaging in Coworking. The aim is to understand whether Coworking Spaces enable entrepreneurs in pursuing their entrepreneurial activities and if so, which aspects of Coworking are the most relevant in this context. The second sub-question focuses on the kind of activities pursued by entrepreneurs and start-up firms and the path development type these might contribute to. To illustrate how these path development types might develop and be sustained in the future, their functional relation to existing regional economic activities are outlined. Additionally, the demand and market of the respective activities as well as the capabilities of entrepreneurial individuals to access input factors from outside the region are considered in relation to Coworking Spaces. By answering the two sub-research questions, the basis for answering the overall research question is established.

Significance

Understanding the potential role of Coworking Spaces in relation to new path development is relevant with regards to addressing regional economic challenges. On the one hand side, Gandini (2015) argues that alternative, more flexible office solutions are becoming more popular among knowledge-based professionals and entrepreneurs. Thus, Coworking models
of work organisation might become more relevant or even the preferred model of work organisation in the future. On the other hand, many regions across the globe are facing dynamic, diverse and complex structural and economic challenges. Thus, localized, flexible and open office solutions entailing support infrastructures for entrepreneurs could be a potential measure to overcome these challenges by attracting entrepreneurial activities initiating structural economic changes and new development paths. Furthermore, Coworking Spaces are a globally observable and further growing phenomenon. This implies that examples of Coworking Spaces are not limited to a certain region but are found across the globe in different spatial settings. As Coworking models of work organisation can be adapted in multiple ways, potential initiators of Coworking Spaces are able to adjust their individual model according their respective spatial setting and purpose. The flexibility of the model can thus be an advantage regarding complex and unique regional challenges.

**Spatial Setting**

This thesis project investigates the research question(s) outlined above in the spatial setting of the Ruhr area, Germany. The Ruhr area was chosen as a spatial setting for several reasons. As the region has been and is currently still undergoing major structural economic changes (Heidenreich 2015), the role of Coworking Spaces in new path development is an interesting as well as a highly relevant topic to investigate in this spatial context. Moreover, the Ruhr area comprises several Coworking Spaces initiated by different actors to promote entrepreneurship. Thus, Coworking is not a concept completely new to the region. At the same time, the region does not comprise overwhelmingly many different Coworking Spaces and entrepreneurial individuals being affiliated to them. Thus, a sufficient share of them could be considered within the given timeframe of this thesis project.

**Structure of the Thesis**

In order to approach the research question(s), this thesis is structured in the following way:

- The second chapter entails theoretical considerations in relation to the research question(s). In the first section, characteristics of Coworking Spaces are discussed. Then, previous theoretical conceptualisations of Coworking Spaces will be outlined to commence with an alternative theoretical approach in the subsequent section. In the last section, path dependency and types of new path development most relevant in the context of Coworking Spaces are illustrated. Also, the role of entrepreneurial individuals in new path development is outlined.

- Chapter 3 comprises the methodology utilized to approach the research question(s). This includes the research philosophy and approach which form the basis for the
methods applied. The last section outlines the principles followed for data organisation, processing and analysis.

- Based on this, chapter 4 illustrates and analyses the empirical findings. The first section entails the context of the Ruhr area. Then, research findings are structured according the research question(s). These will be answered at the end of each section. In the very last section, the research question on how Coworking Spaces enable entrepreneurial individuals to contribute to new path development (in the Ruhr area) will be assessed.

- The main findings resulting from the empirical analysis will be discussed in chapter 5. Among them are themes of importance in relation to how Coworking Spaces influence the development of new ventures, the role of specialisation in individual Coworking Spaces, a potentially emerging new path as well as implications which follow the main findings.

- The last chapter summarizes this thesis project. This includes the theoretical framework utilized in relation to the empirical findings with regards to the research question(s).
2. Theory

To approach the research question(s) conceptually, the following chapter will be organized in different subsections. Chapter 2.1 outlines the main characteristics of Coworking Spaces and defines how the term is utilized in this thesis project. In chapter 2.2, previous conceptualisation of Coworking Spaces, microclusters and the creative economy, will shortly be elaborated on to commence with an alternative conceptualisation of Coworking Spaces in chapter 2.3. This conceptualisation utilizes notions of the creative field (Scott 2006) which draws on aspects of the previous two concepts and acknowledges the role of entrepreneurial individuals in regional innovation processes. Chapter 2.4 focuses on these entrepreneurial individuals, enabled and supported by Coworking Spaces, in new path development.

2.1 The Coworking model

Coworking Spaces are shared office solutions for independent professionals, entrepreneurial individuals and start-up firms of the digital knowledge economy that provide and enhance a work environment characterized by open communication, collaboration, creativity and a common mindset among its members. Moreover, Coworkers may receive additional support for founding new ventures such as consultancy support or support finding investors (Kojo & Nenonen 2017, Fuzi 2015). This often enthusiastically articulated concept, however, has transformed Coworking from a model of work organisation into a trendy buzzword (Gandini 2015). This led to an extensive use of the term which turned Coworking into a term often misunderstood (e.g. Business Centres tend to be referred to as Coworking Spaces even though being similar to a regular office). Thus, the term Coworking will be referred to corresponding to the definition outlined above in this thesis project in order to not foster the ambiguity in the use of the term in this context. A particular focus is set on Coworking Spaces which promote start-up firms and the creation of new ventures by providing several forms of support. A variety of possible initiators of such spaces exist. Among these are governmental institutions, established firms or private initiatives. Furthermore, the actual form of work organisation or the set-up of Coworking Spaces is flexible as Coworking models of work organisation have been adapted in many ways.

For example, Coworking or rather the broader underlying model has been adapted by public policy makers in various forms and approaches to regional development (see Scott 2006, Montgomery 2007, Moriset 2013, Fuzi 2015, Florida 2014). Furthermore, there are accounts of Coworking models as a type of work organisation adapted by established firms with the aim of becoming more innovative and attractive to highly qualified talent, to increase communication and creativity among their employees and to cut costs by increasing flexibility in the provision of office space (Moriset 2013).
Coworking as a model is based on the core values of openness, collaboration, community, accessibility and sustainability (Capdevila 2013). These core values comprise the Coworking ‘philosophy’ (Gandini 2015). Openness, community, collaboration and accessibility emphasise the meaning of interaction, learning, tolerance and low entry barriers for Coworking while sustainability refers to shared office resources (desks, chairs, coffeemakers, etc.), hence making Coworking a phenomenon of the sharing economy (Bounken & Reuschl 2018). Often, the core values of Coworking are actively enhanced by so-called ‘community managers’. Their role is to support networking among Coworkers, host community events or fulfil other functions (Fuzi 2015). However, this does not imply that the Coworking core values occur equally over different Coworking Spaces as the underlying model of work organisation is rather flexible. Coworking Spaces may represent these core values to differing extents depending on the actual model of work organisation, the initiating actor or the purpose of the Coworking Space.

2.2 Coworking in the academic literature

Coworking is a phenomenon that has received increasing attention in the academic literature in recent years. As spaces where highly qualified individuals of the knowledge-based economy co-locate spatially to interact and exchange knowledge, Coworking has been discussed and conceptualised from different angles of economic geography. Localised knowledge dynamics in Coworking communities have been investigated within the broader framework of microclusters (Capdevila 2013). Furthermore, Coworking Spaces have been conceptualised as a phenomenon of the creative economy (Moriset 2013). Moreover, the role of proximity for knowledge exchange in Coworking Spaces has been investigated (Parrino 2015). Apart from that, much literature can be found on management perspectives to Coworking (see Bounken & Reuschl 2018, Kojo & Nenonen 2017, Spreitzer et al. 2015).

The framework of a microcluster is based on cluster theory which describes the spatial concentration of interconnected and related firms and supporting organisations. These supporting organisations consist of suppliers, service providers, associated institutions or other organisations. The relatedness of firms in a specific sector within a cluster enhances competitiveness among them. Collective learning, knowledge spill-overs, trust, complementarity and competition can be considered as the most important elements of a cluster (Isaksen & Jakobsen 2016, Capdevila 2013). As Capdevila (2013) argues, “[…] localized spaces of collaboration have similar characteristics than industrial clusters at a micro level of analysis […]” (p. 5). This means that the relevant actors in microclusters are comprised of independent workers, freelancers and entrepreneurs instead of firms and associated institutions (Capdevila 2013). This conceptualisation, however, is lacking some crucial elements of Coworking Spaces as they are defined in this thesis project. On the one hand,
looking at processes within Coworking Spaces, competition among individuals would be a central driver for innovation when regarding them as microclusters. However, Coworking has a strong focus on collaboration. Also, as Coworkers are part of the vast (digital) knowledge economy, their activities possibly vary widely over different sectors which does not necessarily imply direct competition. Nevertheless, this does not mean that no competition takes place among Coworkers, especially in regards to Coworking Spaces with a focus on particular sectors (see Bounken et. al. 2018). On the other hand, considering Coworking Spaces initiated by established firms or governmental initiatives as a mean to foster innovation and entrepreneurship (within the firm or the region), competition does play a relevant role. However, increased competitiveness does not necessarily occur among individuals within Coworking Spaces but among other firms and regions. Thus, Coworking Spaces may function as an element of a cluster but not necessarily as a microcluster in the context of this thesis project as the focus is rather on the effect Coworking Spaces might have on the broader regional economic structure.

Regarding these challenges, Coworking Spaces will be conceptualized in a modified way. Drawing on the emergence of Coworking Spaces and characteristics of creative, entrepreneurial individuals, is useful because entrepreneurial individuals are regarded as the main drivers of economic change in this thesis project. Thus, a conceptualisation of Coworking Spaces that recognizes the role of creative individuals will follow.

Moriset (2013) views Coworking as a phenomenon caused by the emergence of the creative economy. He argues that Coworking practices result from activities based in the knowledge-based economy which turns into a digital economy at the same time. This enables individuals to work independently from designated locations such as a traditional office or from home. Coworking Spaces can be regarded as “third places” – between home and office (Moriset 2013). The individuals referred to are part of the creative class as suggested by Florida (2002). The creative class does not only comprise artistic professionals but all kinds of professionals who work in highly knowledge-intensive industries attempting to “create meaningful new forms” (Florida 2002, p.18). This does not only include media, advertising or design industries but also software or engineering industries among others. Also, members of the creative class contribute to a high level of diversity, tolerance and openness in the places they live in as they foster these characteristics (Florida 2002).

In many respects the creative class reflects the values of Coworking. Moreover, regarding the notion of “third places”, it becomes obvious that Coworking Spaces are places where individuals prefer to spend their working time (over a traditional office) meaning that they are attractive places to work at. Following this, a conceptualisation of Coworking Spaces drawing on both previous conceptualisations will be outlined in the next section.
2.3 Coworking Spaces and the creative field

Coworking Spaces are positioned within the broader theoretical framework of the creative field. According to Allen J. Scott (2006): “[…] a field of creative forces can be used to describe any system of social relationships that shapes and influences human ingenuity and inventiveness and that is the site of concomitant innovation.” (p. 1). A creative field can be represented in a number of ways. These can include a particular structure in work organisation (inside or outside firms), a particular sector or institutional setting where activities based on interaction enable entrepreneurial and innovative outcomes. “[…] it comprises all those instances of economic effort and organisation whose spatial and locational attributes, at whatever scale they may occur, promote development- and growth-inducing change.” (Scott 2006, p. 1).

The creative field is not a concept that can be viewed independently from other concepts of regional innovation processes (e.g. RIS or clusters) as it synthesises previous research (Scott 2006). Thus, it is connected to notions of microclusters but acknowledges the role of creative, entrepreneurial individuals and recognizes path dependent evolution as a mechanism of regional economic change. Thus, the conceptual framework reflects the research question(s) of this thesis project as both sub-research questions are covered within the conceptual framework. More details on the creative field and path dependency are provided in the next section.

To clarify the relationship between creativity and innovation, creativity by definition enables individuals to explore and identify new ideas that possibly lead to disruptive changes in the economy. Creative ideas turn into innovations when these ideas are further developed and finally realized (Moriset 2013). Thus, creative individuals are an integral part innovation and entrepreneurship. These creative and entrepreneurial individuals will be conceptualized as members of the creative class (Florida 2002) being the driver of innovation and entrepreneurship in the creative field.

An important aspect of the creative field as a continual site of innovation is that it constantly evolves and develops as its configurations are modified by the innovations it triggers. The creative field itself is thus mutually connected to innovation and entrepreneurship. In accordance, spatially and socially embedded entrepreneurial individuals are influenced by the configurations of the creative field they operate in which in turn is modified by innovation processes caused by them (Scott 2006). Activities of individuals transform the environment or the creative field in which they emerge (Florida 2002).

Innovation is stimulated by knowledge production and access to relevant knowledge resources. Knowledge is accumulated at different sites such as individuals, firms, research institutions or government bodies. At these sites, new knowledge is generated by combining
existing knowledge in new ways or linking knowledge to external sources. Innovation thus requires social interaction and knowledge exchange (Asheim & Gertler 2005, Bathelt et. al. 2004).

Social interaction among individuals furthermore provides relevant and critical information for entrepreneurial action (Scott 2006). Apart from daily interaction among like-minded entrepreneurial individuals, events and networking opportunities taking place occasionally are relevant as well. Entrepreneurs rely on access to platforms of interaction facilitated through social interaction to be able to identify emerging opportunities. This indicates the meaning of co-location, communication and social relationships for innovation and entrepreneurship. Knowledge flows which can be accessed by physically being at a certain place are also referred to as ‘local buzz’ (Bathelt et. al. 2004).

Access to these knowledge flows requires effective communication. A shared culture or a common mindset can often simplify knowledge exchange and production as misunderstandings are avoided. This is often enhanced in settings where actors are able to build relations of trust and common codes for communication through regular, intensive and daily interaction. Therefore, regular interaction, openness, tolerance and adaptability of individuals create the kinds of environments that facilitate innovation and entrepreneurship in creative knowledge-based working communities. Along with this argument, Parrino (2015) argues that spatial proximity alone does not facilitate knowledge exchange among Coworkers. Social proximity and personal relationships are a significant condition for knowledge exchange.

So far, Coworking Spaces have been identified as attractive work environments where creative, entrepreneurial individuals of the digital knowledge-based economy possibly build social relationships and networks, exchange and produce knowledge. The notion of the creative field has been adapted to conceptualise Coworking Spaces as a set of economic efforts and social relations that enhance human inventiveness through social interaction and encourage innovation and entrepreneurship to induce economic change. However, Coworking Spaces should not be regarded as a closed system where innovations emerge but rather as a creative subsystem that is connected to the broader regional economy. The notion of the creative field comprises a number of elements that can be found in the Coworking core values. Namely, building communities based on interaction, knowledge sharing, mutual trust and interdependence.

