Building Opportunities for VR

A Constructivist Grounded Theory of How to build entrepreneurial opportunities

Author: Sidsel Bjørnseth

Supervisor: Nicola Ens

Executive summary

The purpose of this study was to generate a substantive theory to better understand the entrepreneurial learning processes situated in a context of rapidly evolving technology. This thesis uses Constructivist Grounded Theory Methodology to study an entrepreneurial learning process through the empirical case xR Creators Lab. The data gathered consists of participatory observation and 9 in-depth interviews. The substantive theory of "Building opportunities for VR" has three components Building a Safe Culture, Creating Future Engagements and Managing Network, which together demonstrates an entrepreneurial learning process where entrepreneurial opportunities are actively developed. The findings from this study are linked to extant literature from the field on entrepreneurship and entrepreneurship education in order to enrich the theory.

Executive summary

Acknowledgements

3

I would like to extend my sincerest thanks and appreciation to Nicola Ens for accepting to be my supervisor, and for all her support throughout this process. I am grateful for the many times she has offered her advice and helped me during this process. I would like to thank Astrid Kahmke for letting me use the xR Creators Lab as a case in this paper. I would like to thank all the participants in this study who made this possible. To write a thesis has in many ways been a challenge and I would had never gotten myself through this if it was not for the support from my friends and family.

Innholdsfortegnelse

1 Introduction

Entrepreneurship has emerged over the last two decades as arguably the most potent economic force the world has ever experienced (Kuratko, 2014). With globalization and rapid technological advancements, the world has become a global village characterized by explosive growth in global businesses and competition creating favourable conditions for aspiring entrepreneurs. Some of the most common myths and misconceptions surrounding entrepreneurship is the idea of the entrepreneur as a solo risk taker on the search for opportunities, who possess innate genetic talent that cannot be taught. This conception has been challenged, and eventually replaced by definitions of entrepreneurship that includes entrepreneurial processes. With the increased interest in entrepreneurship, follows an increased interest in the facilitation of entrepreneurship, by policy makers, entrepreneurship education being an area of special attention (Laukkanen, 2000). How we define entrepreneurship as a field has major impact on entrepreneurship education. There has been a tendency in the literature on entrepreneurship to emphasize the discovery of opportunities and the decision to exploit these as the essence of entrepreneurial action as proposed by Shane and Venktaraman (2000). Following this line of thought, entrepreneurship education would be defined as "knowledge transfer regarding how, by whom and with what effects, opportunities to create future goods and services are discovered, evaluated and exploited (Hindle, 2007). This representation neglects both a fundamental learning process that underlies opportunity formation process where the entrepreneur(s) collect and craft new knowledge. It also fails to recognize the importance of having a community to turn to in order gather the right resources needed to create or exploit an opportunity. Entrepreneurship education could also derive from conceptions of entrepreneurship as it is defined by Stevenson and Jarillo (1990) "a process by which individuals - either on their own or inside organizations - pursue opportunities without regard to the resources they currently control" (p.23). Entrepreneurial opportunity is defined by Stevenson (1985) as having a close relationship with the individual needs, it must represent a desirable future state trough growth or change, and the individual needs to believe that reaching that state is possible. Entrepreneurs who deal with nascent technologies often deal with uncertainty as they search for new applications and work with concepts that are not fully yet explored and defined. In short, there are various definitions entrepreneurship that have been proposed in the context of entrepreneurship education (Fayolle & Gailly, 2008). Some have argued the need to adapt entrepreneurship education to the context based on the needs and wants of the audience to avoid a "one-size fits all approach" (ibid). Hytti et.al

(2014) divide entrepreneurship education into three main groups based on their aims; Learn to understand entrepreneurship, learn to become entrepreneurial and learn to become an entrepreneur. Others have argued the need to adapt entrepreneurship education to the type of opportunity that is being pursued (Wood, Welter, Artz, & Bradley, 2014).

In the field of entrepreneurship studies there is absence of a substantive theory that seeks to explain an entrepreneurial learning process aiming to create an entrepreneurial opportunity. Departing from this common assumption the grounded theory developed in this thesis suggests that entrepreneurial learning and network building are critical components for entrepreneurial opportunity development. This grounded theory demonstrates the factors that influence the entrepreneurial leaning process that underlies entrepreneurial opportunity creation. Because of the lack of previous research, and in turn the selected grounded theory methodology, which was originally developed by Glaser and Strauss(1967) for the purpose of building theory inductively from a quantity of data, rather than deducing testable hypothesis from existing theories.With its roots in symbolic interactionism, GTM is a iterative method for developing a substantive theory that traditionally emphasizes understanding of social processes, however it is also recognized for its usefulness in explaining broader phenomena (Charmaz, 2006). This study adheres to the constructivist version of grounded theory guided by the principles of theoretical saturation, which will be further elaborated in chapter 3.Given my focus on entrepreneurial learning processes and opportunity creation I chose to study this in the case of the xR Creators Lab which I view as a site of entrepreneurial learning process aiming to actively create entrepreneurial opportunities. I began this research with only a loose research focus and not a specific research question, seeking to explore one specific site of entrepreneurial activity, the xR Creators Lab. This gave me the chance to explore the entrepreneurial learning process that was taking place without being directed by specific concepts or theories. The people who participate in this study was selected based on their relevance for the study that seeks to create a substantial theory based on the entrepreneur's own perspectives to better understand the phenomenon. In this thesis, the xR Creators Lab is viewed as an entrepreneurial learning process related to the creation of entrepreneurial opportunities.

The context the entrepreneurs in this study are dealing with is characterized by the rapid development of Virtual Reality technology, which poses challenges as well as opportunities for entrepreneurs involved in trying to create new, innovative content for Virtual Reality. The technology is currently at a nascent state when used as a storytelling medium, and the market

it operates in has not yet achieved neither mass adoption or a viable monetization model for such content. As the literature section highlights, entrepreneurial opportunities are often talked about as being discovered and exploited. In this case, the community that is being developed and the new knowledge the entrepreneurs has acquired, represents the fundament for creating future entrepreneurial opportunities. In this thesis I will use the term entrepreneur to refer to the individuals who were part of the xR Creators LAB as participants, because I see them as part of an entrepreneurial process of learning how to use VR technology in the future. Further elaboration of what I mean by the term entrepreneur will follow in chapter 2. The participants in these programs could be part of creating new, unexpected ways of telling stories in VR, and thereby help define how this technology will be used in the future and shape how the industry evolves. Further description of the xR Creators Lab can be found in Appendix 1.

The empirical material contains references to the technology that is being used, "xR Technology" is used to refer to any type of digital or analogue reality such as Virtual Reality, Mixed Reality and Augmented Reality. To simplify the conceptual language in this study, and to reflect the main focus during the Lab, this paper will refer to the technology as Virtual Reality(VR) throughout the paper. Bucher (2018) explains that Virtual Reality can and has been defined in a variety of ways. When referring to Virtual Reality, I adopt a broad understanding of the term that includes all types of content that can be experienced in a Head Mounted Display, also called VR goggle. This includes 360 videos, which captures moments of reality by recording the physical world through an array of cameras as well as computer-generated, three-dimensional content.

This thesis is composed of six chapters, the first being this introduction which includes in brief the field of research, purpose of the study, research focus and the empirical context. The second chapter outlines the literature review that has informed and helped sensitize the researcher to concepts in the field of entrepreneurship studies. The aim of the chapter is to build a context for the study, and to present literature that enrich aspects of the substantive theory developed.The third chapter introduces Grounded Theory Methodology and serves to explain the research design, how Grounded theory has been adopted in this thesis and thereby how I position myself as a constructivist grounded theorist. This chapter serves to explain how the research process evolved and how data was sampled and analysed. The fourth chapter unfolds the substantive theory by presenting its three main components and showing how these are linked. Chapter five integrates the substantive theory from chapter four with the

extant formal literature presented in chapter two in order to explain the findings and link the substantive theory to previous knowledge in the domain of entrepreneurial learning processes. Chapter six sums up the study, gives my concluding remarks and suggestions for further inquiry.

2 Literature

2.1 Introduction

When utilising grounded theory methodology, the timing of the literature review in a is a disputed topic. Classic grounded theorists, such as Glaser & Strauss, (1967) and Glaser (1978) advocate postponing the literature review until after the analysis is completed in order to avoid importing preconceived ideas and imposing these in the research. However, this has later been criticized by a number of researchers. For example, Thornberg (2012) problematize the early ideas of pure induction and how ignorance of established theories implies a loss of knowledge. He notes how the ideal of the researcher as a 'blank slate' would be impossible to obtain in practice and instead advocates 'informed grounded theory' which is a balanced approach of drawing on the tenants of grounded theory, constant comparison and systematic coding while allowing appropriate theoretical concepts to be visible in the data. The approach of informed grounded theory is congruent with Constructivist grounded theory, where the practitioner rather than using literature as forcing application is instead loosely guided by sensitizing principles (Charmaz, 2006). Thus, in the context of this thesis, the literature review was conducted after the initial data collection and occurred during, and in iteration with the analysis of data. While, initially the literature was reviewed in a non-committal fashion, to sensitize to various concepts, as the analysis progressed certain concepts identified in the data which were also found in theory began to take a more theoretical framing. The purpose of this chapter is to present the relevant contextual literature that has been used to support the research, weaving through the areas that support the grounded theory and explaining where the contribution of this grounded theory is situated. The literature stems largely from the domain of entrepreneurship studies, with a specific focus on the entrepreneurial learning process and entrepreneurial opportunity. However, literature has been reviewed in a non-systematically fashion and instead chosen to enrich the substantive theory developed. The total volume of literature reviewed for this study is relatively light, and the goal has not been to create an overview of the development in the areas mentioned above, rather select the literature that could enrich this specific study and its emerging categories.The

purpose of this grounded theory study was to generate a theory specific to entrepreneurial learning processes and entrepreneurial opportunity creation, which may increase the current understanding of how to adapt entrepreneurship education into a context where the dominant understanding of opportunity discovery is not sufficient. The research begun with a general interest in examining entrepreneurial learning processes in the context of new technology and the formation of new opportunities. In order to better understand the contextual issues, literature on entrepreneurship and entrepreneurship education was reviewed as the analysis in the study progressed. The extent literature situates my study in the field of entrepreneurship education and aims to promote a further understanding of the findings related to entrepreneurial learning processes and opportunity creation. The purpose of reviewing and discussing literature concerning entrepreneurship education and entrepreneurial opportunities was to create a deeper understanding of aspects related to the theory developed. The literature review enriched my understanding of the basic social processes studied at the xR Creators Lab, and it enabled my interpretations of the data to be combined with other conceptual ideas. I.e the data-set indicated that the entrepreneurial learning process was strongly linked to the social context it operated in, literature that could enrich these findings were included. The literature review below is initiated with discussions on key definitions of entrepreneurship, followed by literature on entrepreneurship education with a focus on the processual understanding of some of the theories from this field before reviewing the topic of entrepreneurial opportunities, and lastly opportunity development and social context. Not all of these areas will be explained in-depth equally, the literature review seeks to support the scope of the grounded theory, the emphasis is therefor on entrepreneurship education and entrepreneurial opportunity development within a social context.