Shifting the focus towards the way in which Coworking Spaces influence the development of entrepreneurial individuals or start-up firms contributing to regional economic changes leads to a set of essential questions: Do Coworking Spaces motivate entrepreneurial individuals to stay in the region? How do Coworking Spaces attract entrepreneurial individuals? How do Coworking Spaces influence and support the activities of entrepreneurial individuals?
Entrepreneurial individuals are socially and spatially embedded (Scott 2006). This is relevant for the development of their activities as embeddedness might influence their choice of business partners as well as their locational choice. Feldman (2001) characterizes entrepreneurial places as places that offer venture capital, supportive social capital and support services for entrepreneurs. Later, she identified personal attachment to place as another determinant for locational choice of entrepreneurial individuals (Feldman 2014). Following this, the way in which Coworking Space might provide additional support such as financial support or other services is relevant.

Lacking the secure surroundings and work conditions of an established firm, entrepreneurial individuals and start-up firms are exposed to high levels of uncertainty and risk especially in early phases of their development (Scott 2006, Lawton Smith 2018). Their success highly depends on consumer demand but also on financing or consultancy support to realize their ideas (e.g. legal advice, managerial support etc.). As they tend to be highly specialized in their field, entrepreneurial individuals or small start-up firms do not feature similar capacities as established firms. Coworking Spaces, independently from their respective initiators, can act as social structures of innovation (Scott 2006, Florida & Kenney 1988). These comprise significant support infrastructure that helps to encourage entrepreneurial effort such as venture capital, consultancy firms or other sorts of support.

Therefore, Coworking Spaces, as they are conceptualized in this thesis project, fulfil several functions for entrepreneurial individuals and start-up firms. As creative fields, Coworking Spaces are sites of interaction. By fostering knowledge production, access to relevant knowledge and social interaction, they enhance innovation. Coworking Spaces cannot be regarded as closed systems. Economic activities happening inside are connected to the regional economy they are located in. Due to further support for entrepreneurial individuals and start-up firms, innovations emerge. This subsequently leads to regional economic change.

2.4 Coworking Spaces and entrepreneurship in new path development

According to Scott (2006) the creative field is transformed by path dependent evolution. This means that existing economic and institutional structures constitute the basis for the development of new economic activities (Hassink et. al. 2019). Existing economic and institutional regional structures shape the probability of certain events to occur in the future. In other words, path dependent structures do not evolve in a linear way but frame the likelihood of certain developments in the future. Institutions such as firms, industries or social and cultural norms and practices play an important role in the evolution of path dependent structures. Incremental advancements and innovations in existing industries contribute to the continuation
of existing development paths. New path development occurs when new industries in regional economies emerge (Hassnik et. al. 2019, Isaksen & Trippl 2016).

New path development can occur in many different forms which have been defined in various ways (see Tödtling & Trippl 2018, Isaksen & Trippl 2014). In the following, I will focus on three main types of new path development most relevant in the context of Coworking. Thereby, Coworking Spaces are regarded as places where new economic activities emerge and then eventually induce new path development. First, path upgrading contributes to qualitative improvements in existing industries. This includes new business models, technologies or organisational innovation and might occur in collaborations between entrepreneurial individuals and existing regional industries. Second, path diversification means existing industries move into new industries. Third, the emergence of entirely new industries is referred to as path creation (Grillitsch & Hansen 2018).

Apart from these aspects, there are additional conditions for establishing, sustaining and legitimizing new development paths in the future. It requires multiple, functionally related firms and supporting organisations. This includes firms and organisations that complement, support, demand or are similar to those in the respective (new) industries. Also, a regional demand and market for products and services of respective industries must be given. Moreover, networks and valuables input factors outside the region need to be accessible to actors in a region where development paths emerge (Binz et. al. 2016). This view implies, that individual actors alone are not necessarily capable of initiating new path development (Isaksen et. al. 2018). This means that entrepreneurial activities emerging from Coworking Spaces require functionally related activities in the region. These activities furthermore require regional demand. Additionally, Coworking Spaces need to provide valuable input factors and access to networks from outside the region in order to enable entrepreneurial individuals to potentially contribute to new path development. Thus, the way in which those conditions are realized (e.g. through Coworking Spaces) might be a suitable aspect to consider in this context.

The approach to put non-firm actors such as entrepreneurial individuals at the centre of new path development differs from traditional views on new path development as mainly firm-driven processes (Trippl et. al. 2018). Scholars have argued for the necessity of adding more perspectives into new path development (see Hassnik et. al. 2018, Sotarauta & Suvinen 2018).

Regarding the mechanisms behind new path development which go beyond market and firm driven processes, entrepreneurial action can be regarded as a crucial component. Entrepreneurs are regarded as individuals who are able to identify opportunity, mobilize resources and create value (Feldman & Storper 2018). In accordance with Scott (2006), they are spatially and socially embedded and influenced by the creative field they operate in. Thus, entrepreneurial action is shaped by perceived future opportunities that are related to existing
structures (Grillitsch & Sotarauta 2018). Entrepreneurship is enabled by social interaction, communication, access to knowledge resources and other forms of support (Feldman 2001, 2014). The entrepreneur as the nucleus of entrepreneurial action is thus conceptualized as a creative individual in the sense of Florida (2002) who’s ability to identify opportunity, mobilize resources and create value is influenced by her or his social and spatial embeddedness.

The preceding paragraphs outlined characteristics of Coworking Spaces as utilized in this thesis projects: shared office solutions targeted at creative, entrepreneurial individuals and start-up firms which enhance a work environment characterized by social interaction, knowledge exchange and effective communication based on the core values of openness, collaboration, communication, accessibility and sustainability to promote entrepreneurial activities. This includes the provision of additional support forms. The chapter illustrated how Coworking Spaces enable entrepreneurial individuals and start-up firms to contribute to new path development from a theoretical perspective. This included the conceptualisation of Coworking Spaces as creative fields with a mutual connection to the broader economy. The creative field was characterized as a site where social interaction, knowledge production and effective communication as well as additional support infrastructures stimulate innovation and entrepreneurship. The creative field is transformed by path dependent evolution which means that existing structures shape the likelihood of future developments to occur. Entrepreneurial action of individuals stands at the core of new development paths in this thesis project. These individuals are socially and spatially embedded. Their ability to identify opportunity and mobilize resources enables them to create value.
3. Methodology

This chapter will outline the research philosophy, the research approach, the research methods applied and finally the way in which collected data will be organized, processed and analysed in this thesis project to answer the research question(s).

3.1 Research Philosophy – Ontology and Epistemology

The process of research is always embedded in philosophical questions. For instance, it always involves some kind of problem or phenomenon to investigate, explain or understand. To approach this, there needs to be a framework that describes the kind of things that are out there to investigate and how we come to know these things. These fundamental questions are rooted in the philosophical concepts of ontology and epistemology (Gomez et. al. 2010). Ontological and epistemological foundations for a research project usually depend on the nature of the research question and the personal world view of the researcher (Graue 2015).

Ontology is concerned with the kind of things that exist. It is about the things that assemble reality. There are many different ontological perspectives that can be applied in research (see Benton & Craib 2011). Depending on the object of study, the research question or the purpose of a research project, suitable ontological perspectives possibly vary widely. The ontological perspective most suitable for this thesis project is ‘constructivism’. Constructivism places social actors at the centre of reality. Reality is rather constructed by them than by physical objects. As social actors continuously interact with their environment, truth and meaning is created by their perception of things. Meaning and truth is therefore something individual. Different social actors perceive their world differently depending on how they engage with their environment. Social actors construct the world they live in meaning that the world comes to existence by the meaning that it is given to by social actors (Gray 2013).

Relating this to the purpose of the thesis project, the way in which entrepreneurial individuals create meaning and truth by interacting with their environment is relevant for the initiation of new path development. Perceived opportunities do not exist independently but it is the meaning that is given to creative ideas by individuals. This meaning is given individually as not everyone might perceive certain given circumstances and conditions in the same way. Entrepreneurial activities result from the way in which creative ideas are generated, opportunities are perceived and realized. These aspects are shaped in the minds of individuals. Thus, they are constructed. Considerations regarding aspects which sustain and legitimize development paths are also based on the constructed realities and perceptions of individuals.

Epistemology, the theory of knowledge, is about the way in which knowledge is acquired and turned into acceptable knowledge. It can be distinguished between different epistemological
perspectives as well (see Benton & Craib 2010). As constructivism was set as the ontological basis of this thesis project, the use of an interpretive approach to this thesis project is self-evident.

Interpretive approaches acknowledge that social phenomena are the result of individual action driven by individual perception. Researches following an interpretive approach aim to understand the way in which people perceive and experience their environment. Thus, many individual perspectives are involved (Gomez et. al. 2010).

As the object of study in this thesis project results from individual perception based on constructed realities, an interpretive approach focussing on individual entrepreneurial actors is therefore most suitable. Understanding the personal background, motivation and perceived opportunities of entrepreneurial individuals is an important part of this thesis project. Also, the way they perceive the Coworking Space and the support available to them is an important aspect. Finally, the way in which this influences their entrepreneurial activities is a focus in this thesis project.

3.2 Research Approach

Research can be categorized into qualitative or quantitative research approaches. Both approaches entail certain advantages and disadvantages in comparison with the other. Hence, there is generally no right or wrong in choosing a research approach (Gray 2013). However, depending on the nature of the research question or the research philosophy, one of these or a combination of the two might appear more suitable then the other options (Silverman 2013).

The theme of this thesis project, Coworking Spaces, has already been investigated in different studies (see Capdevila 2013, Parrino 2015, Fuzi 2016). However not much is known about how Coworking Spaces enable entrepreneurial individuals contributing to new path development and how this happens in the spatial context of the Ruhr area. Also, backgrounds, motivations and expectations of entrepreneurial individuals towards Coworking opportunities are not known. Thus, a research approach which allows exploratory methods and the inclusion of individual perceptions and opinions is suitable for the purpose of this thesis project.

This condition, as well as the research philosophy, make a qualitative research approach more suitable. Qualitative research aims to understand the experiences of individuals as a part of their constructed realities through interpretation. As individuals perceive things differently, reality is constructed through multiple interpretations and reference frames (McGuirk & O’Neil 2016). According to Mayring (2002) previous knowledge of the object of study needs to be given in order to be able to interpret collected qualitative data. This knowledge is further developed during the course of the study. He emphasises the importance of an open, flexible research process in order to avoid ignorance towards certain relevant issues that may arise.
Qualitative research implies that the researcher has to engage with the object of study in its respective environment. This means that the researcher is less distant to the researched phenomenon which imposes risks on the objectivity of the researcher. On the other side, the involvement of the researcher can contribute to a better contextual understanding of the phenomenon of study (Mayring 2002).

Moreover, this thesis project follows a partly inductive research approach which draws on case study research. Inductive research seeks to advance theory by focussing on particular phenomena. Typically, an inductive approach is chosen when there is little prior knowledge about a phenomenon. The researcher investigates the phenomenon without any previous assumptions and formulates the research findings after the study has been conducted to advance theory (Graue 2015). However, it should be noted that the approach utilized in this thesis project is not purely inductive. It is inductive in the sense that it has an exploratory character, focuses on a particular phenomenon and does not seek to verify or falsify a predefined hypothesis (as a deductive approach would imply). Nonetheless, a certain familiarity with the object of study is crucial in qualitative research to be able to interpret findings (Mayring 2002).

Coworking Spaces and their role in new path development are investigated within the spatial setting of the Ruhr area. To study a contemporary phenomenon, a case of interest, in its natural setting draws on case study research. A case study is characterized by predefined boundaries to limit the scope of the research. This enables an in-depth understanding of a particular phenomenon in its whole complexity (Crowe et. al. 2011, Silverman 2013).

Findings cannot be analysed independently from their particular context. Case studies describe the unique but are representative as part of a whole (Bennett & Shurmer-Smith 2002). This consideration is important using single-case designs because the reliability of the research is affected otherwise. Thus, the context of the Ruhr area is relevant for the object of study and will be considered in the empirical analysis.

Being aware of these limitations, drawing on case study research as well as a partly inductive approach using qualitative methods is the most suitable way to conduct the research for this thesis project. Following these approaches allows to investigate the object of study in its whole complexity from the perspective of individuals who are involved. The investigation takes place within the scope of a predefined case covering different Coworking Spaces in the Ruhr area. Choosing a case, the suggestions of Bennett & Shurmer-Smith (2002) are followed. These place Coworking Spaces in the Ruhr area as a “starting point for further analysis” (p. 203) regarding the enhancement of entrepreneurial activity and new path development through Coworking Spaces.
3.3 Research Methods

The research methods applied in this thesis project comprise semi-structured interviews, participant observation and the inclusion of internet data. This section describes these methods as well as the way in which they were applied.

Semi-structured interviews

Interviews are useful methods for understanding the complex experiences of individuals including differences, contradictions and similarities within and among the different interviews. These individual standpoints combined constitute a bigger picture of how people experience certain issues (Bennett 2002). For this reason, interviews serve the purpose of this thesis project very well.

Doody & Noonan (2013) distinguish three different types of interviews for data collection. Structured interviews contain closed questions with only one answer within a defined area of possible answers to be given. These types of questions are often used to collect quantitative data. Qualitative researchers typically utilise closed questions only for the collection of socio-demographic or other base data. In unstructured interviews, open questions about certain themes are posed to the participant. Following questions are posed in accordance to the participant’s response leading to a flexible interview structure. As both structured and non-structured interview strategies have their advantages and disadvantages, semi-structured interviews build an alternative that draws from both strategies. Semi-structured interviews are among the most common interview forms in qualitative research (Langhurst 2016). In semi-structured interviews, a predefined guideline is used to ensure similarly structured answers from participants in order to make them comparable (similar to structured interviews). Thus, a semi-structured interview goes beyond a conversational chat. At the same time, the interviewer is still able to ask for clarifications or dive into other topics of relevance that arise during the interview which have not been included in the predefined guideline (similar to unstructured interviews).

Semi-structured interviews have a conversational or informal character (Longhurst 2016). Thus, they are suitable for qualitative research that seeks to investigate a phenomenon in its natural environment. No artificial situation is created that might lead to differing answers or behaviours of participants due to an altered environment.

While conducting an interview, there are several aspects that need to be considered. The interviewer should be well prepared with regards to the interview questions and structure in order to not cause any distractions, interruptions or misunderstandings. Furthermore, it is helpful to introduce the participant to the interview structure to ensure a smooth interview (Dooley & Noonan 2013). Also, the researcher should be aware of how she or he interacts with
the person the interview is conducted with. The behaviour of the researcher (e.g. nervousness) can influence the answers of the researched. Additionally, controlling power in an interview is an important aspect to consider. As the researcher and the researched interact, personal differences based on class, gender, age, race or status can influence the course of the interview. The researcher has to be aware of this in order to decrease effects connected to the own person on the answers of the researched (Bennett 2002).