2.2   Terminology

Before moving on to the reviewed literature, I would like to outline the conceptual language used in this thesis that stems from the field of entrepreneurship literature. In the literature a distinction is drawn between intrapreneurs, that is used to describe people who innovate within an existing organization or business venture whereas entrepreneur is used to describe an individual who starts a own business venture with a new concept or idea. The intrapreneur make use of entrepreneurial skills and thinking to create initiatives that could benefit the organization or business. I do agree that there is a relevant conceptual difference between these two. However, as I am interested in the people who went through an entrepreneurial

learning process as a holistic group I choose not to reflect this difference trough the conceptual language in the rest of the paper, but instead refer to these individuals as entrepreneurs. By referring to them as entrepreneurs, it reflects my social constructivist approach where I see them as active co-creators of both their own learning experience and as co-creators of the entrepreneurial opportunity. In the section of data collection, a description of the entrepreneur's professional background will be described in short. When referring to the empirical case, the xr Creators LAB will be referred to as the Lab.

2.3 Entrepreneurship

Various definitions of entrepreneurship can be found in the literature. For example, Schumpeter (1934) highlights the innovative combination of existing factors, Kuratko(2014) describes entrepreneurship as continuous innovation and creativity, Stevenson and Jarillo (1990) define entrepreneurship as "a process by which individuals - either on their own or inside organizations - pursue opportunities without regard to the resources they currently control" (p.23). The academic field of entrepreneurship is relatively new and still trying to establish consensus regarding what exactly this field is a study of. In contrast to the previous dominant theories that explain entrepreneurship trough the characteristics and performance of individuals as Shumepeter(1934), there seem to be some agreement around the fact that knowledge about the individual alone is not sufficient to explain entrepreneurial action and outcomes (Davidsson, 2015). The focus has shifted towards entrepreneurial processes, leading to a growing consensus that "opportunity" is a fundamental aspect of the phenomenon of entrepreneurship (Gaglio, 1997; Kirzner, 1997; Venkataraman, 1997; Shane and Venkataraman, 2000; Gaglio and Katz, 2001). The question of where do opportunities come from has proven rather elusive in entrepreneurship studies (Wood et al., 2014). The growing interest for entrepreneurship can be seen to reflect what Vankatraman(1996) cited by Henry, Hill and Leitch(2005, p.100) refers to as an "emerging economic environment created by the confluence of changes in the corporate world, new technology and emerging world market". Entrepreneurship can prove to be a beneficial response to such changes. In fact, these global changes have shown the relevance and importance of entrepreneurship. This importance does not exist in isolation, but rather as reflected by global changes that affect the way people live and work. These very same changes that we have witnessed in the world in the last decades require every educator and educational institution to refocus (Stevenson, 2000). At a global level we are experiencing changes related to reduction of trade barriers, advancements in

technology and telecommunications. Paired together this can create both more uncertainty in the world, as well as more opportunities. Changes at an organizational and individual level as well, generates a society with greater complexity and uncertainty which creates the need for people with entrepreneurial skills and abilities in order to navigate current and future challenges(Henry, Hill, & Leitch, 2005). Kuratko (2014) states that we are now at a point in time where there is only a small gap between what can be imagined and what can be accomplished. His take on entrepreneurship involves utilizing imagination and creativity to create new visons for the future (ibid). Entrepreneurship, when properly conceived, is an intellectual domain of hard and important problems that can be confronted with the best possible scholarship (Stevenson, 2000). The next section gives an overview of the literature reviewed from the field of entrepreneurship education.

2.4   Entrepreneurship education

There has been a growing interest in entrepreneurship education on a global scale (Fayolle & Gailly, 2008). Theoretically the discussions of how entrepreneurship should be defined and executed is linked to the ongoing theoretical debate within entrepreneurship and what this field is about. As mentioned in the previous section, the history of this academic field has relied on psychology, and a strong focus on the entrepreneur as an individual to define entrepreneurship(Hytti et al., 2014). Despite a growing body of literature in this field, there still remains uncertainty to whether entrepreneurs are born or made, leading to questions of whether entrepreneurship can actually be taught (Henry, Hill, & Leitch, 2005a,). Rae (2007) claims that entrepreneurs are in fact created, and that entrepreneurial behaviour and talent can be best learned through entrepreneurial activity. A similar perspective is directed by Kuratko (2014) who argues that the *entrepreneurial perspective* that permeates entrepreneurs can be developed in individuals. This perspective encompasses seeking opportunities, taking risk, and having the persistence to push an idea forward to reality (ibid).

The different roles and aims for Entrepreneurship studies can be theoretically divided into three groups; Learn to understand entrepreneurship, learn to become entrepreneurial and lastly learn to become an entrepreneur. This division is only theoretical, and in praxis programs may co-exist in more than one category (Hytti et al., 2014). Entrepreneurship education targets multiple objectives, from personal skill development to innovative venture creation. The target audience for entrepreneurship programs consists of a mix of people with diverse backgrounds and levels of education, leading to a broad definition. That the learning needs of

entrepreneurs will differ at the various stages of the development seems to be an idea that is widely accepted (Henry et al., 2005) There are different takes to what the objectives of such programs should be, in general they should aim to develop an entrepreneurial attitude, skills and behaviour(ibid). One of the core objectives with entrepreneurship education is that it is different from business education because the process of business entry deviates from managing a business (Gartner &Vesper, 1994). Another question that should be taken into consideration is *who* the entrepreneurship education is for, where some authors argue the need to adapt the program to the audience, avoiding a "one-size fits-all" approach, and instead focus on designing a learning experience based on their needs and wants (Fayolle & Gailly, 2008). Entrepreneurial learning can best be understood as a learning by-doing approach according to Minniti and Belgrave(2001). For entrepreneurial learning to be effective it must be based in real life work situations (Henry et al., 2005). A conceptual difference between *learning for* and *learning about* entrepreneurship is often highlighted in the literature, whereas the former is "an intellectual activity while the latter calls for embodied knowledge as experientially acquired" (Hjorth & Johannisson, 2009, p.75). When entrepreneurship is practiced it can be seen as the playful and desired making of opportunities, reflecting upon this in the context of education, what is being taught can be viewed as a creation process. If entrepreneurship is a creation process, learning in this case, would be centred on the actual creation of knowledge and "about the making of the new". According to this view, entrepreneurship education is not reduced to learning what to do, it also includes learning how to create, and to do new things (Hjorth & Johannisson, 2009, p.57). Learning itself can be seen as a process of social creation, "processes create people", learning in the perspective of life enhancement can be viewed also as a process of self-creation. "understanding and constructing learning as an entrepreneurial process suggests that all human senses must be invited since what is aimed for – the invention of new practices, the making of new worlds – happens in entrepreneurship, in learning as an entrepreneurial process." (Hjorth & Johannisson, 2009,p.75). The following section targets the question around the content of entrepreneurship education and what should be taught. The section starts with a short introduction to the debate of entrepreneurial opportunities and ends with a discussion around the implication this could have on entrepreneurship education.

2.5   Entrepreneurial opportunity and Entrepreneurship education

In the stream of research on entrepreneurial opportunities, a conceptual distinction between the "discovery" and "creation" is found (Davidsson, 2015). This distinction is separated by the ontological view of the nature of the opportunity formation process itself, which according to Gartner, Carter, & Hills (2003) are discussions about how the external circumstances to the entrepreneur is construed. Most scholars follow a line of reasoning where the nature of opportunities are seen as concrete realities waiting to be discovered, or observed by the entrepreneur (Kirzner, 1979; Shane, 2000; Shane Vankataraman, 2000). This viewpoint is labelled by Gartner, Carter, & Hills, 2003 as the *opportunity discovery perspective*. In *The discovery view* opportunities are waiting to be discovered and exploited by the entrepreneur. If the entrepreneurial opportunity is objectively out there, then why do some people and not others exploit the opportunity that they discover? For Venkataraman (1997) the answer is a joint combination of the opportunity and the nature of the individual. The recognition of entrepreneurial opportunities is seen as a subjective process, however the opportunities themselves are objective phenomena out there waiting to be discovered. Defining entrepreneurship education based on this definition would mean a focus on "knowledge transfer regarding how, by whom and with what effects, opportunities to create future goods and services are discovered, evaluated and exploited (Hindle, 2007). Pursuing this line of reasoning may lead us to ignore important characteristics of the opportunity as a phenomenon. Other authors have suggested an alternative view, arguing that opportunities are in many cases *enacted,* emerging from the "imagination of individuals by their action and their interaction with others" (Gartner et al., 2003, p.105). The "opportunity enactment" perspective provides a way to talk about opportunities without inheriting the dominant logic of economics. Stevenson (1983, 1985, 1990, 2000) defines entrepreneurship as "the pursuit of opportunity beyond the resources you currently control". His definition shows how the individual is embedded in a societal context where the individual must seek the additional resources to pursue an opportunity. Stevenson (2000) describes successful entrepreneurship as the "dynamic fit between a set of individuals, an opportunity derived from a particular context, and the deal that unites them. The nature of the fit requires constant vigilance. There is no such thing as opportunity forever" (p.12). If we situate objective opportunities in the market as one end of the spectrum, than in the other end we find Sarasvathys (2001) theory of effectuation. Her theory positions opportunity as so strongly rooted in local information, prior knowledge, skills and resources, so that the opportunity is only available to a handful of

skilled entrepreneurs who are able to effectuate the opportunity into a venture. Effectuation refers to a set of entrepreneurial decision-making principles that entrepreneurs use of in the face of uncertainty when non-predictive control is required. Through this pattern of reasoning the entrepreneurs do not try to predict the future, instead they try to control an inherently unknowable future trough actions and choices and in doing so they fabricate opportunities(ibid). Some authors do not make the clear-cut distinction between discovery and creation when conceptualizing the entrepreneurial opportunity. While certain elements of the opportunity might be discovered by the entrepreneur, the opportunities are in fact made and not found according to Ardichvilli, Cardozo, & Sourav(2003). The development process requires the creative work of the entrepreneur, and therefor gives some agency to the individual. However, this view adheres to the fact that both individual and situational influence the process of opportunity formation. In turn, this becomes a nexus between the individuals capabilities and the external context. The term "opportunities" describes a wide range of phenomena, that starts of as formless and becomes more developed over time. The latter may include ideas, inventions and basic technologies that do not have an identified market. These may or may not result in the formation of a business (ibid). The process of opportunity development depends on the type of opportunity pursued, the authors separate mainly four types based on the combination of value sought(problem) and the value created(solution). I.e in the upper left cell, both value sought, and value creation capability is unidentified, and the opportunity may represent the creative endeavour of pushing a technology past the current limits. In the upper right cell, where value sought is identified, the opportunity development represents problem solving and filling a gap in the market.

Figure 1 Type of opportunities Adopted from Ardichvilli et al., 2003, p.117

The importance of entrepreneurial opportunity should be reflected in entrepreneurship education according to Wood, Welter, Artz and Bradley (2014). They claim that entrepreneurship researchers have paid to little attention to the variance in entrepreneurial opportunities, and instead choosing to treat them as homogeneous. If there in fact is a variance in types of opportunities pursued, then this will reflect the entrepreneurial action required, which should be addressed by entrepreneurship education. The object of such education would revolve around training and developing the skills required for the entrepreneurs to discern opportunity type. This implies that the skills of a successful entrepreneur are partially a function that reflects the type of opportunity being pursued. To illustrate, the actions required to develop an already known product would differ drastically from a radical innovation (Wood et al., 2014)

2.6   Opportunity development and social context

In todays globalized world, with immediate access to large amounts of information, few organizations have the luxury of owning or employing all of the resources needed in order to pursuit an opportunity. Being part of a supportive community creates the basis for repeated, mutually beneficial transactions between entrepreneurs. Such communities are built by focusing on building networks rather than hierarchies and "by reinforcing the community trough celebration and reinvestment in other community members' new ideas" (Stevenson, 200, p.15). Aldrich and Zimmer (1986) situated the entrepreneurial process in a social network, seeing it as embedded in a shifting network of social relations that at simultaneously facilitate and constrain the linkages between aspiring entrepreneurs, resources and opportunities. DeKonings (2003) model highlights the process in which the entrepreneurs interact with their social contexts in order to develop opportunities, more precisely, to develop and shape ideas into attractive opportunities. During the opportunity development process, the entrepreneur engages in two cognitive activities, information gathering and concept creation, which could be described as "a process of collecting, combining and configuring a specific set of information bits into unique business concept"(p.275). The entrepreneur creates new concepts trough (re)combination of the gathered information or convergence of ideas. Central for this cognitive process to take place is a network consisting of weak ties and experts. The entrepreneur engages in two specific activities that links the cognitive processes and the social context during the opportunity development; *thinking-through-talking* occurs through conversations the entrepreneurs inner circle, or even strangers, to develop ideas into concepts.

This begins early in the process of developing opportunities, and is described to help the entrepreneur, and to have an impact on success. *Assessing resources* begins when details and strategy is not fixed, this puts detail into the opportunity by shifting focus from a larger picture over to a more detailed plan for execution. This plan is based on the resources the entrepreneur perceives as available. It is also essential for the creative process as it will also have a direct impact on the concept itself by shaping and changing it according to the resources available (ibid).

Figure 2 Social Context and Cognitive Activities (De Koning, 2003, p.283)
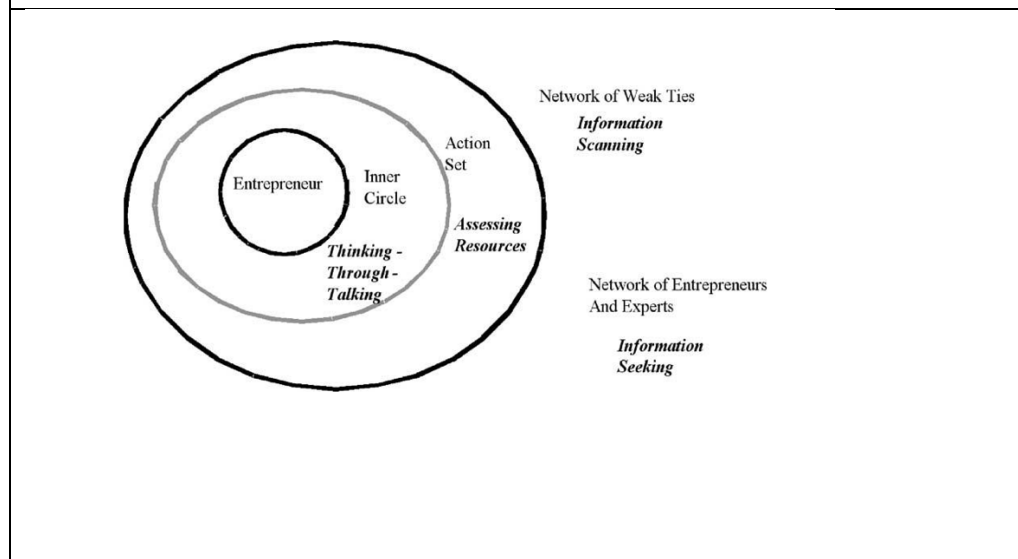
Figure 2.2 shows De Koning´s modelt of the entrepreneur situated in a societal context represented by the concentric circles; inner circle, action set and network of weak ties and experts. *The Action set* refers to a network of strong ties that is built actively by the entrepreneurs to pursue a specific venture opportunity. This is created in response to the development of the opportunity, from existing ties or even strangers (de Koning, 2003). Her model shows the importance of social context for opportunity development by emphasizing the dynamic between cognitive and network activities. This shows how in the context of a specific opportunity the entrepreneurs actively use their network to seek out relevant information from peers and experts whose knowledge makes them useful. The process of creating a concept is intensified by accessing resources and building an action set(ibid). Dimov (2007) describes opportunities as creative products, emerging through the continuous shaping and development of ideas that are acted upon. Instead of viewing them as single insights and single attributions, he emphasizes the contextual and social influence that

continuously affect the creation and shaping of ideas into opportunities by accessing new information, directing the entrepreneur's attention and reinforcing beliefs (ibid).

2.7 Sub Conclusion

This chapter was initiated with a discussion around the use of literature review in a Grounded Theory study, and an overview of how and when literature review was conducted for this specific study is provided, it was reviewed in a non-committal fashion and used as a set of sensitizing principles to enrich the study of entrepreneurial learning process(2.1), an overview of the terminology used in this paper is given in Terminology(2.2), literature from the field of entrepreneurship is introduced in short in Entrepreneurship(2.3), literature from the field of entrepreneurship education is reviewed and discussed in Entrepreneurship education(2.3), literature reviewed on the topic Entrepreneurial opportunity(2.5), literature on entrepreneurial opportunity formation and social context is reviewed.(2.6) This chapter situates my study within the field of entrepreneurship education, with a focus on entrepreneurial opportunities and the impact of social context and explains how literature was used to enrich this grounded theory study of how to educate entrepreneurs to actively create entrepreneurial opportunities.

3   Methodology

3.1 Introduction

Underlying any form of research is a philosophy of science that informs us of the nature of the phenomenon examined and the methods for understanding it(Van de Ven 2007). The following chapter makes explicit my fundamental assumptions about the nature of human knowledge and how it can be acquired (epistemological assumptions), the studied realities (ontological assumptions) and the nature of ways to studying phenomena (methodology). The purpose of the chapter is to create transparency around my research approach. Section 3.2 describes the ontology and epistemology of this study. My research strategy and the reasons for using Grounded theory are found in section 3.3. In section 3.4 I provide an overview of the rationale for sampling data in this study. The specific methods for data collection and analysis found in section 3.5 and 3.6. The procedure for data management is outlined in section 3.7. Ethical considerations of this study are found in section 3.8. A discussion about quality criteria's and limitations are discussed in section 3.9 and 3.10.