Regarding the interview questions, the order in which they are posed to a participant is very relevant for the eventual results. Langhurst (2016) suggests to put difficult or sensitive question towards the end of an interview. Questions that are easy to answer shall be asked at an early stage of the interview, so the participant will most likely be comfortable and the interview can progress from a starting point of trust and reduced nervousness. Questions for an interview guideline should be thoughtfully developed and carefully selected. De Vaus (2014) cited in McGuirk & O’Neil (2016) suggests to build questions based on four main content types: (1) attributes (socio-demographic data), (2) behaviour (what people do), (3) attitudes (what people think) and (4) beliefs (what people believe is true or false).

Many of the potential difficulties which may occur during an interview raised above result inevitably from research situations where the researcher engages in the object of study. As this is typical for qualitative research, the researcher has to consider all these things when preparing interviews in order to keep a certain degree of objectivity or neutral impact on the researched setting. Along with this, ethical considerations concerning the research project are necessary. Regarding this thesis project, the object of study and the research questions are not overly sensitive or emotional. This eases a research process as it is less likely to be exposed to ethically critical issues.

In essence, semi-structured interviews are a popular method of collecting data in qualitative research. It combines the benefits of structured and unstructured interviews. The researcher is enabled to engage with the object of study by conducting conversational interviews in a natural setting for the researched. However, there are more details that need to be considered conducting interviews successfully.

As part of the research, semi-structured interviews were conducted with start-up related entrepreneurs who are connected to at least one Coworking Space considered in this thesis project. The aim was to understand the way in which entrepreneurial individuals perceive and experience Coworking Spaces. How has it influenced their development? How has social interaction with other individuals in the Coworking Space changed their activities? How were networks enriched working in a Coworking Space? What kind of support forms are appreciated? What other things do they benefit from?
The interview guideline (see Appendix 8.4) was divided into two sections broadly covering the two sub-questions of the research question. The questions were conceptualized based on the four main content types outlined above. Section one aims to find out about details of their background, development, entrepreneurial activities, their motivation or purpose, perceived opportunities and additional circumstances under which they operate. These questions were posed in relation to the activity itself and to the role of a Coworking Space throughout their development. In this section of the interview, details on possible functional relations with local firms, regional demand or adequacy and connections to networks beyond the region were covered to estimate whether the activities possibly contribute to a form of new path development.

In the second section, the concept of Coworking as a form of work organisation and the support offered by Coworking Spaces were covered in more detail. The forms of support provided by Coworking Spaces were divided into four main elements: Non-financial support (consultancy service, workshops, legal advice etc. – support based on the provision of information), Community (personal relationships and contacts), Network/Events (business contacts, networking events) and Financial Support (support to find investors, mostly indirect support). Participants were asked to report about these categories in detail to identify relevant themes in connection to the elements. Subsequently, they were asked to put the elements in an order from most to least important. This was done because the interview partner would reflect on all aspects covered in the interview (including section one) again and eventually add something that has not been mentioned before. Also, this kind of question at the end sums up the interview properly and understandably for the participant. However, this type of question poses a certain risk as answers might be limited to the suggested elements. Thus, the whole interview rather than just this one section was considered during the analysis and identification of relevant themes in Coworking contexts. Also, participants were asked whether there was anything they would like to add or have not mentioned yet to make sure all relevant information is included.

In total, nine semi-structured interviews were conducted following this guideline. Interviews lasted for approximately 20-40 minutes depending on the amount of detail and additional information provided by participants. Most interviews were conducted by telephone. This was mainly due to practical reasons including the limited timeframe of this thesis project and the decentralized structure of the Ruhr area. Also, conducting telephone interviews ensures a natural environment for participants as no artificial interview situation is created. By not creating an artificial environment for participants, reliability of the research is increased as the risk of differing responses of participants due to the interview set-up is decreased (Silverman 2013). Two interviews were conducted with Coworkers in face-to-face situations in one of the Coworking Spaces in Essen, which still kept the interview partners in a familiar and natural
environment to them. Start-up firms were selected based on different criteria. The aim was to include a broad range of Coworking Spaces across the region. Thus, the target of covering start-up firms with a connection to different Coworking Spaces was followed. Including a broader range of Coworking settings was to increase the validity of the research. Regarding the validity of the research, participant observations were conducted as an additional method. Details on this are included in the next section.

The way in which findings from the semi-structured interviews were processed and analysed will be outlined in the last section of this chapter.

**Participant Observation**

Observation is a popular method applied in qualitative social research. This has been conducted in order to understand how individual perceptions might differ from observable practices. Observation can be divided into non-participant and participant observation. The former applies for situations where the researcher observes social or cultural settings from a distance without interacting. Participant observation is about getting involved and actively participating in particular settings. A distinction between the two is sometimes difficult to draw which is why no clear distinction will be drawn in this thesis project. Participant observation imposes the researcher to the risk of losing their objectivity while non-participant observation ensures objectivity to a higher degree. On the other side, active participation enables the researcher to understand processes, norms, values, practices and reasoning of the researched in their whole complexity and in the context of their constructed realities (Laurier 2016).

Observation is a form of informal engagement with a group of people or environment to be studied. This way the researcher can find out about certain ways of thinking, personal background or the motivation of people to do the things they do. It helps to understand what things and why certain things matter to them and how they go about such things.

Participant observation is a suitable method that complements interviews. By observing social actors in a Coworking context, particularly attention was payed to elements covered in the interview guideline. Observation might lead to further insights into interaction among Coworkers and the Coworking Space which might not be directly articulated in interviews. Also, observation might identify other interesting or important aspects to study which have not been considered initially in this thesis project and thus not included in the interview guideline.

Participant observation was conducted by working on this thesis project in two different Coworking Spaces in the Ruhr area. Observation results will be added to the section of the next chapter which illustrates the Coworking environment of the Ruhr area. Participant observation notes can be found in the appendices (8.3).
Internet Data

Regarding the Coworking environment of the Ruhr area, internet data was collected to sketch out relevant actors and their role in providing Coworking opportunities. This included communication via e-mail with a Coworking actor (see Bryman 2016) (included in observation notes as respective information is not openly available). The collection of internet data has proven highly useful in this context. This is the case because relevant actors and Coworking Spaces hosted by them are not necessarily accessible to the general public. References to internet research can be found in the appendices (8.2).

3.4 Organisation and analysis of empirical data

This section is concerned with the approach used for data analysis, including the way in which data is organized and processed in order to analyse it.

Between data collection and analysis, there is a significant step to be made: data organisation. Proper data organization is important for guaranteeing the accurateness of research results. There are several options for organising qualitative data before analysis (Mayring 2002). Each interview conducted represents a constructed reality based on the individual perception of interview partners. The well-defined interview guideline for semi-structured interviews which already contains basic abstract categories for data collection, the number of interviews conducted and the limited timeframe of this thesis project need to be taken into account when selecting a way of data organization. Summarizing protocols has emerged as a suitable option for data organisation (Mayring 2002). The thematic content of interviews is more important for the research conducted than the exact words of each participant. This is further enhanced as interviews were conducted in German in order to ensure participants articulate exactly what they think and do not encounter any language difficulties but feel comfortable speaking. As this requires translation into English, the exact words of the participant become even less significant while keeping the meaning of the words needs to be ensured. This is a key focus when the interview material is processed and turned into a summarizing protocol. Based on summarizing protocols, a thematic analysis of the interview material is an adequate way of analysing the collected data (Bryman 2016).

The process of creating a summarizing protocol which is suitable for thematic analysis includes the identification of themes through reduction, selection, construction and integration of the given material. The summarizing protocol contains the interview content in a generalized, abstract form (Mayring 2002, Bryman 2016). From this point on, relevant categories for the object of study can be derived from all interviews conducted. These can be interpreted and analysed considering patterns, relationships, frequencies of certain issues or other relevant aspects about the object of study and its context (Bryman 2016).
In this thesis project, a well-defined interview guideline was created in a table format. Each row represents one theme and each field a related question. Recordings of the interviews were utilized to fill the respective fields of the table with relevant details on the respective question. Additional relevant themes and issues mentioned were added to fields for “other details”. This first step ensures that all relevant details are included in the analysis. In step two, an extra column was added to the table to summarize each row by reducing and abstracting its content. Summarizing protocols were written based on the summarizing column. To analyse the data, an additional table was created. In this table, each row represents one interview while each column represents one theme identified in step two. Details from the summarizing protocol were reduced to the main points and posted into the matrix. As this matrix shows each participant’s perception of themes and issues next to each other, the interview material can be easily compared, counted and analysed. It should be noted that the material in each column of the matrix cannot entirely be regarded as mutually exclusive as same aspects and themes appear in multiple columns. The matrix entails reduced content which could be counted in order to identify frequent themes. The matrix can be found in the appendices (8.5). Additionally, content of the summarizing protocol was considered and added to the empirical analysis as well to ensure a complete picture of the results and to be able to highlight patterns and particularities of the participant’s responses.

The results from participant observation were gathered in the form of notes (Appendix 8.3). Impressions and spontaneous events occurring in different Coworking Spaces were included. These will be added to the empirical findings in the next chapter.

It has to be noted that there are limitations to this research and consequently the research results. Semi-structured interviews and other methods applied will not cover every and any perspective on every and any Coworking Space given in the Ruhr area. Being aware of this limitation, results should be handled in context. Additionally, details on Coworking Spaces in the Ruhr area including the ones covered in this thesis project can be found in the appendices (8.2).
4. Empirical Analysis

This chapter entails the empirical findings based on fieldwork conducted using the methods outlined above. Chapter 4.1 gives an overview of the Ruhr area as a study context based on background research from academic literature, internet data and participant observation. References to observations (obs.) refer to Appendix 8.3. Chapter 4.2 synthesises and analyses the findings including those based on semi-structured interviews following the research question(s).

4.1 The Coworking environment and the context of the Ruhr area

Coworking Spaces and the way in which they enable entrepreneurial individuals are investigated in the spatial setting of the Ruhr area, Germany. In order to be able to understand this object of study in its whole complexity, the context of the Ruhr area is of critical importance.

The Ruhr area is located in the west of Germany, in the federal state of North Rhine-Westphalia. It is the largest urban agglomeration in Europe, containing more than 50 cities (Heidenreich 2015). The economy of the Ruhr area used to be dominated by coal and steel industries from the mid-1800s on. These industries employed almost half a million people at their peak in the 1950s. However, due to several factors coal and steel production declined in recent decades. This resulted in enormous unemployment rates and the deprivation of the region. Governmental subsidies supported the heavy industry over a long period of time in order to ensure a controlled decline and closure of mines and factories (Raines 2011). The last mine in the Ruhr area was closed down in 2018.

Several attempts of revitalising the economy and introducing new industries to the Ruhr area were made resulting in the establishment of universities, research institutions and firms in environmental and renewable energy technology, recycling and waste combustion (Coenen et. al. 2018). Firms operating in industrial or energy related sectors are still dominant in the economic structure of the Ruhr area (Heidenreich 2015).

Apart from economic restructuring, conservation of the old industrial heritage, became a key issue in the Ruhr area. A number of industrial monuments such as mines or industrial buildings have been protected as historic preservation sites and were put into other uses. For example, Zeche Zollverein in Essen, a UNESCO world cultural heritage site, was turned into a museum exhibiting showpieces of the region’s history and is a popular site for cultural events. Additionally, many other activities are hosted on its site (Raines 2011). Until today, Zeche Zollverein is constantly developed further and can be regarded as an identification figure of the Ruhr area. These examples are an indication for the ongoing identification of the population with their industrial heritage. At the same time, the actual economic structure of the Ruhr area
has transformed significantly, even though this happened partly in existing industries. It has been argued that the Ruhr area has transformed into a service-based, culturally diverse, polycentric urban agglomeration. However, high rates of unemployment, poverty, population shrinkage and high municipal debts bear witness to the challenges that are prevailing until today (Heidenreich 2015).

These challenges need to be kept in mind when attempting to understand the role of Coworking Spaces in the Ruhr area. Besides the prevailing macroeconomic challenges, the structure of key actors is to be considered.

Sketching out the Coworking environment of the Ruhr area, three major actors were identified. First, numerous established firms in industrial and energy related sectors engage in Coworking by providing Accelerator Spaces and Programmes mostly targeted at start-up firms in fields relevant to their business (e.g. Innogy SE – Innovation Hub, E. ON SE – E.ON: agile). This includes firm internal Coworking Spaces as well (e.g. Franz Haniel & Cie. GmbH – Schacht One). However, firm-related Coworking Spaces might be open for internal as well as external start-up firms, depending on the individual case. Besides these individual initiatives collaborative approaches across firms can be found as well. For example, Gründerallianz Ruhr (= “Founders’ Alliance Ruhr”) is an initiative of several established firms and funds which aims to establish the Ruhr area as an attractive place for start-up firms and entrepreneurs. A number of these Coworking Spaces are located on the site of Zeche Zollverein in Essen. As the second key actor, the federal state government opened eight “Digital Hubs” across regions in North Rhine-Westphalia as part of an initiative to strengthen the digital economy in the federal state. This initiative also includes a Coworking Space in the Ruhr area (Ruhr:Hub). The economic development department of the Ruhr metropolitan area and the economic development departments of the city councils take part as partners in this undertaking. The aim of the Coworking Space is to strengthen mostly small and medium sized enterprises by matching digital start-up firms to established firms and leverage the potential of their business models. The Coworking Space is open to everyone while only digital start-ups receive this kind of support as well as office space at a reduced rate. The focus is on the provision of B2B solutions (obs., Boldt 2017). As the third pillar, Coworking Spaces across the Ruhr area also result from private initiative. Various examples with a variety of forms for this can be found. Private initiatives receive attention from other actors such as economic development departments as well (obs.). Compared to the other actors, private initiatives are not overly dominant but they are present in the Coworking environment. A detailed overview of the most relevant Coworking Spaces across the Ruhr area can be found in the appendices (8.2). It has to be noted that the usage of office space is not necessarily a condition for being part of a Coworking Space. Conditions for receiving support might also be based on personal relationships in some cases.
Also, entrepreneurial individuals may be part of multiple Coworking Spaces underlining the flexibility of the underlying model of work organisation.

Considering their strong engagement, established firms in the Ruhr area comprise a major driver for (internal and external) start-up formation, innovation and entrepreneurship in the region. Support offers are accessible for selected start-up firms in related fields which participate in the respective accelerator programmes. Conditions to participate in an accelerator programme might vary. Start-up firms benefit from the support of mentors, they are allowed to use the office space and they can meet valuable contacts. According to the economic development department of the Ruhr metropolitan area, the regional focus of innovation and entrepreneurship is on B2B centred start-up firms (Boltd 2017). This strategy mainly influences how start-up firms are supported by the governmental Coworking Space. Privately initiated Coworking Spaces might rather focus on a particular target group in respect to products and sectors. However, often this is not exclusively the case as they are typically open to everyone.