3.2   Research philosophy

The question of 'truth", or the nature of reality, lies at the heart of a discussion about philosophical underpinnings of any qualitative research methodology (Mills, Birks, Hoare, 2014, p.109). Positivism assume that an external reality exists "out there" separate from our descriptions of it. This social reality should according to positivist researchers be studied with the same objectivist principles that adhere to natural science (Flick, 2014). A contrast to this position is that of social constructivism. Constructivists see reality as pluralistic. Reality becomes "relative—local and specific—and therefore, reality is actually *realities*" (Denzin & Lincoln, 1994, p. 109). Given the exploratory nature of the research aims, and the underlying emphasis on the entrepreneur's perceptions of their learning experience this led the study to adopt a social constructivist stance. This allowed me to access the multiple renderings of entrepreneurs without assuming that there exists an objective truth about the studied phenomenon. When researching the factors that contributed to the entrepreneurial learning experience, I find it necessary to point out that what is considered a successful entrepreneurial learning experience is constructed by the human subjective worldview. The entrepreneurial learning process is constructed and maintained by humans and it is situated in a particular time, and place. Since there is no such thing as universal truth in social constructivism, this research can simply uncover one context-dependent shared understanding of reality that is constituted trough collective and individual actions. This thesis follows an approach that explicitly assumes that any theoretical rendering offers an interpretive portrayal of the studied world (Charmaz, 2006, p.10). The choice of epistemology will influence how I conduct my research, as reality will be co-constructed together with the participants. For this paper this means that the data I view both the data I gather, and the analysis as created from shared experiences with the entrepreneurs participating in the study. Constructivist grounded theory allows the researcher to incorporate the multiple voices, views and visions of participants when interpreting their social reality. This study used the constructivist grounded theory methodology articulated by Charmaz (2006) in which inductive and abductive analytic processes predominate. A constructivist grounded theory approach start with a systematic inductive approach and evolves into an interactive, comparative and abductive process. Abductive reasoning of the data entails that the researcher considers all possible interpretations of the data, constantly examining these empirically before arriving at what seems to be the most plausible interpretation of the data Charmaz (2006, p.186).

Qualitative researchers are interested in uncovering the meaning of a phenomenon for those involved, how people interpret their experiences and what meaning they attribute to their experience and how they construct their worlds (Merriam, 2009) A grounded theory seeks not only to understand, but to build a substantial theory about the studied phenomenon (Merriam, Tisdell, 2015). This study revolves around how the entrepreneurs understand the process of learning and engagement during the Lab, it explores the core meanings attached to the entrepreneur's actions. This type of interpretive research, which is where qualitative research is most often located, assumes that reality is socially constructed. In this view there is no single, objective reality out there, rather there are multiple realities or interpretations of one single event (Merriam, 2009). Following this assumption, the researchers do not "find" knowledge, they construct it. Constructivism is a term that is often used interchangeably with the term interpretivism (ibid). This study rests on an overarching social constructivist epistemology where knowledge is constructed in processes of social interchange; it is based on the role of language in such relationships, and, above all has its social functions (Strauss, 2012). Imbedded in this perspective is a reversed relation between ontology and epistemology which acknowledge that ontological categories could exist, but our knowledge of what is true or false is neither seen as subjective nor objective but rather constructed by social interactions (Hansen, 2013). The interpretation of the studied phenomenon in this paper is in itself considered as a construction and not a universal truth (Charmaz, 2006). The unit of analysis in this paper is the actions taken by the participants taking part in this study.

3.3   Research Strategy Grounded Theory Methodology

The term Grounded Theory refers at once to a methodology, method as well as the outcome of the research process, in the construction of a grounded theory (Eriksson & Kovalainen, 2008). Grounded theorists often begin their research guided by certain empirical interests to study and general concepts that create a lose frame to these interests (Charmaz, 2006).

This thesis started with identifying a field of interest based on the established research on entrepreneurial education and opportunity formation. I identified what I perceived as a lack of empirical studies that explain the entrepreneurial learning process that seeks to actively create an entrepreneurial opportunity, as opposed to discover it. Given the lack of pre-established theory to explain the phenomenon Grounded Theory was applicable, due to the ability to generate theory to explain the "how" and the "why" in an unexplored area of study (Eisenhardt & Graebner, 2007). The xR Creators Lab was chosen as a site of entrepreneurial

activity that could be suitable for this study, which did not start by formulating a research question, rather as guided by the empirical interest of discovering the process of teaching entrepreneurs how to create opportunities. Given the interest in discovering basic social processes, I found GTM to be a good fit. This was also because it allowed me to enter the field with an idea of the direction and framing, and to guide the further inquiry process by the logic of theoretical sampling. The goal of this study was to generate a substantive theory that could explain the basic social process of how to teach entrepreneurs to create opportunities. It is worth noting that theories developed through the grounded theory methodology are generally of the middle range and context specific instead of broad macro-level theories (Eriksson & Kovalainen, 2008). This study adheres to Charmaz(2006) Constructivist version of Grounded Theory, a detailed overview of the research process is given in the data analysis section(3.6).

3.4   Research design

The founders of the Grounded Theory Methodology, Barney Glaser and Anselm Strauss, published The Discovery of Grounded Theory (1967) where they contrasted "theory generated by logical deduction from a priori assumptions" (p.3). The origins and orientation of Grounded Theory approach and methodology should be viewed as imbedded in the social science landscape of the 1960 when it emerged. At this time the social sciences were heavily influenced by the logic-deductive theory generation, analysis and method approach which some would argue that the methodology reflects. The original work by Glaser and Strauss was later labeled the classic view of Grounded Theory by Glaser and his advocates (Thornberg, 2012). Over the years a number of text books about Grounded Theory methodology has proliferated, each of these with different starting points and taking different approaches to grounded theory and the elements in the methodology(Strauss, 2012). The most renown are Straussian GT by Strauss and Corbin (1990), and the Constructivist approach by Charmaz(2006). These different versions of Grounded Theory Methodology are influenced by different historical and philosophical underpinnings (Charmaz, 2006). Glaser´s work can be seen as heavily influenced by positivist traditions where theory is assumed *discovered* from the data in a unitary external world by a neutral observer. The Straussian GT is informed by pragmatism and moves away from the earlier embedded objectivist threads, shifting his focus from structures to mere processes and bringing agency to the studied human beings conducted through problem solving practices in an open-ended study(Charmaz, 2006). Constructivist

grounded theory can be seen as a contemporary version of Grounded theory, which assumes that people construct both the studied phenomenon and research process through their actions. Regardless of which type a researcher adopts, the very essence of Grounded Theory is that theory and analysis should be grounded in the data themselves.(Eriksson & Kovalainen, 2008; Strauss, 2012). In Grounded Theory, the data gathering and analysis take place simultaneously where each part informs one another in order to construct theory about the studied phenomenon (Thornberg and Charmaz, 2013). The inductive elements with the data collection and analysis differs from many other qualitative traditions where the researchers first collect all the data and then analyze them, in grounded theory this parallel gathering and analysis is conducted throughout the whole research project (Thornberg and Charmaz, 2013). Grounded theorists representing each version engage in the following actions

1) Conduct data collection and analysis simultaneously in an iterative process. Compare data in order to develop conceptual categories. 2) Develop analytical codes and categories from the data and of from preconceived logically deducted hypothesis. 3) Analyse actions and processes rather than themes and structure. 4) Use memo-writing to elaborate categories, specify their properties, define relationships between categories and identify gaps. 5) Engage in theoretical sampling towards theoretical saturation, aimed towards theory construction rather than population representativeness (Charmaz, 2006, 2011).

By using a constructivist grounded theory, I retain the rigour of the traditional grounded theory, but without adopting the objectivist and positivist assumptions from the traditional grounded theory. The substantive theory in this paper therefor represents interpretive rendering of reality as opposed to an objective reporting of it, which reflects my epistemological stance as a researcher (Charmaz, 2006). The main source to guide my overall inquiry process, was Charmaz´ Constructivist Grounded Theory, because this variation resonates with my ontological view. However, the research design of this thesis was constructed in a pragmatic way, where the ambition has not been to stay stringently true to one specific version of grounded theory methodology but rather draw upon different approaches that equip the study with a toolbox of concepts that helped navigate in the, at times, messy empirical field. As a researcher I found it helpful to adopt the coding paradigm by Strauss and Corbin (1990) as a heuristic tool in my data analysis process. I do acknowledge that Strauss and Corbins´s use the coding paradigm more rigid compared to how it was used in this thesis since its originally used as a tool to locate a core variable that will explain the Basic Social Process studied. As a constructivist Grounded theorist, I was not

concerned with locating a core variable in the data what would have explanatory, predictive power. The theoretical concepts serve as interpretive frames in this study and the understanding of the relationship between them are abstract (Charmaz, 2006, p.140).

Figure 3.1 shows is a visual representation of the research design in this study. How I implemented the specific research design of grounded theory methodology will be elaborated in the following segments.