The actors mentioned follow different purposes with their Coworking Spaces. This influences the activities of entrepreneurial individuals inside Coworking Spaces as well as the way in which entrepreneurial individuals interact with each other and build personal relationships (obs.). These conditions or existing structures in the Coworking environment shape the way in which entrepreneurial action unfolds.

4.2 Empirical findings

Nine semi-structured interviews were conducted with start-up related entrepreneurial individuals to understand how Coworking Spaces enabled them to potentially initiate new development paths in the Ruhr area. For more consistent representation of the findings, the section was divided into two parts, each focusing on one of the respective sub-research questions of this thesis project. Part 1 focusses on the background of participants and how Coworking Spaces influenced the development of the participant’s activity. This includes perceptions of different elements provided in Coworking Spaces such as non-financial support, community, network / events as well as financial support (as predefined in the interview guideline) as along with possible further motives and perceived opportunities. In part 2, the kinds of activities pursued and how these potentially contribute to new path development are outlined and analysed. The respective sub-research question will be assessed at the end of each section. The last section links the findings of the previous sections to assess the central research question: How do Coworking Spaces enable entrepreneurial individuals in contributing to new path development? References refer to the interview number as given in the respective summarizing protocol (see Appendix 8.1).
Part 1: How do Coworking Spaces influence the development of entrepreneurial individuals/new ventures?

Regarding the motivation of participants to create a start-up firm, intrinsic motives were identified as most relevant. Interview partners named independence and self-fulfilment as relevant aspects for becoming an entrepreneur most frequently (1, 2, 3, 4, 8, 9). Two of them claimed they followed several business ideas before they engaged in their current activity (8, 9). Some of the activities are based on identified opportunities or customer demand from personal experience in a previous job (6, 9). Another vantage point of innovative activities stated in the interviews are internal innovation projects in established firms (4, 7).

Some participants met their co-founders in a Coworking related context (2, 7). The remaining participants met co-founders in other, mostly personal contexts (e.g. university or school). Considering the locational choice, participants chose the Ruhr area as a place to study a (higher) university degree (1, 2, 4, 5, 6) and moved there from outside the region (1, 2, 5). The role of universities for entrepreneurial individuals will be further discussed in the subsequent chapter. Those who have moved to the Ruhr area from outside also have the advantage of additional networks outside the region. Those who lived there for a longer period time claimed personal attachment mostly based on friendships, family or networks to be a reason to stay in the Ruhr area (1, 4, 5, 6, 7). Also, the provision of special infrastructure is an important aspect for one of the interview partners to commute occasionally (3). Finding suitable employees for their activities was an aspect mentioned in relation to splitting operations over multiple locations, beyond the Ruhr area (6, 7).

These perceptions of the participants point towards a conclusion that entrepreneurial activity in not necessarily motivated or initiated in a Coworking context but mostly results from intrinsic motives and personal relationships among founders. Thus, entrepreneurial characteristics of individuals seem to play a role for becoming an entrepreneur. This is because participants identified opportunities and mobilized resources to pursue their activities.

Despite not being the primary cause for entrepreneurial activity, Coworking Spaces played different roles for the development of participants and their activities. Seven out of nine claimed they received support from a Coworking Space in different forms in the initial phase of the start-up firm. For the remaining two (1, 6), Coworking Spaces became relevant later on in their development. Four participants are currently working fulltime in a Coworking Space (2, 5, 7, 8).

Participants were asked to rate the main elements of Coworking, as covered in the interview guideline, from most to least important for their own development. The results are illustrated in Figure 1. Rating multiple elements equally was allowed. As most important, community (3,
4, 5, 6, 7, 9) and network (2, 3, 4) was named. Often this was commented with networks turning into a community over time. Thus, the two elements cannot be clearly distinguished as the transition between the two is a continuous process. Non-financial support was named once in connection to a mentor programme (8) while other participants criticized the quality of such mentor programmes (7). Accordingly, financial support was named as least important followed by non-financial support. As an explanation, all of them state that non-financial support can easily be substituted with independent research based on literature or related content found on the internet (3, 6, 9). Non-financial support offers are often perceived as a confirmation of what is already known. Also, universities in the Ruhr area offer courses on respective topics (2, 5). Regarding financial support, governmental funding sources (1, 2, 5, 8), revenues from consultancy services related to start-up activities (3, 6) and a private investor (1) were named. However, financing was often not perceived as significant in early development stages. Additionally, participants criticized the lack of private investors in the Ruhr area (2, 7). Financing for internal start-ups is usually given through the firm’s budget (4, 7).

![Perceived importance of main elements of Coworking](Image)

**Figure 1: Perceived importance of main elements of Coworking by participants**

To provide further detail on the elements of Coworking and identify additional aspects of Coworking, participants were asked to give account of their motives for engaging in Coworking and their perceived opportunities in doing so. Some aspects overlap as access to networks and communities are motives as well as opportunities while not every opportunity is necessarily a motive as well.

To quote one of the participants: “Hardly any start-up firm joins a Coworking Space to actually work there but for the access it provides to their networks of potential collaborators or clients” (8, quote translated by the researcher). Networking activities play a central role to all participants, including those who got in touch with Coworking Spaces in later stages of their
development. Most state that meeting potential clients, the opportunity to introduce or present themselves and meeting new business contacts is most relevant for the network aspect of Coworking. Six interview partners stated to use Coworking Spaces to access networks either officially provided by the Coworking Space itself or by individuals in the Coworking Space (1, 3, 5, 6, 8, 9). This indicates that every actor involved in Coworking comprises a resource to others. Networking activities allow entrepreneurial individuals to make themselves known within a wider community (1, 2, 3, 5, 6, 9). This aspect seems to be especially relevant to single entrepreneurs (1, 3). Also, knowledge exchange is claimed to be relevant in Coworking. Other aspects considered relevant are the provision of office space and the Coworking community (four answers each).

Following this, seven participants named personal relationships with other individuals in the Coworking Space as significant for their personal and/or business development. All of these also claimed to be connected to at least one Coworking Space from the beginning of their development. One of the participants noted: “being surrounded by the same group of people over a longer period of time is an important condition for building personal relationships, friendships and a functioning Coworking community” (9, quote translated by the researcher). This quote strengthens the argument suggested above. As personal relationships are only named as important for start-up firms which utilized a Coworking Space from the beginning, building these personal relationships was possibly enabled by co-location over time. However, considering how networks potentially turn into communities illustrates how a community does not naturally emerge over time but has to be enhanced actively through regular social or networking occasions. The remaining participants engaged in Coworking later on in their development to benefit from its network (1, 6). Others are even connected to several Coworking Spaces to access different networks (3, 5, 8, 9).

These aspects are mostly based on social interaction and facilitated by effective communication. On the one hand, participants perceive the presence of like-minded people in a Coworking context as positive. Three of them claimed like-mindedness to be the key for communication (2, 3, 9). Knowledge exchange with other entrepreneurial individuals often leads to learning processes. This kind of learning is regarded as an opportunity of Coworking, participants claim (2, 4, 9). Also, knowledge exchange is a source of opportunity regarding jobs offers or other kinds of relevant information (2, 3, 9). On the other hand, participants assert that knowledge exchange mainly took place with established firms rather than other start-up firms either through personal networks or through the network of the Coworking Space (4, 6, 7, 8). This implies that not only similarities on a cognitive level but also similarities regarding activities themselves can be a basis for social interaction and finally knowledge exchange.
In accordance with this implication, interacting with a community beyond the own start-up firm is claimed to be beneficial to five interview partners for the reasons named above. Most of them interact for both personal and business-related purposes. Other participants assert to be more open for building personal relationships in Coworking Spaces rather than business related ones as they do not perceive exchange with non-related start-up firms as beneficial for their activities (6, 8). These examples comprise two out of four participants who rely on their internal network or personal network stemming from before they started their activities. Among them are also internal start-up projects of established firms. However, internal start-up firms state to interact with a wider community outside the firm structure as well.

Motives for not using Coworking Spaces as a fulltime workplace comprise locational independence (6, 8), a distractive work environment and received support from other sources including their own effort (3,1).

Furthermore, there are two other ways in which Coworking Spaces played a role in the development of start-up firms. This includes the provision of special infrastructure (e.g. workshop for hardware development, support infrastructure for social entrepreneurship: 9, 3, 5) and the reduction of personal risk (2). The latter aspect was mentioned in connection to participation in an accelerator programme combined with governmental funding to cover living expenses. The combination of these support forms enables founders to focus on their activity, develop ideas and experiment for a certain period of time with reduced obligations and not having to invest much of their own capital. Risk reduction can be regarded as an indirect support form offered by Coworking Spaces.

Moreover, Coworking Spaces are regarded as representative and innovative spaces (4, 9). Thus, they can be useful for meeting with clients or attracting employees. Also, they provide a different and possibly more innovative environment in comparison to regular offices (4). Moreover, Coworking Spaces are often used to attend or host events (3, 6).

Frequently mentioned themes within the elements of Coworking Spaces are summarized in Table 1. Networks and communities are based on social interaction and named most frequently while non-financial support is not very dominant in the interviews. Financial support is not a frequent theme either. Apart from that, the provision of an attractive office or event space, special infrastructure and reduction of personal risk as well as security are relevant themes mentioned by participants.
Table 1: Identified themes relevant for Coworking Spaces (based on semi-structured interviews)

<table>
<thead>
<tr>
<th>Network / Events</th>
<th>Community</th>
<th>Non-Financial Support</th>
<th>Financial Support</th>
<th>Other themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to clients</td>
<td>Personal relationships</td>
<td>Realization through independent research</td>
<td>Government support</td>
<td>Security and risk reduction</td>
</tr>
<tr>
<td>Marketing platform</td>
<td>Knowledge Exchange</td>
<td>Mentors</td>
<td>Consultancy service</td>
<td>Special infrastructure</td>
</tr>
<tr>
<td>Business contacts</td>
<td>Learning</td>
<td>Established firm (internal)</td>
<td>Physical environment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Like-mindedness</td>
<td>Private investors</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Linking these considerations to the research question of this section, Coworking Spaces influence the development of entrepreneurial individuals/new ventures by providing a platform of interaction for personal as well as business related contacts. As networks might turn into communities over time, one could argue that the line between the two is rather blurry. Also, it has to be noted that participants do not necessarily talk about the same thing when referring to community. Despite these issues, both elements are based on social interaction and are regarded as beneficial for the development of new ventures in some way. These interactions may emerge between a variety of individual actors involved in Coworking (personal and/or business related). As other support forms are not perceived as similarly important, the prevailing role of Coworking Spaces as platforms of interaction becomes clear. Additionally, entrepreneurial characteristics of individuals seem to play a role in this context.

These results are to be regarded independently from the purposes or the initiators of Coworking Spaces even though these two aspects influence how different support forms are provided. This might have implications for the way in which entrepreneurial activities contribute to new path development. Consequently, this links up to the next section.

**Part 2: How do entrepreneurial activities happening inside Coworking Spaces initiate new path development?**

This section illustrates the way in which activities of start-up related entrepreneurs in Coworking Spaces potentially contribute to developing new paths. First, the types of new path development as observed among participants in the Ruhr area are to be examined. Then, the way in which these activities are functionally related to existing structures, their regional demand and how networks outside the region can be accessed will be considered to show how development paths might emerge in the future in relation to Coworking Spaces. Lastly, the overall research question will be assessed in the subsequent section.
The interview number of each participant, their activity and a possible path development type relevant in Coworking contexts (upgrading, diversification or creation) are provided as an overview in Table 2. Development types as suggested, are not to be regarded as predefined but point towards a possible future development.

Table 2: Overview of possible path developments

<table>
<thead>
<tr>
<th>Nr.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity</td>
<td>Production and sales</td>
<td>Technology development</td>
<td>Social Entrepreneurship</td>
<td>Internal innovation project</td>
<td>Social Entrepreneurship</td>
<td>Process efficiency/digitization</td>
<td>Internal innovation project</td>
<td>Platform Development</td>
<td>Process efficiency/digitization</td>
</tr>
<tr>
<td>Path</td>
<td>Continuation</td>
<td>Diversification</td>
<td>Creation</td>
<td>Upgrading</td>
<td>Creation</td>
<td>Upgrading</td>
<td>Diversification</td>
<td>Diversification</td>
<td>Upgrading</td>
</tr>
</tbody>
</table>

Participant 1 does not initiate a new development path as the respective activity is part of an existing industry. Participant 2 diversifies existing industries by introducing a new technology from another industry. Participant 3 and 5 engage in social entrepreneurship which could become a new industry of significance in the Ruhr area. Further details on that will be outlined below. Participant 4 is part of an internal innovation project which aims to digitize core processes of an established industry. Thus, it is an example of upgrading an existing development path. This is also the case for participants 6 and 9 as both engage in activities that aim to digitize business process, increasing efficiency in existing industries. Participant 7 used to be an internal start-up firm which became independent and diversifies an existing industry in the Ruhr area and beyond by offering an alternative solution, moving into another industry. Participant 8 also diversifies by adding an alternative sales platform to an existing industry, moving into another industry. A majority of activities referred to are not available on the market yet or are at an early development stage. Thus, suggested path development types are to be handled in context and with consideration of their current state. Industries covered by participants mostly comprise energy, electric mobility, logistics and manufacturing. To ensure anonymity of participants, they are not identified by their respective industries.

Participants 4, 6 and 9 offer B2B solutions upgrading existing development paths. Attempts of path diversification could be observed for participants 2, 7 and 8 while participants 3 and 5 are potentially involved in path creation while participant 1 does not contribute to a new path. Additionally, a majority of participants is connected to firm-related Accelerator Spaces in the Ruhr area (2, 6, 8, 9). This includes participants who are additionally connected to governmental Coworking Spaces outside the Ruhr area (8, 9). Also, participants stand in connection to Coworking Spaces for social entrepreneurship (3, 5), firm-internal Coworking Spaces (4, 7) or the governmental Coworking Space in the Ruhr area (1, 6). Additionally, some participants are connected to privately initiated Coworking Spaces in the Ruhr area (3, 5, 6).
This does not allow for the conclusion that a certain path development type does inevitably result from certain Coworking Spaces. Firm-related Accelerator Spaces host activities that are relevant to diversification (2, 8) or upgrading (6, 9) existing paths. Also, internal start-up firms do not necessarily contribute to path upgrading only (7), but might also diversify a path. The governmental Coworking Space in the Ruhr area hosts participants contributing to path upgrading based on the regional B2B focus (6). As such Coworking Spaces outside the region do not follow the same focus, they host participants potentially contributing to other development types. The respective participants are connected to Accelerator Spaces in the Ruhr area. Potential paths include diversification (8) and upgrading (9). Coworking Spaces focusing on social entrepreneurship potentially contribute the path creation. Among them are Coworking Spaces from private initiators and established firms with multiple (regional) partners. Thus, there are particular Coworking Spaces, the governmental one and the ones focusing on social entrepreneurship, which seem to foster activities contributing to particular development paths in a more direct manner than others.

A schematic overview regarding the intensity to which participants used different Coworking Spaces in the Ruhr area and the type of development path they potentially contribute to is given in Figure 2. The intensity of Coworking Space usage is based on the degree to which their development was influenced by them, assessed subjectively.

Figure 2: Schematic overview of Coworking Space usage of participants and possible path development types
Given these considerations, the purpose and the initiator of Coworking Spaces seem to be relevant for the kind of activities happening inside and thus the development paths which might emerge. As some Coworking Spaces focus on particular entrepreneurial activities (e.g. B2B start-up firms, start-up activities related to established firm activities, social or digital start-up firms), they select and accumulate related activities according to this focus. This might include a wider or a narrower range of activities depending on the individual case. Further discussion on this are found in the next chapter.

Accordingly, participant 1 can be regarded as more or less independent from Coworking Spaces as their development was hardly influenced by them. As participant 1 contributes to the continuation of an existing path, the role of Coworking Spaces in selecting and accumulating related and relevant activities for new path development appears more probable.

New path development processes are sustained and legitimized in the future when multiple, functionally related firms and support organisations are established. This includes complementing, supporting, demanding or similar firms and organisation. A regional demand or market as well as access to networks and input factors outside the region are prerequisites, too.

A functional relatedness among start-up firms, established firms and organisations inside but also outside the region exists in various forms. Most participants report a functional relation to clients of their product (3, 6, 7, 8, 9). This applies for start-up firms providing B2B solutions to established firms and organisations. Furthermore, participants are functionally related to established firms in the region based on similar or related activities (2, 6, 8, 9). This includes start-up firms with a connection to firm-related Coworking Spaces. Others were not able to find suitable collaborators and thus split their operations in order develop their start-up in collaboration with related firms elsewhere (7). Another way in which a functional relation among start-up firms and established firms can emerge is when the start-up was created following internal innovation efforts (4). Also, regarding start-up firms in development and sales of products, functional relatedness to other firms might be given through producers or retailers (1, 5).

Coworking Spaces enhance functional relations among their involved actors as well because they build a supporting organisation to start-up firms, depending on their purpose. Participants got in touch with established firms to find support developing their activities due to efforts of Coworking Spaces (2, 8). Also, governmental Coworking Spaces play a role in matching start-up firms to potential clients through their network (1, 6, 8, 9). Being part of a firm-related Accelerator Space or an internal Coworking Space by definition implies a certain relatedness between activities of start-up firms and the established firm (2, 6, 8, 9). Thus, efforts which aim to support entrepreneurial activities and start-up creation, including Coworking Spaces, can be
regarded as functionally related to those start-up firms. Accordingly, Coworking Spaces and other support infrastructure dedicated to social entrepreneurship are functionally related to activities of social entrepreneurs (3, 5). Other privately initiated Coworking Spaces seem to play a more significant role in providing a platform of interaction rather than enhancing functional relations based on similar or related activities. This is because they are often not specialized on certain entrepreneurial activities and lack the benefits of such a focus. However, they do not appear in great numbers compared to other actors in the Coworking environment. In relation to that, functional relatedness is enhanced by selection and accumulation processes initiated by Coworking Spaces.

The demand for products and services offered by all participants originates primarily from the Ruhr area but potentially reaches beyond it. However, as many start-up firms have not entered the market yet or face a low technology penetration, actual demand and future development is unclear (2, 5, 7). Apart from that, participants already serve regional clients (1, 9). Also, functional relatedness as defined in this thesis project, implies that potential clients exist in the vicinity or elsewhere.

Regarding access to networks and input factors outside the region, participants state that this access was provided to them by at least one Coworking Space (3, 4, 5, 8, 9). Coworking Spaces for social entrepreneurship are part of wider networks for social enterprises and participants benefit from these networks (5). Participants also claim they access networks and input factors through multiple locations (4, 6, 7). This interestingly also holds true for internal start-up firms. Alternatively, networks and input factors can be accessed through personal networks which emerged before they engaged in their start-up activity (2, 5, 6, 9) or through their own effort (1).

Following these considerations, social entrepreneurship might turn into a development path as several relevant Coworking Spaces and support infrastructure can be found in the Ruhr area. Support infrastructure includes an accelerator programme and a very active entrepreneurial community (3, 5). A participant reports to commute occasionally from outside to benefit from the support offered in the Ruhr area (3). Thus, as support infrastructure is already provided and a number of social enterprises exist, the networks of Coworking Spaces evidently reach beyond the region and they receive attention from other actors in the Ruhr area such as economic development departments (see 4.1). Social entrepreneurship as a new development path for the Ruhr area will be a focus in the next chapter.

This section has illustrated possible development paths in the Ruhr area based on the activities of participants enhanced through Coworking Spaces. Among them were path upgrading, diversification and creation. Furthermore, functional relations among Coworking Spaces, start-up firms and established firms are given based on demand, support, complementation or the
pursuit of similar activities. This applies for the region but also goes beyond the region as networks and input factors outside the region can be accessed based on efforts of Coworking Spaces, established firms, multiple locations or personal efforts and networks of entrepreneurial individuals. The products and services of participants are in demand within the Ruhr area. This demand however is potentially not limited to the region but might expand even nationally or globally. These considerations need to be handled with regards to the early development stages of activities pursued by participants.

The purpose and the initiators of Coworking Spaces can be regarded as potentially relevant for the way entrepreneurial activities might contribute to new development paths. This is because these aspects influence the way in which entrepreneurial activities are selected and accumulated in a region. Coworking Spaces might focus on industries already existing in the region, contributing to upgrading existing paths. Also, actors in existing industries might diversify development paths by moving into new industries with the support of Coworking Spaces selecting and accumulating respective activities to do so. Coworking Spaces specialized on non-existing industries in a region potentially contribute to path creation. This implies that new path development might be further enhanced by Coworking Spaces. However, a Coworking Space itself is not the only relevant factor contributing to new development paths. Start-up firms and new ventures need to match the purpose or the specialization of the Coworking Space in order to benefit from its support. The initiating actor is thus relevant as they set the respective entry barriers for entrepreneurial individuals. Apart from that, results emphasized how personal efforts of entrepreneurial individuals can complement or even partly substitute efforts of Coworking Spaces. This points towards the relevance of entrepreneurial abilities and characteristics of individuals to contribute to new path development and represents a strong link to the first section of 4.2.

Overall, a certain purpose or specialization in Coworking must be given in order to select and accumulate relevant activities to contribute to new development paths. Besides, support from Coworking Spaces potentially becomes more effective when entrepreneurial individuals entail certain abilities or characteristics to contribute with their own effort. The attraction of individuals with said characteristics and abilities might even be the key component in shaping the success of Coworking Spaces with regards to path development.

**Research Question: How do Coworking Spaces enable entrepreneurial individuals to contribute to new path development?**

Coworking Spaces, independently from their purpose and initiator, provide entrepreneurial individuals with access to platforms of interaction. These platforms of interaction are claimed to be vital for the development of start-up firms and new ventures in the future rather than non-
financial or financial support. They enable individuals to access networks and input factors even beyond the region of focus. Interactions may take place among a variety of different involved actors (e.g. firms, mentors, freelancers, entrepreneurs, employees of Coworking Spaces etc.). The relevance of these interactions might increase based on two different aspects. The relatedness of respective entrepreneurial activities on the one hand or like-mindedness of entrepreneurial individuals on the other as well as a mix of both.

The way in which entrepreneurial activities, start-up firms and new ventures inside Coworking Spaces contribute to new path development is related to and dependent on the purpose and the initiator of the respective Coworking Space. This is because Coworking Spaces following a certain purpose select and accumulate entrepreneurial activities according to these purposes. In accordance, social entrepreneurship was identified as a potentially new path to be created by accumulating social enterprises and respective support infrastructure. The accumulation of related activities and support infrastructure increases functional relatedness among different regional actors while networks and input factors outside the region can be accessed based on the networks/capacities of involved actors in a Coworking context. These conditions of functional relatedness and the usage of extended networks contribute to sustaining and legitimizing new development paths. This relationship however is unclear for Coworking Spaces that lack a clear purpose and focus. Their role in new path development therefore cannot be assumed to be a major one.
5. Discussion

This chapter discusses the most significant findings of the conducted field research outlined in the previous chapter. The role of Coworking Spaces as platforms of interaction will be discussed with a particular focus on the meaning of Coworking Spaces as office spaces in relation to the significance of social interaction over other support forms provided. In this context, the role of Coworking Spaces following a certain purpose or specialisation will be discussed in relation to new path development. In the subsequent section, social entrepreneurship as a concrete potential new development path in the Ruhr area will be discussed. Lastly, implications for the impact and role of Coworking Spaces following the findings of this thesis project will be outlined.

Coworking Spaces as platforms of interaction

Coworking Spaces can be conceptualized as fields of creative forces characterized by social interaction, knowledge production and effective communication which all stimulates innovation. Even though the potential role of Coworking Spaces as social structures of innovation offering non-financial support and financial support was illustrated in theory, actual perceptions of entrepreneurial individuals in the Ruhr area differed.

New ventures are always facing high risk and uncertainty at early development stages (Lawton Smith 2018). Financial support in this high-risk phase was often found by participants through sources other than Coworking Spaces. However, financial support was often not the main concern during early development stages. As suggested by a participant, security in ways other than classic investment can be provided by Coworking Spaces as start-up firms often lack the capacities to create such an environment themselves. A space for idea development, experimentation and failure is provided. As this can be provided free of charge (e.g. in an accelerator programme), it reduces financial risk. This consideration implies that the availability of office space, a sufficient amount of time and well-placed advice could potentially reduce personal risks for entrepreneurial individuals in early development phases. Taking this aspect further, special infrastructure provided by Coworking Spaces including workshops for building models or prototypes of products can be a valuable asset during early development as suggested by other participants.

Regarding non-financial support forms based on the provision of relevant information, participants claimed that such services could easily be substituted by independent research. Alternatively, such support forms were provided from other sources than Coworking Spaces. Independent research heavily relies on relevant information available on the internet in this case. One could argue that the availability of relevant information possibly increased since the utilized literature on social structures of innovation (Scott 2006, Kenney & Florida 1988) was
published. Despite the increase of available information, the ability to gather relevant information by oneself can only be done by mobilizing certain resources. The ability of doing so is regarded as a central entrepreneurial characteristic (Feldman & Storper 2018). Thus, the role of Coworking Spaces in providing such forms of non-financial support is questionable, especially in times where information is openly available. As emphasized in the previous chapter, personal resources and capabilities of entrepreneurial individuals play just a similar role for the development of start-up firms as the various kinds of interaction enabled by Coworking Spaces. In cases of fully capable entrepreneurs the question arises whether additional non-financial support is an adequate mean at all in this context. This argument is also strengthened by a participant who criticizes the quality of support offered by “so-called mentors” in Coworking related context, thus negating the meaning of non-financial support in their case (7).

Social interaction was identified as the most important aspect in Coworking for the development of start-up firms and new ventures. Social interaction among creative, entrepreneurial individuals forms the basis for relevant themes of Coworking identified during the research process. Among them are networking activities and building a community. Entrepreneurial individuals rely on access to platforms of interaction with peers, suppliers, clients or investors (Scott 2006). As these platforms are provided by Coworking Spaces, new knowledge is produced by interacting actors in Coworking Spaces. By combining existing knowledge in new ways or linking own knowledge to external sources, new knowledge is generated and innovation is stimulated (Asheim & Gertler 2005). The empirical results emphasize that a platform of interaction does not only provide access to knowledge but potentially also to wider networks or communities. Therefore, any actor involved in the platform of interaction is considered a resource to other actors. By implication this means that the reach and the capacity of a Coworking Space can only be as wide as the combined resources of each actor involved. This furthermore suggests that entrepreneurial individuals mostly benefit from contacts, know-how or the experience of others rather than the provision of information or a secure frame provided by Coworking Spaces.

Each participant considered in this thesis project claims that networking or community played a role for their development. Both aspects are summarized under the term social interaction. Social interaction is achieved through effective communication. According to Scott (2006), effective communication is enabled through regular, daily interaction, like-mindedness among individuals based on relations of trust. These aspects are enhanced in a Coworking community. Participants state that like-mindedness based on relations of trust among individuals rather than similar or related activities in a Coworking Space is key for effective communication. Physical co-location and regular networking opportunities might lead to
establishing a functioning Coworking community based on trust over a longer period of time. In accordance, Parrino (2015) argues that social proximity conditions knowledge exchange rather than spatial proximity. Spatial proximity might be a catalyst for the formation of social proximity in some cases however.

Apart from like-mindedness, results illustrated how similar or related activities of established firms and start-up firms might also constitute a basis for knowledge exchange. This is to be regarded independent from physical co-location and indicates that knowledge exchange can be enabled or enhanced in different ways. A common purpose among involved actors can be a way to enable knowledge exchange. Coworking Spaces can initiate such types of knowledge exchange. However, it should be noted that knowledge sharing in Coworking Spaces, either based on like-mindedness and relations of trust or related economic activities, might entail negative aspects in environments of increased competitiveness. This can lead to idea stealing and distrust among entrepreneurial individuals (see Bouncken et. al. 2018) and bring knowledge exchange to a halt. This might apply especially for Coworking Spaces following a certain purpose and therefore hosting entrepreneurial activities in related fields.

**Specialisation of Coworking Spaces**

When individual Coworking Spaces follow a certain purpose or are specialized on a certain target group of entrepreneurial activities, they begin to select and accumulate related activities. Effective communication might be enabled based on these related activities.

As outlined in the previous chapter, selection and accumulation of related, relevant economic activities might contribute to the development new paths because a functional relation between relevant actors (e.g. start-up firms, established firms, support infrastructure etc.) is enhanced while involved actors in Coworking can access wider, relevant networks and communities. Participants stated that social interaction with firms in related fields was more beneficial to them than social interaction with non-related firms or actors. On the one hand side, this comes with advantages as entrepreneurial individuals might be enabled to exchange knowledge more focussed on the development of their activities or even build social relationships over time. Regarding that every entrepreneurial individual brings different input factors and networks, a broader group of individuals in the Coworking Space might benefit from these.