Figure 3. Research Design
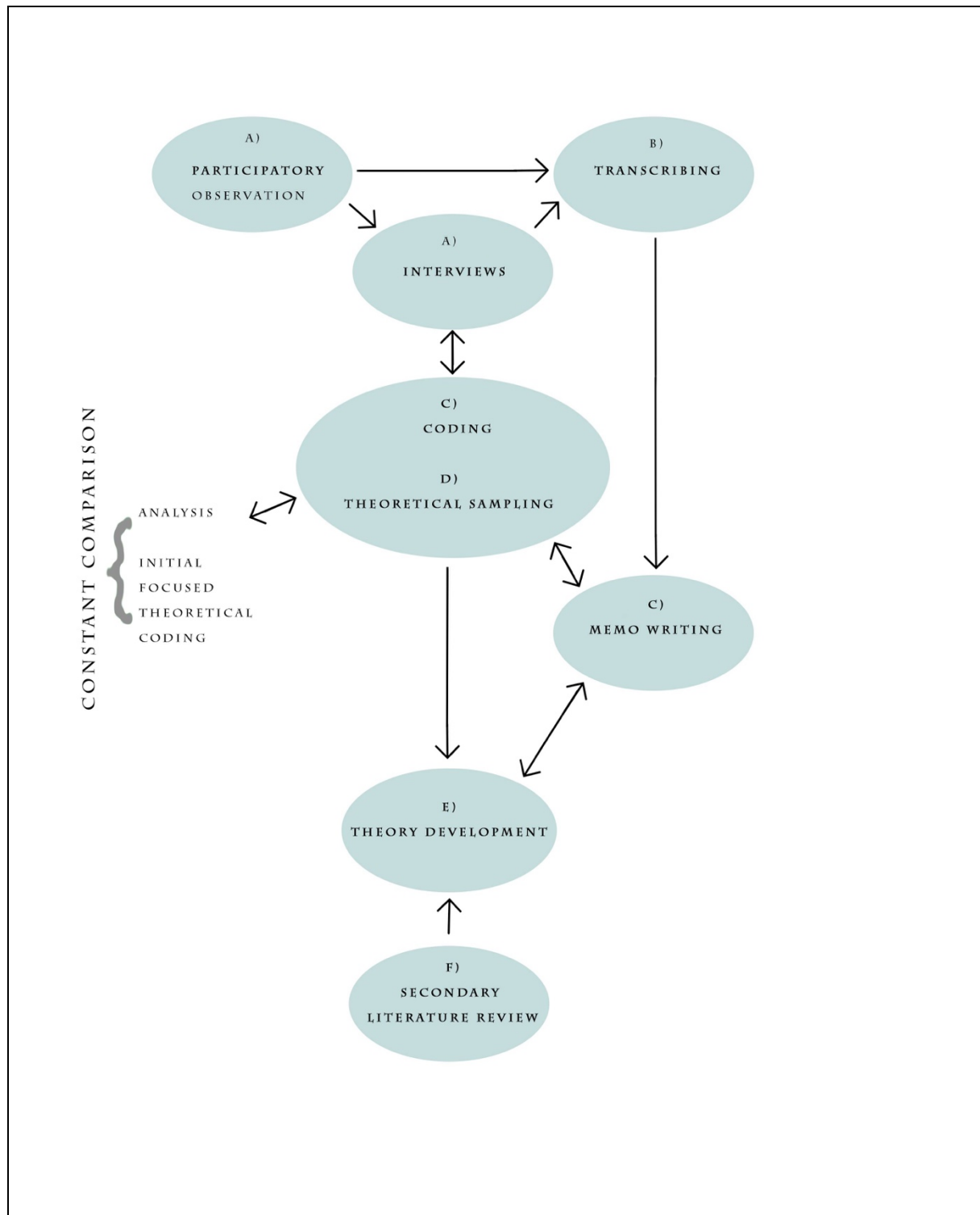
3.5   Sampling Strategy and data collection

The sampling strategy for this study was organized after the principles of theoretical sampling where the goal is to sample data purposefully to explicate the emerging categories. This

differs from the traditional sampling that aims to sample representative distributions of a particular population, or randomly selected population. More specifically, theoretical sampling allows the emerging theory to inform the further data collection (Charmaz, 2006). This means that the researcher seeks out relevant people, events or information in order to enrich and define the emerging categories in the data. The sampling continues until new data does not reveal any new properties or yield any new theoretical insight about the emerging theory (Charmaz, 2006).

In this study I considered the xR Creators Lab as a suitable site to study the process of how these entrepreneurs *learn* to work in successful entrepreneurial ways in a context where they are dealing with a nascent technology, and a market where there is no widespread monetization-model for what they are producing, thus a market where entrepreneurial opportunity formation would likely be high. Data collection began during the xR Creators LAB itself. During these five days, from the 23rd of July until the 27th of July 2018, I was a participant observer, carrying a notebook with me at all times, where I recorded things that I found interesting, plausible, or just simply mundane. I observed what was going on in the LAB, noting down questions that emerged. I wrote field notes without having a research delamination in mind, and simply sought to capture what was interesting about the process the LAB engaged creative entrepreneurs in. In the evenings I would write down my reflections from the day and create a digital record of the observed activity.

During the five days at the Lab, I participated in various events, workshops, talks and lectures and a prototyping session. The program in its full description can be found in Appendix 1. On a daily basis the program would start around 9 in the morning, and we would wrap up around 8 in the evening. I made several discoveries during my time at the Lab that I later pursued through interview data. I.e. I recognizes several elements from Design Thinking, a qualitative method I had become familiar with through my study program, however this method had been adapted to the specific setting at the Lab. In its original form this is a human centred approach to innovation that seeks to address the needs of the user. A refined version of the method was used for creative purpose to form new ideas via ideation and prototyping. I became interested in gaining a deeper understanding of how these methods contributed to the entrepreneurial learning process at the Lab. I found several other processes that I wanted to gain a rich understanding of, these are presented in the analysis section. In order to achieve this, further data sampling was required. I was interested in investigating a process of entrepreneurial learning experience in a bounded setting which meant that I knew *where* to seek further

information. My research was aiming to interpret and explain the basic social process of entrepreneurial learning at the Lab and thus required enriching my sample with interview data from the people who had first-hand experience of this.

A total of nine in-depth interviews were conducted, an overview of these can be found in the next section (3.6). The participants for the study were mainly recruited via e-mail where I contacted them and asked if they would be interested in participating in a study centred on the xR Creators Lab where they would share from their learning experience at the Lab and I explained to them that the research was for my thesis. As I did not know beforehand who would enrich my theory to the highest degree, I begun reaching out to a handful of participants asking if they wanted to participate in the study. An inclusion criterion for the study was therefore based on their willingness to participate in a study where they would engage in self-reflection and self-disclosure about their experience from the Lab. I experienced being turned down by a handful of participants who were not willing to participate.

The three initial interviews in this study helped me build a better understanding of the entrepreneurial activity at the Lab and how this was forming an entrepreneurial learning experience. Emerging categories were defined after the three interviews and the sampling became more refined and I could seek to further saturate the emerging categories and form new ones. In the interviews that followed I would upgrade the interview guide in between interviews, making sure to sample more data around the concepts that were still thin. I was beginning to see these categories emerging, but I was still lacking a rich understanding of them and the relationship between them. During the third interview the entrepreneur talked about the organizers role as facilitating certain salient attributes of the process, such as safe environment. I realized that her name had come up in the two previous interviews as well, indicating that she could be a part of my theory somehow. I decided to extend my sample through an interview with her to create a better understanding of her understanding of why things were organized in the way they were, and the role she played in them. An interview was held with the organizer which led to a richer understanding of several of the concepts and it led me to sample further in the direction of the categories networking, building confidence, collaboration and building a safe culture. I was originally planning to sample interviews with the mentors who were part of the Lab because I thought that could enrich my theory of entrepreneurial learning. When I spoke to the organizer it became clear to me that the mentors did not have any role in the actual planning and organizing of the Lab, and I therefor went

back to sampling interviews with the entrepreneurs. I became aware that a handful of the entrepreneurs who were part of the Lab in 2018 had participated in the 2017 edition of the Lab as well. I believed that it could be fruitful to sample interviews with these entrepreneurs, interview five was conducted with a person who participated in both editions. The categories became saturated, however I had questions regarding how they were linked. I therefore decided to sample two more interviews with entrepreneurs with the specific areas that needed enriching, i.e to understand how the process of *Experimenting* was linked to *Building a Safe Culture.* My dataset implied that these two processes were linked, and I wanted to explore this further. Also, I could see that *Creating Future Engagements* was a creative process that the entrepreneurs engaged in, some of the data indicated that the mentors played a key role in this process and I needed to figure out how exactly. Upon coding the ninth interview I did not identify any new information, indicating the saturation of my theory I made the decision to stop sampling data. I concluded that the categories were in fact, saturated after I had compared the data from my ninth interview with the other codes and categories and reviewed my memos. One additional document, and information collected from their website [1] were also used in this study, however these were not relied on in the analysis but were used to inform my study.

Data collection sources

Figure 4. Data sources

---

[1] http://filmzentrum-bayern.de/en/labs/xr-creators-lab/ (Last

Type of source	Description	Quantity
Primary source	Interviews with participants	8
Primary source	Interviews with organizer	1
Primary source	Participatory observation	5 Days
Primary source	Field notes	10 pages
Secondary source	Documents (Booklet)	26 pages
Secondary source	Web page	Not quantifiable

Table 2 Table of Interviews conducted

Natl.	Ref	Name	Background	Duration
LU	I1	Sneja Dobrosavlievic	Video artist and advisor in communication/new media	40
DE	I2	Christina Kinne	Independent Film producer and director	65
DE	I3	Julia Bruton	Producer, writer and co-founder of "Sinnema animation Studio" in Berlin	40
DE	I4	Astrid Kahmke	Creative Director and founder of xR Creators Lab	70

IE	I5	Niall Campion	Director and Producer of xR Content. Founder of VRAI, a xR production company.	40
PL	I6	Kasia Prus	Independent Film director and Writer. Background in Media from the University of Arts London.	50
DE	I7	Jennifer Firtz	Conceptual and instructional designer(e-learning) and storyteller for digital media. Background in History	40
LU	I8	Karolina Markiewicz	Visual artist and writer-director Background in political science, philosophy and theatre science.	40
LU	I8	Pascal Piron	Writer-director and visual artist in conventional film, new media and VR. Background in Visual Arts	40