However, on the other hand, other participants regard knowledge exchange with a wider community of non-related entrepreneurial individuals as beneficial as well. Thus, opinions on this differ with no clear picture of which of these kinds of knowledge exchange is actually more beneficial. Considering this, some challenges might emerge for Coworking Spaces pursuing a narrow purpose or specialization. When the purpose or the specialisation of a particular Coworking Space becomes too narrow, the range of different entrepreneurial activities
decreases, thereby increasing the homogeneity of individuals and activities represented. This would also decrease the probability that activities emerge which contribute to new development paths in regional industries to a certain extend. At the same time, a particular purpose or specialisation plays an important role for selecting and accumulating related or relevant activities to contribute to such new development paths.

This implies that the topical scope of Coworking Spaces should not be kept too general, while too much specialisation is not beneficial either. Finding the right balance is key. This stresses the importance of multiple actors with different backgrounds involved in individual Coworking Spaces (e.g. mentors, freelancers, entrepreneurs, employees of Coworking Spaces etc.). Every actor involved might be a resource to others. Therefore, a balance between related and non-related activities in a Coworking Spaces is important to maintain with regards to the selection and accumulation of relevant entrepreneurial activities for new path development. In relation to that, it should be noted that start-up firms may join several Coworking Spaces. Thus, being part of a Coworking Space does not necessarily imply any limitations with regards to the development of entrepreneurial activities. Entrepreneurial individuals and start-up firms engaged in Coworking to degree can create their own balance of scope by joining several Coworking Spaces, even when none of them offer the ideal degree of specialization.

Linking this to the core values of Coworking, specialisation of individual Coworking Spaces impacts accessibility. Entry barriers are set by the initiator of a Coworking Space. The core values of Coworking are not represented equally among different Coworking Spaces in the Ruhr area. This suggests that entry barriers set by the respective actor in the Coworking environment in connection to their purposes are relevant for the way in which entrepreneurial activities inside Coworking Spaces might unfold and contribute to developing new paths.

Additionally, the broader regional Coworking environment influences the purposes and entry barriers. This might vary from region to region. Regarding the Ruhr area, the regional focus of promoting start-up firms engaged in B2B activities, as well as Coworking activities of established firms in prevailing industries and private initiatives are relevant.

**Social Entrepreneurship as a new development path**

Following the results of the previous chapter, path upgrading and diversification were the prevailing potential new development paths in the Ruhr area following efforts of the governmental Coworking Space as well as efforts of firm-related Coworking Spaces. Additionally, the creation of a potentially new path was observed.

Social entrepreneurship could turn into a development path of the Ruhr area mainly due to the following three main reasons. First, several Coworking Spaces and specialized infrastructure including events and an accelerator programme targeted at social entrepreneurs can be found
in the Ruhr area. Thus, a functional relation between several support infrastructures and actors is given. Second, a number of social entrepreneurs can be found in the Ruhr area while others even commute to benefit from the given support in the region. This indicates how support infrastructure for social entrepreneurs cannot be found at similar quality in surrounding regions. Also, demand for such support infrastructure beyond the region is emphasized. Third, the respective Coworking Spaces are part of wider, national or even global networks for social entrepreneurship. This includes other Coworking Spaces but also several organisations, established firms and private initiatives. This enables social entrepreneurs to access relevant resources including resources outside the region. In turn, these networks might also strengthen support infrastructures in the Ruhr area as offers are backed by several actors. Additionally, Coworking Spaces targeted at social entrepreneurship as well as social entrepreneurs receive attention from other regional actors including the economic development department of the Ruhr metropolitan area. Also, regarding the socioeconomic challenges of the Ruhr area, activities of social enterprises are likely to continuously be in high demand. This high demand makes social entrepreneurship a promising development path for the Ruhr area.

Given these considerations, there is a certain probability for social entrepreneurship to turn into a regional development path in the future. At the current stage, however, this is not to be regarded as fixed. The considerations outlined above point towards tendencies which are visible and might grow in the future. These tendencies might be further sustained when support of other actors is deployed, more social enterprises are established and public attention rises. Nonetheless, these tendencies highlight how Coworking Spaces following a certain purpose or specialisation potentially contribute to the development of new regional paths.

**Implications**

Besides actors in the Coworking environment of the Ruhr area identified in the previous chapter, universities in the Ruhr area seem to play a significant role for promoting innovation and entrepreneurship. This is the case because universities are a catalyst of spatial and social embeddedness of entrepreneurial individuals and provide different forms of support to them. This includes the provision of Coworking Spaces to students as well as specialized study programmes on innovation management and entrepreneurship. The role of universities was not included in the initial interview guideline and therefore not scrutinized in depth in the previous chapter. However, results indicate that the universities in the Ruhr area do play a role for entrepreneurial activities.

Universities as well as the governmental Coworking Space and economic development institutions are public institutional bodies which follow a similar purpose regarding the promotion of innovation and entrepreneurship in the Ruhr area. Their activities could possibly complement efforts in the provision of support in both, early and more mature development
stages. Considering networks and communities as a resource for entrepreneurial action, a broader range of individuals from across universities and disciplines could come together. This suggests that more resources might become accessible to entrepreneurial individuals but also the initiating institutions. However, no collaboration between Coworking Spaces of universities and the governmental Coworking Space could be observed.

These considerations imply that further collaboration outside the current boundaries among actors involved in Coworking should be more actively enhanced in order to combine existing resources. This could be regarded as a policy implication for public institutions engaged in Coworking but also for other Coworking related actors in the Ruhr area such as established firms or private initiatives. Given the highly decentralized structure of the Ruhr area, further collaborations could contribute to overcoming challenges which might come with such a fragmented structure by combining available resources to benefit the entire region.

Apart from that, related and non-related entrepreneurial activities might become easier to balance with regards to further collaboration among actors involved in Coworking. This is because entrepreneurial individuals engaged in related economic activities might be enabled to interact across Coworking Spaces creating their own balance of scope.

Summary

The main findings discussed in this chapter include the role of Coworking Spaces as platforms of interaction rather than providers of other support forms like financial or non-financial support. Furthermore, the effectiveness of certain non-financial support forms such as the provision of information was questioned. Even though Coworking Spaces might provide a secure working environment for start-up firms in early development stages, the meaning of social interaction outweighs for their users.

Regarding social interaction in specialized Coworking Spaces, opposite effects might emerge. Related and non-related entrepreneurial activities with regard to specialized Coworking Spaces need to be thoroughly balanced to ensure an environment beneficial to the development of entrepreneurial activities.

The chapter commences by discussing social entrepreneurship as a potential new development path in the future. As sufficient support infrastructure, demand and attention to emerging activities is given, social entrepreneurship might be established as a new industry in the region. The emerging industry is backed by several (regional) actors such as established firms, organisations and private initiatives. However, as these developments rather stand in the beginning, the actual emergence of a new development path will be subject to future developments.
Considering relevant actors of the Coworking environment, universities were identified as important throughout the research process. Potentially, a collaboration between actors engaged in Coworking of various sorts could be beneficial with regards to entrepreneurial activities and new path development. This is because such a collaboration might combine resources of Coworking opportunities throughout the Ruhr area. This implication applies for multiple actors in a Coworking context as available resources and thus, the effectiveness of Coworking Spaces in new path development increases. Concerning further collaboration among Coworking Spaces, balancing related and non-related activities could be facilitated.
6. Conclusion

The objective of this thesis is to assess the role Coworking Spaces take in new path development. In particular, the central research question is concerned with the way in which Coworking Spaces enable entrepreneurial individuals to contribute to new development paths. Coworking Spaces in this context were defined as shared office solutions mostly targeted at entrepreneurial individuals and start-up firms which not only focus on office space but also provide additional support in regards to the development of entrepreneurial activities and the creation of new ventures. The Coworking core values of openness, collaboration, communication, accessibility and sustainability, as a basis for the type of work organisation, have also been taken into account.

In order to bridge the gap between Coworking Spaces and new path development, the research question has been approached by splitting it up in two more focussed sub-research questions that can be more meaningfully analysed. The research methodology is based on qualitative methods.

As a theoretical framework, previous theoretical conceptualisations of Coworking Spaces were drawn upon. The creative field, as suggested by Scott (2006) was utilized to provide a theoretical framework in which creative, entrepreneurial individuals are the transforming force behind path dependent evolution.

Coworking Spaces in new path development

In essence, the central research question can be answered in the way that Coworking Spaces indeed contribute to new path development in their respective region under certain circumstances. They especially enable entrepreneurial individuals by providing a platform of interaction. This enhances their activities because access to relevant resources in networks and communities is generated. Entrepreneurial activities happening inside Coworking Spaces potentially contribute to new path development when these are selected and accumulated according to a certain purpose or specialisation. The initiators of Coworking Spaces play a significant role as they set the respective entry barriers entrepreneurial individuals have to overcome. In contrast to more focussed Coworking Spaces, the role of Coworking Spaces without a particular focus is unclear regarding their contribution to new path development.

Following this, Coworking Spaces can be regarded as an effective mean for initiating new development paths considering the conditions named above. However, as an implication, further collaboration across Coworking Spaces of various sorts should be intensified to realize their full potential in the Ruhr area. This is the case because such a collaboration might combine resources of Coworking opportunities throughout the region in a meaningful way for
new innovations. Also, the involvement of multiple actors in a Coworking context increases available resources and thus the effectiveness of Coworking Spaces in enabling entrepreneurial individuals. Moreover, further collaborations might have positive implications on balancing related and non-related activities found throughout several Coworking Spaces contributing to new path development.

**The meaning of Coworking Spaces for the development of new ventures**

Empirical results of the research conducted show that Coworking Spaces can provide a secure frame to start-up firms and new ventures in early development stages. However, this form of support was perceived as less important compared to those based on social interaction thus, highlighting the prevalent role of Coworking Spaces a platform of interaction rather than social structures of innovation where additional support is received. Coworking Spaces promote entrepreneurial individuals as they receive access to networks and communities inside and potentially outside the region. This form of support is also perceived as more significant than other support forms such as financial support or support based on the provision of information (non-financial support). In relation to that, empirical results emphasized the importance of certain entrepreneurial characteristics for creating a new venture suggesting that certain support forms might not be necessary.

Following theoretical considerations, entrepreneurial individuals were identified as creative individuals who are socially and spatially embedded, capable of identifying opportunity, mobilizing resources and creating value. Empirical results strengthen this conceptualisation. Entrepreneurs typically face a high level of uncertainty during early development stages of new ventures. Therefore, additional support infrastructure providing security was considered useful to them from a theoretical perspective. In practice, those forms of support were perceived less relevant to entrepreneurial individuals than those based on social interaction.

Effective communication enables social interaction. Achieving this is enhanced by regular interaction and relationships based on trust. Social interaction among entrepreneurial individuals may be facilitated through this or, as empirical results showed, based on a common purpose and similar economic activities.

In relation to that, knowledge production is enabled by social interaction. This is because knowledge is accumulated at different sites (e.g. firms, individuals, research institutions etc.). By socially interacting, existing knowledge is combined in new ways or new knowledge is acquired and consequently stimulates innovation. The creative field provides a platform of interaction to entrepreneurial individuals. Relevant knowledge can be accessed via these platforms. These theoretical considerations strengthen the meaning of networks and communities for entrepreneurial individuals in Coworking contexts.
With the influence of Coworking Spaces on entrepreneurial activity assessed, the question remains to be answered how these activities contribute to new development paths.

**Entrepreneurial activities and their contribution to new development paths**

The research conducted suggests that entrepreneurial activity fostered by firm-related Coworking Spaces and the governmental Coworking Spaces mostly contribute to upgrading existing paths. The former potentially contributes to diversifying existing paths as well. Results emphasized how a certain purpose or specialisation on a particular field or activity selects and accumulates relevant and related activities to contribute to these development paths, sustain and legitimate them in the future. Coworking Spaces might focus on industries already existing in the region, contributing to upgrading existing paths. Also, actors in existing industries might diversify paths by moving into new industries with the support of Coworking Spaces selecting and accumulating respective activities to do so. Coworking Spaces might also be specialized on new industries which do not exist in a region priory, contributing to the creation on new paths. In accordance, social entrepreneurship was identified as a potentially new path to be created by accumulating social enterprises and respective support infrastructure in the Ruhr area. For specialized Coworking Spaces, however, the balance between related and non-related activities has additionally been identified as highly important in relation to effective promotion of entrepreneurial activity and contributing to new path development.

Entrepreneurial activities considered in this thesis project therefore potentially contribute to all the suggested development paths. Additionally, the main actors in the Coworking environment and the context of the Ruhr area constitute the basis for new path development. The main actors are established firms, the federal state government with local economic development departments and private initiatives. Additionally, universities were identified as relevant actors as well. The Ruhr area, as a region formerly dominated by steel and coal industries, faces challenges in connection to major structural economic changes. Major established firms in the Ruhr area are still active in industrial and energy-related sectors. Moreover, the regional strategy for start-up firm promotion is on B2B start-up firms.

This background influences the way in which existing structures are being transformed. Path dependent evolution means that existing structures shape the probability of future events to occur. The emergence of new development paths is sustained and legitimized when multiple functionally related firms and support organisations are established, a regional demand or a market is given for the respective entrepreneurial activities and networks or valuable input factors from outside the region can be accessed. Empirical results emphasized that these conditions can be enhanced by Coworking Spaces under the conditions outlined above.
7. References


8. Appendix

8.1 Summarizing Protocols of semi-structured interviews

**Summarizing Protocol Nr. 1 (semi-structured)**

04/15/2019, start-up entrepreneur, 31y/o, male

A semi-structured interview was conducted with a start-up entrepreneur who initially moved to the Ruhr area to study. Entrepreneurial activities comprise the development and sales of a product which is produced by a local manufacturer. The product is available at different retail partners in northern Germany or can be purchased online. Professionals working in digital business are potential customers for products.

Becoming an entrepreneur resulted from intrinsic motives, the desire to be self-employed and doing something joyful for personal development. These motives are independent from the entrepreneurial activity itself. The overall goal was to be self-employed and not to enter a certain business. Regarding social interaction and knowledge exchange, family ties are claimed to be very helpful during the early stage of development.

The Coworking Space played a minor role during the process of founding but became relevant later in the development process. His investor connected him with a Coworking Space which supported him applying for the founder’s scholarship and offers his products at their events. This is because individuals who attend Coworking events belong to the respective target group of the product. The Coworking Space is thus relevant for advertising and making the product known. Product development, finding a suitable production partner and an investor was part of his own effort. Also, making the product known by attending fairs, events and other platforms for networking was done independently from the Coworking Space by himself or the investor.

Non-financial support, community, networking and finance are considered equally important. None of these forms of support were provided to him by a Coworking Space. His investor plays an important part in networking and making the product known. Also, networking was part of his own effort. In terms of community, a family member is regarded as a strong influence and advisor in his career path.
Summarizing Protocol Nr. 2 (semi-structured)

04/20/2019, start-up entrepreneur, 24 y/o, male

A semi-structured interview has been conducted with one of the four co-founders of a start-up firm. Two of the founders are currently studying a particular master’s programme in the Ruhr area with a focus on innovation and entrepreneurship. The founders met independently from each other at university and attending a start-up related event in the Ruhr area. The founders, except for one, moved to the Ruhr area from outside the region.

The start-up firm aims to develop a future solution for energy provision of electric vehicles. They plan to enter the market by the end of 2020. Regarding the motivation of the founders, aspects of independence, the ability to choose collaborators for themselves and the creation of something that secures a sustainable future were named as significant for the decision to found a start-up firm.

The founders who lived, studied and worked outside the Ruhr area before are able to rely on personal networks which emerged before they moved to the Ruhr area. These contacts include firms which are active in mobility. Additionally, they hope to get in touch with a local energy firm through the Coworking Space/Accelerator Space they are affiliated with.

Furthermore, the Accelerator Space allows them to surround themselves with like-minded people. The community of the Space is very much appreciated. Communication, especially with individuals from older batches of the accelerator programme, provides them with advice and recommendations. Being at an early stage in their development, perceived future opportunities are unclear. However, constant learning processes triggered by working in the Accelerator Space are perceived to be beneficial for their personal and business development. Learning processes are initiated by communication with other start-up founders, attending events and workshops offered by the accelerator and by their own activities. Additionally, they claim that the accelerator programme allows them to significantly reduce the risk of founding a venture through the provision of office space and non-financial support free of charge. As the founders additionally receive the founder’s scholarship, they do not have to invest any of their own capital.

Considering the most important factors given in a Coworking Space, they rank networking and events as the most important followed by non-financial support and community. Financial support is not applicable for the Accelerator Space because they only provide a frame for finding investors (e.g. at events) but do not actively match start-up firms and investors. They furthermore mention missing private investors as a disadvantage of the Ruhr area compared to other regions.
Summarizing Protocol Nr 3 (semi-structured)

04/23/2019, start-up entrepreneur, 47 y/o male

A semi-structured interview was conducted with a social entrepreneur. The start-up firm aims to connect his former profession as a tech expert with a social purpose by providing online platforms to social organisations. Additionally, he provides consultancy service and promotes social entrepreneurship.

As a motivation, he names self-fulfilment and the desire to give something useful and sustainable to society.

The activity was influenced by different Coworking Spaces. He used to work in a Coworking Space outside the Ruhr area, closer to where he lives, but later turned to a Coworking Spaces in the Ruhr area with a particular focus on social entrepreneurship where he received substantial support. The Coworking Spaces in the Ruhr area enabled him to access relevant networks and a community of social entrepreneurs to exchange knowledge and experiences with like-minded people. Also, he states that access to these networks and communities provides major support for making oneself known, receiving valuable business contacts and act upon opportunities like consultancy jobs or giving workshops and presentations. These opportunities often only emerge through social interaction based on regular communication and relations of trust.

He claims that working in a Coworking Spaces was particularly important for him during the initial phase of the start-up firm. Currently, he mostly visits the Coworking Space occasionally and especially for attending events or hosting workshops by himself at this stage of development of his start-up firm while usually working from home as he lives outside the Ruhr area.

Following this, he perceives networking and events as the most important aspect of Coworking. This is because it provides a way to gain access to relevant communities where opportunities emerge. Non-financial support and advice offered by the Coworking Space is not perceived as highly beneficial but more as a confirmation of what he taught himself. Thus, he believes that independent research fulfils the same function then non-financial support. Financial support was not received yet. However, as job opportunities regularly emerge in or outside the Coworking Space, financial support is given through this.
Summarizing Protocol Nr.4

04/24/2019, project leader of an internal innovation project, 32 y/o, female

A semi-structured interview was conducted with an employee of an established corporate in the Ruhr area. The corporate is very active in innovating and digitalizing its own structure as well as the structures of its sub-firms and clients. The interviewed employee is part of an innovation project which led to the creation of an internal start-up firm.

The start-up firm aims to provide a digital and agile solution for the firm's core activity. It emerged from internal effort which was accompanied with the establishment of an internal Coworking Space. Regarding the cooperation between the project team and the Coworking Space, support was provided by an assigned mentor during the conceptualisation phase of the project. After completion, the start-up firm moved back to the headquarter of the firm to commence with operational tasks. Even though the start-up firm operates independently, it is still bound to the structures of the corporate and its hierarchies. Part of the start-up project team is currently moved to Berlin while another part is moved back to the Coworking Space following strategic considerations.

Internal networks within the sub-firm, among other sub-firms and the corporate are regarded as important resources for the operation of the start-up firm but also for its conceptualisation. The internal Coworking Space is regarded as an innovation space for the corporate and its sub-firms, different from the regular office, which enables knowledge exchange, learning processes across sub-firms as well as communication and interaction on an individual level. Moving part of the project team to Berlin furthermore enables contact to other start-up firms in a more mature start-up environment in the future.

Conditions for an internal start-up firm differs from other start-up firms. However, community and networking within the corporate structure are perceived as most important. These aspects are enhanced by the internal Coworking Space. Non-financial support and advice, including external resources are perceived as second important while financial support is not considered as important. This is because the corporate provided the budget for the project and consequently the start-up firm.
Summarizing Protocol Nr. 5

04/25/2019, start-up entrepreneur, 30 y/o, female

A semi-structured interview was conducted with one of the three founders of a start-up firm. All founding members moved to the Ruhr area from outside to study or for private reasons. Two of the three study a particular master’s programme at the University Essen-Duisburg focused on innovation and entrepreneurship.

The start-up firm aims to produce a product which rises awareness on resource conflicts. Thus, they rely on support infrastructure targeted at social entrepreneurship in the Ruhr area.

Their development was influenced by different Coworking Spaces and other support infrastructure. Initially, the workshops and advice from the Coworking Space were perceived as very valuable for business related issues during the founding process. This form of support was complemented and replaced later on with course content of a study programme they participated in. Technical support relevant for production was provided by other sources such as the university and experts from outside the region.

Coworking Spaces played a central role from the beginning of the process for networking and building relationships based on trust with other start-up firms and community managers which are still relevant and beneficial for them. The latter motivated them to participate in an accelerator programme which is claimed to be the starting point for the start-up firm.

Community is regarded as the most important element of Coworking. Knowledge exchange and the ability to learn from the experience of others are named in this context. Active networking is regarded as the second important aspect enabled by Coworking Spaces for two reasons. First, it helps making the product and the entrepreneurs known. It is thus a platform of advertisement. Second, networking results in building a community. Moreover, they state that being part of a Coworking Space with several locations across the country or the globe is a great advantage for making oneself known and access networks beyond the Coworking Space one regularly works at. Financial support was provided through different awards and the founder’s scholarship with limited help of a Coworking Space.

Regarding the future, when they enter the market, they aim to conduct operational tasks at a Coworking Space and maybe showcase their products there as well to benefit from the networking and community character of Coworking Spaces. Consequently, production will be organized outside the Coworking Space.
A semi-structured interview was conducted with one of the four founders of a start-up firm which aims to provide a digital platform to firms in order to simplify operational processes. Additionally, they provide related consultancy services to clients in logistics and manufacturing. The activity resulted from relevant personal experience in the respective field which enabled the founders to identify customer needs. The founding team is comprised based on personal contacts, independently from the start-up activity itself. Also, the team is dispersed geographically over different locations. This is mainly due to practical reasons but also based on the availability of suitable employees.

During the founding process, they barely relied on external support and realized their idea through independent research on relevant issues, personal and business contacts from personal networks and internal communication among the founding members. The believe that independent research substitutes non-financial support.

Coworking Spaces became relevant later on in their development. They utilized Coworking Spaces as platforms to make their product and consultancy services known among a wider community though meet-ups and other events on an occasional basis. Moreover, a local Coworking Space initiative in the Ruhr area provided them with contact to potential clients and they benefit from networks, events and workshops provided to them through an accelerator programme which takes place in the Ruhr area. Thus, they do not benefit from working inside a Coworking Space but from other offers. Looking back, they claimed that some forms of support would have been useful for their development. In particular, financial support could have been useful for them and potentially accessible through a Coworking Spaces.

In their perception, knowledge exchange and communication with other start-up entrepreneurs is not a vital element of founding a start-up firm. They claim that interactions like this were not explicitly searched for but also but systematically avoided in a Coworking context. However, according to them, interaction with experienced entrepreneurs and professionals from their personal network are regarded as more beneficial than networks provided by a Coworking Space. These networks reach beyond the region and are considered to be a resource for accessing knowledge but also for finding investors. These networks are accessible through one of the founders in particular.

Community is regarded as an important aspect that needs to be given among the founders and employees of a start-up firm. Least important for them was non-financial support as this can also be realized through independent research.
Summarizing Protocol Nr. 7

04/25/2019, start-up employee, 38 y/o, male

A semi-structured interview was conducted with an employee of a start-up firm which emerged from an internal project of an established firm and became an independent firm later on. The start-up firm was created in an internal Coworking Space by two employees. It is mostly targeted at institutional clients from all industries with several locations.

The activity is based on providing a technology which enables individuals to communicate across physical locations. The idea emerged from an internal innovation project and was realized with a partner firm in Berlin. As the start-up firm became independent, the initiating established firm became the main shareholder, part of the project team was moved a Coworking Space in Berlin while the other part moved to a regular office in the Ruhr area.

Coworking Spaces played a role for the start-up’s development. Initially, in the internal Coworking Space, provided the framework in which the two founders met and developed their idea. During this phase, support was provided through the firm’s structure. Social relationships which stem from this phase are still perceived as valuable resources.

For developing a prototype of the product, the founders turned to Berlin to find qualified professionals. A collaboration with a partner firm created a network across regions and led to a split of the start-up’s project team. The physical co-location with their partner firm in Berlin enables social interaction among them which enhances their business activities and builds personal relations based on trust. These are considered as important resources for the start-up firm. Also, the start-up firm relies on its own employees and internal community in developing their product and business. Thus, internal human resources are perceived as equally important than exchange with external partners. Apart from that, they benefit from opportunities given in Berlin which is considered a more mature environment for start-up firms than the Ruhr area. The interview partner mentions missing private investors as a possible reason for that. The connection with the established firm in the Ruhr area as well as personal attachment of the founders contributed to locational split of the two operations instead of moving the whole team to Berlin.

Community is regarded as the most important aspect given in a Coworking Space. Secured financial support is considered as second important. It is acknowledged that the founders did not put a lot of effort into networking activities. Possibly, this is because they relied on established firm structures and personal contacts. Non-financial support is perceived as least important. A relevant point on the entrepreneurial character of individuals in this context is made. The interview partner additionally views the support of voluntary mentors critically as they often lack quality.
Summarizing Protocol Nr. 8

04/29/2019, start-up entrepreneur, 26 y/o, male

A semi-structured interview was conducted with one of the four founders of a start-up firm. The founding team is comprised based on personal contacts, independently from the start-up activity itself. The start-up firm aims to provide a digital solution to B2C retailers. The team has created several entrepreneurial ideas before due to the intrinsic desire to become entrepreneurs. The current idea was created to be eligible to enter a certain Coworking Space.

This Coworking Space highly influenced their development. Social relations based on trust emerged with community managers while working there. This resulted in additional support provided to them by the Coworking Space. Forms of support include intensive advice from the beginning, connecting them to relevant stakeholders and the provision of office space. They claim that: “Hardly any start-up firm joins a Coworking Space to actually work there but for the access it provides to their networks of potential collaborators or clients” (Quote translated by the researcher).

The Coworking Space enhanced close collaboration and knowledge exchange with a former internal start-up firm of a local established firm which was put down for several reasons. The collaboration allows them to learn from previous mistakes and gives them access to the resources of the established firm.

Furthermore, an additional accelerator programme supports them with business related issues by providing an experienced mentor for them. This aspect is perceived as very helpful. However, they claim that they highly rely on information from independent research. Generally, they are open to any forms of support. Often non-financial support, however, only confirms what was already known to them. This was especially the case for thematic issues concerning their activity. Still, they consider non-financial support as most important as the mentor programme they participated in was very helpful.

A Coworking community is appreciated but only on a personal level meaning that knowledge exchange with others, including other start-up firms, is not perceived as beneficial to them. Approaching people directly to receive relevant information and advice often proved to be more rewarding. Thus, community as well as networking, is regarded as least important to them.

Regarding financial support, they name the Coworking Space and the initiator of the accelerator programme as potential investors. Alternatively, they expect them to find investors for them within their network. Financial support is named as the second important aspect.
Summarizing Protocol Nr. 9

05/03/2019, start-up entrepreneur, 26 y/o, male

A semi-structured interview was conducted with on the four founders of a start-up firm. The founders met independently at university and followed entrepreneurial ideas before they founded the current start-up firm. The start-up firm aims to provide software and hardware for optimising manufacturing processes. This is based on identified customer need from the personal experience of one of the founders.

Coworking Spaces and Accelerator Spaces influenced their development. They chose a particular Coworking Space which provides a laboratory for hardware development. Community is named as the most important aspect in Coworking as the founders appreciate knowledge sharing with other founders regarding their start-up activities and related issues but also on other, personal issues. They managed to build relations of trust among other founding teams and employees of the Space. Learning is an aspect which results from knowledge sharing with others and is regarded as a crucial element of Coworking. The interview partner notes that physical co-location is most important for community building.

Regarding the networking aspect, they claim that they mostly relied on personal networks and networks provided to them via the university. Attempts from the Coworking Space to match them with potential clients has not been successful, yet. However, the Coworking Space builds a platform to present themselves and make themselves known among a wider community. Additionally, being part of a firm-related Accelerator Space in the Ruhr area through efforts of their university, provided them with the opportunity to sell their product via a new, indirect sales channel to industrial clients. This also widens the portfolio of the respective firm. The university is one of the strategic partners of the Coworking Space.

The founders participated in non-financial support offers of the Coworking Space. As this was at a relatively late stage in their development, they did perceive this as very helpful. Additionally, they believe that independent research and communication with other founders are as beneficial as these support offers.

Moreover, financial support was realised based on their own their own effort and through personal networks independently from the Coworking Space.