An overview of the participants of this study can be found in table 2 where a short description of their professional background is added. In short, the participants had various backgrounds from creative industries such as Film producers, Film and new media directors, media artists, writers and Virtual Reality and Augmented Reality developers.
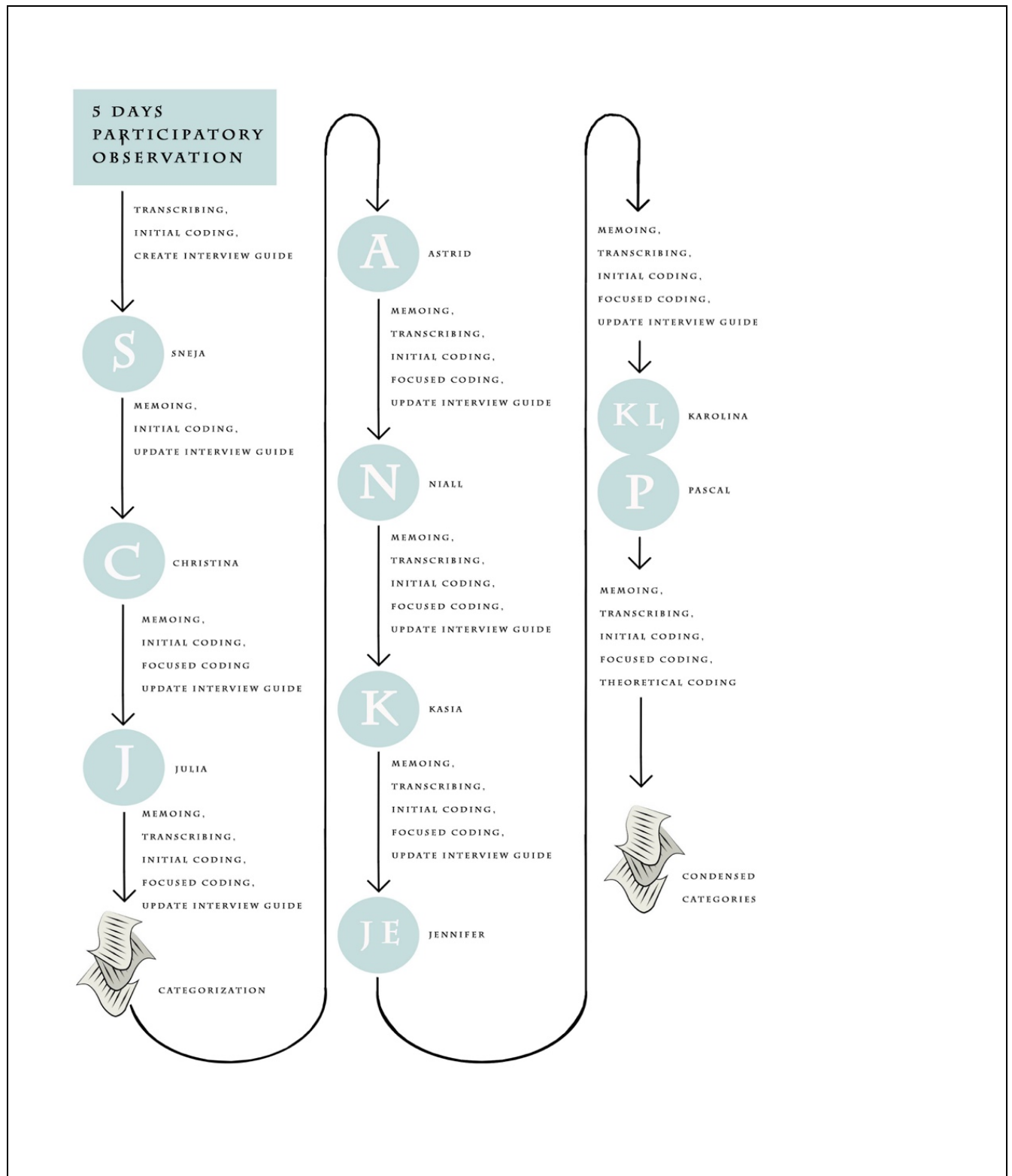
Interviews

Semi-structured interviews for this study was conducted via Skype Video Calls. I strived to balance flexibility and control during these interviews. Using interviews for theoretical sampling meant that I gathered data to refine and saturate my already existing categories, at the same time I did not want to "force" data into my preconceived categories. Since I could

not identify the most significant processes beforehand, updating the interview guide based on the already collected data set and emerging analysis, served as a way to inform the rest of the data collection. This was also a way for me to keep close to my gathered data, making sure that I sampled in the direction of the emerging categories. I made sure to ask probing questions where I found it necessary or appropriate. At the same time I kept the interview open in order to allow the participants to share what was most significant to them about their learning experience at the Lab. An example of an interview transcript can be found in Appendix 3.

3.6 Data analysis methods

This section details the research methods used in the data analysis of this study. In line with grounded theory methodology, analysis began in conjunction with the collection of data. Rather than starting from a position of an already existing theory or predefined concepts, the codes and categories were constructed trough the data, guided by theoretical sampling, the data was analysed trough a constant comparative method until the substantive theory was saturated. The coding process in this consisted of three phases: initial, focused and theoretical coding. Initial coding is the closely study of fragments of data to look for their analytic import, this can be words, lines, segments and incidents. The focused coding process is centered on selecting what seems to be the most useful initial codes, and thereby testing them against extensive data (Charmaz 2006).

Figure 3 Research Process

5 DAYS PARTICIPATORY OBSERVATION

TRANSCRIBING,
INITIAL CODING,
CREATE INTERVIEW GUIDE

S SNEJA

MEMOING,
INITIAL CODING,
UPDATE INTERVIEW GUIDE

C CHRISTINA

MEMOING,
INITIAL CODING,
FOCUSED CODING
UPDATE INTERVIEW GUIDE

J JULIA

MEMOING,
TRANSCRIBING,
INITIAL CODING,
FOCUSED CODING,
UPDATE INTERVIEW GUIDE

CATEGORIZATION

A ASTRID

MEMOING,
TRANSCRIBING,
INITIAL CODING,
FOCUSED CODING,
UPDATE INTERVIEW GUIDE

N NIALL

MEMOING,
TRANSCRIBING,
INITIAL CODING,
FOCUSED CODING,
UPDATE INTERVIEW GUIDE

K KASIA

MEMOING,
TRANSCRIBING,
INITIAL CODING,
FOCUSED CODING,
UPDATE INTERVIEW GUIDE

JE JENNIFER

MEMOING,
TRANSCRIBING,
INITIAL CODING,
FOCUSED CODING,
UPDATE INTERVIEW GUIDE

KL KAROLINA

P PASCAL

MEMOING,
TRANSCRIBING,
INITIAL CODING,
FOCUSED CODING,
THEORETICAL CODING

CONDENSED CATEGORIES

Data analysis begun with my transcribed field notes that I had constructed during five days of participatory observation. I started to search for patterns and processes in the data, and

I labelled passages of text with an appropriate code using incident to incident coding. I made several discoveries during my time at the Lab which I developed into codes.

Figure 7.

FN02

During these two days people have been encouraged to write down ideas and post them on the boards that are placed in the large oval room **[Encouraging sharing of ideas]** *that is set up in a way that encourages people to be creative and to make something with their hands* **[Setting up for creative processes]**. *There are whiteboards, large post its, colorful pens, and play-doh. The ideas can be anything, there are no restrictions we are told.* **[Breaking loose from constraints]** *The post its on the board are short descriptions of different ideas and formats that are suggested for the prototyping session that follows tomorrow. After a long day of intense workshops everyone gathers at six in the afternoon where the organizers have set out beers and finger foods. Mads, one of the mentors, is facilitating the session, everyone else, participants and mentors are seated around the tables, with 5-7 people per table. People are encouraged to share their ideas, and a handful of people goes up to the board to pitch their ideas.* **[Openly sharing ideas and receiving inputs]**. *All the concepts are written on post its and put on the board. Each table needs to agree upon one idea that they want to develop and select this from the board.* **[Collaborating to find new ideas]** *Back at the table the idea is placed on a large white paper and the teams are given an instruction: For three minutes they will come up with as many association and details as possible to develop the idea/concept further. A messy, collaboration process starts.* **[Learning trough prototyping]**

Through observation I gathered information about the environment where the xR Lab was held and some of the activities the entrepreneurs engaged in. This created a conceptual understanding of the context they were part of. I realized that I would need more data to enrich my understanding of the social processes at the Lab, and I decided to sample interviews with participants who had first-hand experience with the social processes at the Lab. The field notes were also formative to creating the interview guides in the process.

During the first interview I asked one participant from the Lab to share from her experience being participant at the LAB, and to talk about and what she felt she had learned and which parts of the program she found valuable. My goal was to keep the focus in the study open, leaving space for the conversation to freely evolve to get insights about her learning experience. The semi-structured interview was recorded and lasted for about 40 minutes. After the interview, I wrote a memo straight after where I captured what I learned from the interview and how it challenged my notion of the previous data. I transcribed the interview straight away and I started to break down the data into segments and label the text with codes. Many of these codes were labelled with the participants own words, in-vivo coded, in the beginning in order to preserve the participants actions in the coding and to not make a leap. As recommended by Charmaz (2006), I tried to code for actions, gerunds to get into the data to discover the relevant processes that she described from her participation at the Lab. For example, the in-vivo code "find the right people", was expressed as one the objectives for signing up. I replaced the noun "find" with "finding" for that code in order to not lose the sense of action and process inherent in what Sneja was telling me. This was also applied to several other codes due to the same reasons. The first interview extended my analytical focus to not only focus on the formal components of the training program, but to include non-formal aspects of the training program, such as the creating a network, building relations and building a culture where unexperienced entrepreneurs could come in an experiment with the technology and feel comfortable. I constructed several codes that I found interesting to sample further. These were *Network / need to locate other professionals /finding the right people /mixed interdisciplinary groups creates rich knowledge exchange /locating future collaborations/ learning trough discussions/ Having the freedom to customize learning experience*. These first codes I created were leading my focus towards a process of networking, that seemed important for the entrepreneurial learning process. At the end of the first interview I had a nascent idea of the importance of the process of networking. Sneja explained that *Networking* was necessary to locate the right people to collaborate with, and this was more important than any technical skill that she could have learned at the Lab, because these become outdated due to the rapidly evolving technology. I wanted to pursue further interviews to enrich these concepts.

Figure 8 Early memo´s during initial coding

Date	Stage of analysis	Memo
26.sep	Transcribing interview 1	Creating a network was the main reason for signing up
26.sep	Transcribing interview 1	Network has significant importance
26.sep	Transcribing interview 1	Meaning of network; Building relations via Informal socializing
26.sep	Transcribing interview 1	Building relations that might turn into partnerships in the future
26.sep	Transcribing interview 1	Feeling safe made her dare to be active
26.sep	Transcribing interview 1	Exploring new topics and constructing new knowledge via conversations for others
26.sep	Transcribing interview 1	Learning via prototyping in small groups; feeling safe to explore tech without risk
26.sep	Transcribing interview 1	Activation; Ideation phase important source of new creative concepts
26.sep	Transcribing interview 1	Learning how to collaborate in mixed groups is important for working in VR
26.sep	Transcribing interview 1	Peoples attitudes affecting the learning experience; being open and not focusing on an end goal
26.sep	Transcribing interview 1	Rapid shifts in technical skills create a need for something more stable; network

This is an example of the type of memo´s I would write during initial coding, I used short memos to keep track of the different codes and what they indicated. Based on this finding I entered a second interview to increase richness and to further saturate the concepts discovered. I followed the same procedure with writing a memo straight after the interview, transcribing it as soon as possible, printing it out and starting to analyse the text via coding. However, in the second interview I found it more difficult to conduct line-by-line coding due to the speech pattern of the informant, I therefor started to utilize both line-by-line and paragraph-by paragraph coding. The second interview kept enriching these concepts, and I discovered several new ones, i.e "*creating lasting collaborations*" and "*becoming a pioneer*", I saw these codes as more or less related to the idea of networking. I conducted a third interview before starting to create categories, because the concepts of networking, creating a culture and building capacity were visible, but I did not have a full and saturated understanding. After my third interview, I asked myself which of the initial codes made the most analytical sense to categorize incisively, i.e. which codes enriched my developing theory of entrepreneurial learning. These categories were thereby tested against data to see if they could hold up. This was not a linear process, but a rather iterative process that represents the stage of focused coding. At this stage I recognized that some of the codes I had labelled were too general, and some of them did not capture action or process, but rather a topic. I critically read through the codes for the first interviews and made changes and deleted codes which did not support my theory. After the third interview certain codes began to form larger categories that had significance, abstracting common themes and patterns in several codes into a more analytical concept (Charmaz, 2006). By comparing the different codes from the three interviews I assessed which ones best represented what was happening in my data, which were raised into tentative categories. These categories were initially very broad and contained quite a number of codes.

After transcribing interview four, with Astrid, I went back to constant comparison of the data to further saturate the existing categories and to form new ones. The interview with Astrid enriched my understanding of the process of *Building a safe culture* at the Lab and made me see how some of the different concepts were linked to this process. I.e her description of how she had tried to mitigate hierarchy and competition at the Lab explained some of the codes descriptions I had found in the earlier interviews, examples of these were *Actively engaging* and *Sharing information.* Both of these codes were examples of how the entrepreneurs took part in the learning experience at the Lab. I constructed a focused code *Organizing Culture* that reflected Astrids role in the process of *Building a Safe Culture,* because I perceived these as strongly linked when I reviewed the rest of my dataset. I continued to scrutinize the tentative categories and compare them to each other as well as raw data. I could see that the tentative categories were emerging, however my ideas about them were incomplete. The entrepreneurs described that the process of *Creating new concepts* were strongly linked to the social context it was part of. I had focused codes describing how the entrepreneurs saw VR as *Becoming a new art form,* a process I linked to codes describing open collaborations and creative processes.

Figure 9 Early categories

Networking
Mitigating hierarchy
Building a safe culture
Acting on future opportunity
Building the potential of the technology
Creating new production mode
Maintaining relationships
Building a new language trough collaboration

| |
|---|
| Creating forward-thinking mind-set |
| Building capacity |
| Experimenting in a safe environment |
| Seeing the world as "could be" |

After sampling two more interviews with Niall and Kasia, I could see more clearly how the process of networking was unfolding based on their descriptions. I began to understand the networking process in terms of the other codes i.e the focused codes *managing uncertainty* and *locating funding opportunities*. This gave me a richer understanding of the process, and how networking could be used by the entrepreneurs as a strategic way to learn more about how to locate the right resources to build opportunities. The complexity of the technology required them to seek out others to *mitigate uncertainties* and create a support system of likeminded people. I had codes indicating the relationships that were built during the Lab were not reduced to formal business contacts, rather the quality of the network was described using in-vivo codes such as *VR Family* and *Creating new friends*. These codes indicated that the network was meant to last over time. These interviews created a richer understanding of the category *Building a Safe Culture*, which the data indicated was related to the process *Building confidence* found in-vivo in the previous interviews. I had a loose understanding of this being of importance for their learning experience, after the interview with Kasia I could see how this was of importance for active participation during the Lab and for building motivation.

I continued to sample data until no new concepts were revealed. After I had conducted all nine interviews I was left with 39 categories. As the analysis progresses I focused my analysis on exploring the relationships between those categories and also between codes within these categories. By scrutinizing my data and constantly comparing concepts, I could see that a few of them actually represented the same basic social process, and the categories were condensed. As my analysis progressed the memos became richer and more conceptual. Examples of conceptual memos from focused coding can be found in Appendix 5. During the at times messy empirical landscape, I would use a set of questions to help me navigate and force me to write memo´s capturing what was happening in my data. These were quite simple

questions like "what are people actually doing, and what consequence this gets". I.e I utilized this while investigating the concepts *Experiencing increased motivation* and *Becoming part of something bigger,* I could see that both of these codes dealt with the same process; how the entrepreneur experienced increased motivation and feeling as part of a larger movement of what was referred to as "pioneers" and "early adopters" in-vivo. The description covered the process of early inventors that could have a large impact in their domain.

The process of linking categories continued.I followed a description from the one of the entrepreneurs describing how the learning environment balanced creating new knowledge, with room for imagination. The process of learning how to create content for VR was described as not reduced to what was possible to do with the current technology, but it was also a creative exercise, aiming to engage the entrepreneur's imagination, *Imaginative Work*. This focused code was later incorporated into the core category *Creating Future Engagements* which described the social practices that forced the entrepreneurs to engage with the future. This category explained what I perceived as a creative tension in the development process, between the current state of the technology and a potential future state. The category described a creative process that helped the entrepreneurs innovate. I sought additional analytical tools to better understand the processes and contextual complexities in the data. The «coding paradigm» by Strauss and Corbin enriched the study and helped me recognize that the concepts emerging were more dynamic. Helped me link interactions to the conditions influencing them, which led to a greater understanding for how the conceptual categories were linked together. I questioned when processes occurred, and with what consequence for the ones involved, it became clear to me that they were closely linked, they both dealt with the entrepreneur's motivation. As a constructivist grounded theorist, I want to acknowledge that I used this as a heuristic tool, which means that I included it in parts of the analysis where I was struggling to see the relationship between categories. I continued to refine categories by using excessive memos and by applying the coding-paradigm during focused coding. I.e the category *Experimenting* which had three sub-categories *Testing to find the potential*, *ideating*, and *Experimenting to unlock potential*, was collapsed into the category *Building Safe Culture*. By using the coding-paradigm I could see that *Experimenting* was in fact enabled by the process of *Building a Safe Culture*, the entrepreneurs were actively experimenting with the technology *because* it was safe and risk-free.

Figure 10 Coding Paradigm Strauss and Corbin (1990)
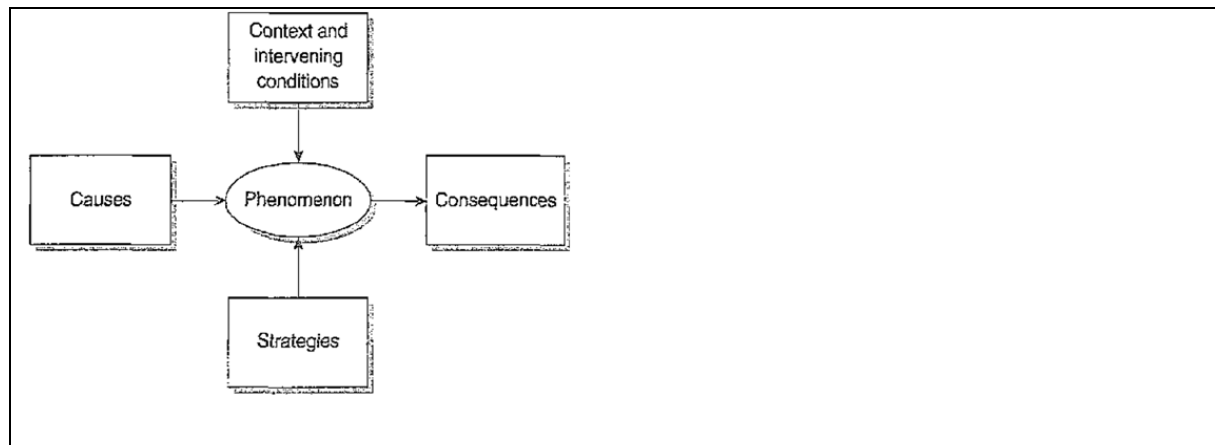
The coding procedure was repeated until I saw the categories as saturated and what I kept finding in the data was expected. I explored the relationship between the categories to clarify and adjust them accordingly. The following focused codes were used integrated into what was structured into three core categories. The rationale for creating these three categories was because they were perceived to relate to different stages and phases of how the entrepreneurs were engaged in the learning experience at the Lab. Chapter 4 elaborates how the different categories are constructed and how they interlink, quotations by the entrepreneurs will be used to support the categories.