Additionally, they note that Coworking Spaces potentially provide a representative space to meet clients or to attract employees.
### 8.2 Overview of selected Coworking Spaces in the Ruhr area

<table>
<thead>
<tr>
<th>Name</th>
<th>Initiator</th>
<th>Description</th>
<th>URL</th>
</tr>
</thead>
</table>
| Startport*** (Duisburg)             | Duisport AG                        | - Accelerator programme targeted at start-up firms in logistics at all development stages  
- Accelerator does not necessarily claim shares of the start-up firms  
- Coworking, Mentoring and Coaching, Workshops, Investor Events, access to partnership networks  
- After the programme they can rent space, benefit from the partnership network and receive advise if they wish | https://startport.net/        |
| Schacht One* (Essen)                | Franz Haniel & Cie. GmbH           | - Internal digitalisation and innovation unit of Franz Haniel &Cie. GmbH  
- Focused on B2B solutions  
- Collaborate with start-up firms in long-term projects  
- Create internal start-up firms  
- Located at Zeche Zollverein | https://schacht.one/          |
| Schmiede Zollverein (Essen)         | Franz Haniel & Cie. GmbH           | - Innovation and digitalisation unit of Franz Haniel & Cie. GmbH directed to other firms/clients  
- Focused on B2B solutions  
- Create internal start-up firms with clients (long-term projects)  
- Located at Zeche Zollverein | https://schmiede-zollverein.de/|
| Ruhr:Hub** (Essen)                  | Government of North Rhine-Westphalia | - Governmental Coworking Space  
- support selected digital start-up firms (mentoring, matchmaking with firms, finance support) for B2B solutions  
- Platform for firms, universities and investors for digitalisation | https://hub.ruhr/            |
| Impact Hub Ruhr** (Essen)           | Private initiative                 | - Global network of Coworking Spaces that promote social and sustainable entrepreneurship | https://ruhr.impacthub.net/   |
| Social Impact Lab** (Duisburg)      | Beisheim Foundation, Franz Haniel & Cie. GmbH, KfW Foundation, | - Coworking Space in Duisburg with focus on social entrepreneurship  
- Changed name due to change of partners | https://duisburg.socialimpactlab.eu/ |
<table>
<thead>
<tr>
<th>Company/Initiative</th>
<th>Description</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Inn (several locations)</td>
<td>Private initiative</td>
<td>Offers support programmes for social entrepreneurs</td>
</tr>
<tr>
<td>KABU* (Essen)</td>
<td>Private Initiative</td>
<td>Open Coworking Space with an accelerator programme for freelancers, self-employed individuals and start-up firms. Coworkers only pay for their beverages and food. Events for start-up scene.</td>
</tr>
<tr>
<td>E.ON:agile*</td>
<td>E.ON AG</td>
<td>Accelerator space of E.ON located in Essen, Berlin, Dusseldorf. Collaborate with energy-related start-up firms.</td>
</tr>
<tr>
<td>Innovation Lab*</td>
<td>Innogy SE</td>
<td>Accelerator space of Innogy SE. Collaborate with start-up firms in cyber security, IoT, AI, Blockchain technology, smart solutions, digital disruption with a relation to their core activities.</td>
</tr>
<tr>
<td>Haus 5</td>
<td>Initiativkreis Ruhr/ Gründerallianz (Founder’s alliance)</td>
<td>Focused on data centred start-up firms. Located on site of Zeche Zollverein.</td>
</tr>
<tr>
<td>c/o Raum für Kooperation (Gelsenkirchen)</td>
<td>Private Initiative</td>
<td>Coworking Space with a focus on founders, freelancers and small teams. Event location. Support for Coworkers.</td>
</tr>
<tr>
<td>Rent24 (Dortmund)</td>
<td>Private Company</td>
<td>Network of Coworking Spaces for start-up firms and established firms. Locations in several cities. Offer Co-living in some locations.</td>
</tr>
</tbody>
</table>

*Number of participants connected to this Coworking Space (multiple connections possible)
8.3 Participant observation notes

Coworking Space 1
- Relatively small space ~200m²
- Located in a shopping mall
- Open plan area, open telephone cells, conference room, office for employees, open kitchen
- Modern interior, advertising for events
- In total: eleven employees of which 4 students, 4 project managers
- Occupied by ~8 freelancers and employed people
- Quiet working atmosphere
- One observed social interaction of seemingly two people who knew each other before
- Community not given
- Part of employees regularly works from home, not approachable except student employees
- Accelerator programme, exclusive start-up club (purpose: matching with investors)
- Start-up Night/Breakfast to meet potential start-up firms
- Support may be based on personal relationships as well
- Try to become more visible to students of local universities

Coworking Space 2
- Fixed offices, Coworking area, Event Room + Workshop Room, ~600m²
- 3 founders + 1 employee and several community hosts
- No Coworkers but fixed office spaces are used
- Founders engaged in a lot of other (social/start-up) activities around the Ruhr area
- Fragmented structure, open kitchen, beverages available in every room
- Separation of quiet and loud Coworking area
- Community host (different backgrounds) + one employee is always there
- Freelancers play important role
- A lot of activity going on, people bump in -> interaction (including random/lost people)
  -> accessible place
- Have lunch together, community members join to eat only -> social aspect important
- Regional economic development institution visited to record a video -> interested in their activities
- Space was visited by interested people for renting rooms/hosting events (incl. firm events)
- External events (including established firms and student organisations)
- Host own events

Coworking Space 3
- Internal Coworking Space of established firm, formerly active in heavy industry
- Open to internal projects, client projects -> long-term collaboration
- Consider internal and external start-up firms in B2B business
- Office space is also used by friends to follow entrepreneurial activities (based on personal relationships, informal/flexible character)
- Include “Glück auf” at the end of E-mails
### 8.4 Interview Guideline (semi-structured interviews)

#### Concept

<table>
<thead>
<tr>
<th></th>
<th>(a) Attributes</th>
<th>(b) Behaviour</th>
<th>(at) Attitudes</th>
<th>(be) Beliefs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Topic/Issue</strong></td>
<td>Non-Financial Support</td>
<td>Community</td>
<td>Networking/Events</td>
<td>Finance</td>
</tr>
<tr>
<td>B</td>
<td>Usage (y/n)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Details? What extend?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BE</td>
<td>Importance?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BE</td>
<td>Perception/more details</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Processes/activities

<table>
<thead>
<tr>
<th></th>
<th><strong>Topic/Issue</strong></th>
<th>Other details</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Background</td>
<td>Place of residence at different stages</td>
</tr>
<tr>
<td>B</td>
<td>Economic activity</td>
<td>Who is the target group?</td>
</tr>
<tr>
<td>BE</td>
<td>Motivation/Purpose</td>
<td>How did CW influence?</td>
</tr>
<tr>
<td>BE</td>
<td>Motives for using CWS</td>
<td>Why Coworking Space?</td>
</tr>
<tr>
<td>BE</td>
<td>Perceived Opportunities</td>
<td>What do you hope to gain from it?</td>
</tr>
<tr>
<td>BE</td>
<td>Locational choice?</td>
<td>Infrastructure</td>
</tr>
<tr>
<td>A</td>
<td>Path?</td>
<td>Path upgrading</td>
</tr>
<tr>
<td>AT</td>
<td>Condition for new path development</td>
<td>Functional relation</td>
</tr>
</tbody>
</table>
### 8.5 Thematic analysis of semi-structured interviews (matrix)

<table>
<thead>
<tr>
<th>Nr</th>
<th># Founders</th>
<th>Activity</th>
<th>CWS</th>
<th>Path</th>
<th>Motivation</th>
<th>Role of CWS?</th>
<th>Motives for using/not using CWS</th>
<th>Opportunities?</th>
<th>Interaction</th>
<th>Locational Choice?</th>
<th>Most important</th>
<th>Least important</th>
<th>Additional Comment</th>
<th>Functional relation</th>
<th>Regional demand</th>
<th>Network beyond region, accessible?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Productio n and Sales</td>
<td>Independent government</td>
<td>Continuation</td>
<td>- Intrinsic motives for self-employment - Activity itself play minor role</td>
<td>CWS not relevant in initial founding phase - own effort</td>
<td>- self-fulfillment - personal development</td>
<td>- family ties are most important contacts</td>
<td>University, convenience, personal networks</td>
<td>equally important</td>
<td>equally important</td>
<td>- investor played important role in his development - Founder's scholarship</td>
<td>- local producer - retailers - CWS</td>
<td>- local producer - retailers</td>
<td>- start-up scene</td>
<td>- limited</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>Technolog y Developm ent</td>
<td>firm accelerator</td>
<td>Diversification</td>
<td>- intrinsic motives - independence, choice of collaborator - sustainability</td>
<td>enables exchange with others - risk reduction - office space - access to networks</td>
<td>- learning - personal and business development - network and business contacts in the region</td>
<td>- like-minded people - appreciate exchange with others - enables learning - rely on personal network</td>
<td>University - practical reasons</td>
<td>- network/events</td>
<td>- Finance</td>
<td>- Finance not necessary yet because of accelerator - missing private investors - stong personal networks - Founder's scholarship - founder met on start-up event</td>
<td>- yes, several established firms related - connection via CWS - hardware components? - &gt;build prototype themselves</td>
<td>- beyond region - future</td>
<td>- yes, through personal networks</td>
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<td>3</td>
<td>1</td>
<td>Social Entrepren eurship</td>
<td>social entrepreneu rship</td>
<td>Creation</td>
<td>- social impact - self-fulfilment</td>
<td>networking platform - access to community - initial phase - advertising - find job opportunities</td>
<td>- job opportunities - like-minded people - find people doing what they are best at</td>
<td>- communicat ion and interaction offers opportunitie s - like-minded people - builds community based on trust</td>
<td>CWS with a focus on social entrepreneurs hip</td>
<td>- networking and events give access to community</td>
<td>- non-financial support - non-financial support was conducted independently</td>
<td>- social entrepreneurship - B2B</td>
<td>- beyond region</td>
<td>- yes, through CWS - orientation: Rhein-Ruhr</td>
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<td></td>
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<td>Internal project: digitalization of business processes</td>
<td>internal start-up</td>
<td>Upgrading</td>
<td>- internal digitalisation efforts - internal Coworking Space</td>
<td>- space for conceptualisation phase - support through mentors - personal contacts (internal) - get away from daily routine - moved back to office for operations - now: part of project team in Berlin, other part moves back to internal CWS - innovative environment to enhance ideas - enable exchange with others in both locations - internal communication within the group - learning environment - exchange with other start-ups in the future - HQ of firm - location of internal CWS</td>
<td>- community networking - financial support was secured due to corporate - start-up acts independently but is bound to hierarchies of the firm - turn to mature start-up environment</td>
<td>- yes, through firm - demanders - B2B - beyond region</td>
<td>- yes, through internal relations - internal CWS - multiple location</td>
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<td>4</td>
<td>2</td>
<td>Social Entrepreneurship</td>
<td>social entrepreneurship</td>
<td>Creation</td>
<td>- rise awareness for global conflict - social entrepreneurs</td>
<td>- support infrastructure in the beginning - starting point - now: workplace, networking opportunity and community place - community character - long-term contacts</td>
<td>- Future: lead operations from CWS - showcase and advertise products - access network of CWS</td>
<td>- personal network - convenience - financial support was not provided by CWS - scholarshi p</td>
<td>- university programme - external experts outside region - CWS as a production site? - Founder’s scholarship - social entrepreneurship - production sites</td>
<td>- beyond region</td>
<td>- yes, personal and business contacts - from CWS</td>
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<td>5</td>
<td>3</td>
<td>Digitalization of business processes</td>
<td>firm accelerator</td>
<td>Upgrading</td>
<td>- based on personal experience - identification of customer need</td>
<td>- network platform - make their product known - meet clients/expan d personal network - CWS later</td>
<td>- locational independence</td>
<td>- interaction mostly among founders - exchanging with other start-up not that beneficial - personal networks of one founder very helpful</td>
<td>- internal start-up community - non financial support can easily be realized with independent research - consultancy support</td>
<td>- knowledge exchange with experienced entrepreneurs and professionals - located where they could find suitable employees</td>
<td>- beyond region</td>
<td>- yes, multiple locations - personal network</td>
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<td>7</td>
<td>2</td>
<td>Product Development</td>
<td>internal start-up</td>
<td>Diversification</td>
<td>- internal call for innovation project</td>
<td>- internal call in internal CWS</td>
<td>- idea was conceptualized in internal CWS</td>
<td>- to realize idea: moved to CWS with partner firm in Berlin</td>
<td>- initial phase + realization phase + ongoing exchange</td>
<td>- firm is a shareholder of the start-up</td>
<td>- Berlin offers a more mature start-up environment</td>
<td>- collaboratio and knowledge exchange with partner firm</td>
<td>- personal attachment to suitable employees</td>
<td>- community</td>
<td>- non-financial support</td>
<td>- not much effort for networking</td>
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<td>8</td>
<td>3</td>
<td>Platform development</td>
<td>firm accelerator</td>
<td>Diversification</td>
<td>- intrinsic motives - created start-up ideas before</td>
<td>- support based on trust in initial phase - knowledge exchange, business contact - mentor programme</td>
<td>- access to networks - find investors and clients</td>
<td>- access to networks - find investors and clients</td>
<td>- interaction on personal basis, not for business - interaction with firm: resources and valuable experience - approach people directly, not at events or daily</td>
<td>- convenience</td>
<td>- non-financial support</td>
<td>- community</td>
<td>- non-financial support</td>
<td>- independent research substitutes non-financial support to a large extend - appreciate business/operational support but not thematic support - founder's scholarship</td>
<td>- demanders - B2B - CWS</td>
<td>- beyond region - future</td>
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<td>9</td>
<td>4</td>
<td>Process optimisation</td>
<td>Firm</td>
<td>Upgrading</td>
<td>Intrinsic motives</td>
<td>Identification of customer needs due to personal experience</td>
<td>Provision of lab for hardware components</td>
<td>Initial phase</td>
<td>Relations of trust with CWS and founders</td>
<td>Meet potential customers</td>
<td>Representative space</td>
<td>Benefit from things it offers, community</td>
<td>Network platform</td>
<td>Find potential clients</td>
<td>Advertising</td>
<td>Knowledge sharing with other founders based on friendship</td>
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<td>4, firm accelerator</td>
<td>2, SE and 2 internal start-up and 1 independent</td>
<td>5, intrinsic motives</td>
<td>2, internal projects</td>
<td>2, identified need based on experience</td>
<td>When?</td>
<td>7, initial phase</td>
<td>2, later phase</td>
<td>Network 6, meet clients</td>
<td>3, present themselves 1, business contacts</td>
<td>Community 7, personal relations 3, like-minded people 2, knowledge exchange other: 3, special infrastructure 1, risk reduction</td>
<td>Using</td>
<td>6, knowledge exchange and access to networks 3, office space and community 2, events 2, representative/innovative space not using 2, locational independence 1, distraction and own effort</td>
<td>Other</td>
<td>2, mature environment in Berlin (internal projects)</td>
<td>Motives/opportunities</td>
<td>6, access to network 2, community (single entrepreneurs) 1, exchange other 2, learning (exchange) 2, personal/business development 1, events</td>
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</tbody>
</table>