Figure 11 Categories

Building a Safe Culture	Creating Future Engagements	Managing network
Welcoming failure	Building the language of future VR concepts	Networking as strategy;
Experimenting	Becoming part of something bigger	Maintaining relationships;
Building toleration for risk		Mitigating funding challenges
Learning the value of collaborations	Upskilling for the future	Establishing a support system
Sourcing ideas in safe space	Imaginative work	
	Building agency	Managing complexity

Establishing a level playing field		Problem solving trough a community
Building experience		
Feeling supported over time		
Developing confidence		

3.7   Data management

Field notes were written in a notebook that I carried with me during the five days of the Lab and later transcribed into a Word document. Taped interviews were transcribed verbatim by me as soon as possible after the interview was conducted. Creating routines for the data management in this study was an iterative process where I went back and forth between manual handling of the data and using a software to assist me. Charmaz (2006) recommends using pen and paper during data analysis as a way to stay connected with the data. I decided to start out by conducting line-by line coding of the interviews in such manner. However, as I started to gather more data I became worried that I would not be able to structure and keep track of the progress with a manual approach. Midways in my process of sampling interviews, I turned to a software program to assist in the coding process in order to create transparency as well as storing all data in one place. Nvivo12 was used for parts of the coding process. I had not undertaken any specific training or workshop prior to using Nvivo12, but I was open to see if I could achieve a more efficient and effective data management and analysis. I found some of the features with Nvivo12 helpful, however at times when the software became too cumbersome I found myself returning to the manual way of coding, instead of spending more time watching online tutorials or reading manuals because I was more eager to spend time getting "into my data" and start coding. The kinesthetic approach of physically handling the paper or the coding became my preferred method for transcribing interviews. Later in the analysis when I began creating categories and relating them to form a theory I would mix between Nvivo, Word or just writing and drawing with pen and paper.

3.8 Quality criteria for Constructivist Grounded Theory

Quality Criteria	Definition	Demonstrated trough
Credibility	Has research achieved intimate familiarity with the setting or topic? Do the categories cover a wide range of empirical material? Are there strong logical links between the data and argument and analysis? Have the research provided enough evidence for your claims?	Credibility is demonstrated through the use of rich data, drawing on both observational and interview data and following an extensive coding procedure. The categories presented are firmly rooted in the data.
Originality	Do the categories offer new insights? Does the analysis provide a new conceptual rendering of data? What is the social and theoretical significance of this work? How does your grounded theory challenge, extend, or refine current ideas, concepts and practices?	Originality is demonstrated trough the categories that are unique to this study. The categories developed have elements of originality and can offer new insights into the entrepreneurial learning process.
Resonance	Do the categories portray the fullness of the studied experience? Have you revealed both liminal and unstable taken for granted meanings?	Resonance is demonstrated trough representation of the participants views which is consistent with how they answered questions in this study. The categories developed

		Does your grounded theory make sense to your participant or people who share their circumstances?	portray the experience of the entrepreneurs that were part of this study. The developed categories were shared with a few participants from the study who could resonate with their experience.
Usefulness		Does your analysis offer interpretations that people can use in their everyday worlds?

Do your analytic categories suggest any generic processes? Can the analysis spark further research in other substantive areas? How does your work contribute to knowledge? How does it contribute to making a better world? | Usefulness is demonstrated trough providing a substantial theory that may have implications for how entrepreneurship education dealing with nascent technologies are organized.

. |

Table 6. Based on the Quality Criteria listed in Charmaz (2006, p.182-183)

3.9   Ethical considerations

This study followed the Danish Code of Conduct for Research Integrity[2] and its description of the three basic principles that should pervade all phases of research; Honesty, Transparency and Accountability. These are important principles that I have incorporated into my study. I have tried to be accurate and balanced in my reposting and ensured that everyone involved accepts their responsibility for the research. The participants right to privacy was respected and every participant were asked to give a verbal consent before recoding the interviews. The

---

[2] https://ufm.dk/publikationer/2014/filer-2014/the-danish-code-of-conduct-for-research-integrity.pdf (Last reviewed 14.12.2018)

participants were all informed about the nature of this study and what it would be used for. Confidentiality was a topic treated by the researcher by seeking permission from each participant to use their real names, information about their background and to reveal the information gathered. Every participant gave a written consent before this paper was published. Qualitative studies that invite participants to talk about sensitive topics have the potential to cause harm or distress among the participants. The studied phenomenon in this paper was not considered particularly sensitive. During the interviews, references to particularly sensitive or personal issues were not relevant or encouraged topics. Based on this, I do not consider that I have any sensitive data in my collection that requires any special handling. I have received informed consent to use the participants actual names due to the fact that this study does not handle any particularly sensitive information.

3.10 Limitations

The sample size of this study is quite small, with nine qualitative interviews and five days of participatory observation. However, in grounded theory the notion of saturation for categories supersedes the actual sample size (Charmaz, 2006). This thesis has demonstrated theoretical saturated categories and collecting more data seemed unnecessary. Although theoretical saturation has been demonstrated, this study was bound by the limitations following a thesis, which created restrictions for the time spent on this research. I do believe that I have created a representative study through my data.

Utilizing Grounded Theory Methodology for the first time was a challenging and rigorous process, and I followed the principles of Theoretical Sampling as best I could. I would like to acknowledge that as a novice researcher it was difficult to make the decision about when to stop sampling data. I gathered more focused data until I decided that my categories were robust enough and no new data would enrich them. As the method was new to me, this may have affected the results. I may have focused on things that were not as important as I thought it to be. There is a possibility that as a novice researcher I may have missed important topics, which more experienced researchers would have discovered.

The explorative and constructivist nature of this study allowed me to create new insights about the processes related to entrepreneurial learning by co-constructing the data together with the entrepreneurs who participated in the study. Even though interviews were semi-structured, they were to some degree bound by the frames I had created, and it can be argued

that this did not let the participants speak freely about their experience from the Lab. However, I would ask the participant before ending the interview if there was anything they wanted to add that had not already been explored, in order to make sure they got the chance to freely express themselves and share what they found most significant.

3.11 Sub Conclusion

This chapter outlined the research philosophy, social constructivist (3.2). The research strategy describes how GTM was applied to this study (3.3), Research Design outlines why GTM is suitable for this study (3.4). Sampling Strategy describes how data was sampled in this study and how theoretical saturation was achieved, and an overview of the specific data collection sources for this study is provided (3.5). In Data analysis methods the methods used in this study and the iterative process of data collection and analysis is described, showing how I constructed the three core categories Building a Safe Culture, Creating Future Engagements and Managing Network (3.6). A description of how data was handled in this study is thereby outlined (3.7), followed by a discussion on the quality criteria's adopted from constructivist GT was achieved, namely Credibility, Originality, Resonance and usefulness (3.8). A discussion around the ethical considerations made in this study is outlined followed by a discussion around this study's limitations (3.10).

4   Empirical Findings

4.1   Introduction

The previous chapter provided an overview of my research process that was mainly guided by Charmaz Constructivist GT(2006). The chapter showed my data collection, sampling and data analysis, revealing how I coded and categorized data from participatory observation and 9 interviews. During the process of coding, and constant comparison of data, implicit processes, actions and meanings of the entrepreneurs' experiences were revealed. Data that shared similar attributes and properties were grouped together giving rise to three conceptual categories which taken together represents the process of entrepreneurial learning and opportunity creation. These conceptual categories and sub-categories will be further elaborated in this chapter where the aim is to show their properties and demonstrate how they fit together, unfolding my constructed grounded theory.

The purpose of this research was to generate a theory of entrepreneurial leaning specific to the setting of dealing with nascent technology which resulted in the theory of "building opportunities for VR". This theory has three components (1) building a safe culture, (2)creating future engagements and (3)managing network. This first section will outline the theory in short followed by a description of the different conceptual categories. The three categories are considered to be highly relevant for the focus of this study, namely to explain how the entrepreneurial learning process unfolded at the Lab and how they affect the entrepreneur's ability to create opportunities. While each category focuses on different processes connected to an entrepreneurial learning process, they are not understood to have distinct boundaries and they complement and interact with each other as parts of the process of entrepreneurial learning for opportunity formation. The process at the Lab can be identified as an early stage of an opportunity development process. This theory demonstrates how *Building a safe culture* creates a fundament for the rest of the learning experience, and empowers the entrepreneurs through experimentation in a risk-free environment, strengthening their beliefs on their own abilities, and creating an environment share information more freely and begin to form collaborations. *Creating future engagements* explain the social processes the entrepreneurs engage with the future which force creative thinking and concept creation and creates an increased motivation among the entrepreneurs. The process of *Managing network* is part of the entrepreneurs' strategy to reduce uncertainties embedded in the current state of the technology, this process involves building relationships that are meant to last over time, and create access to knowledge and resources in the time during and after the Lab.

Building a Safe culture

Safe culture was a term that was found in-vivo in several of the interviews. This core category explains the process of actions leading to the manifestation of a culture at the Lab. Culture is here understood as the non-formalized, but reoccurring social patterns in which made up the dynamic environment at the Lab. This category affected the process of creating opportunities by setting up an environment that did not punish failure, but rather welcomed it, creating a shift in the entrepreneur's mind-set towards a more risk-taking attitude. This category also encompasses other processes that manifested the culture, namely not bringing commercial interests in and fostering collaborations and a community-feeling. The data revealed that manifestation of a culture had impact on their self-confidence, their professional identity and

their motivation for further participation in the VR industry. The category of building a safe culture is entangled with the two other categories, because it affects how the entrepreneurs interacted with one other throughout the course of the Lab. In the following sections I will show how building a safe culture had a significant impact on how the entrepreneurs learning experience unfolded. The process of creating the culture was described as both as heavily influenced by the organizer and as a result of collective effort. The culture was not formalized; however, it was evident in the data that the entrepreneurs believed that the organizer had a strong influence on the creation of the culture, by handpicking individuals who would fit into a collaborative environment and by communicating a set of norms in the beginning of the Lab.

"Astrid made it very clear, this was one of the first things she said: that this was a safe space, and nothing was asked of us. We will work on a prototype, but if it fails it doesn't matter. There is nothing on the line here, nothing to show afterwards, even though if we fail everyone will learn from it. Its lucky. I think it's one of her competences to choose the right kind of people." Pascal (I,8)

One of the ways a safe space was constructed was through a risk-free environment that welcomed failure. Removing pressure informed the learning process because it made the entrepreneurs engage more actively in the experimental processes. At the Lab the entrepreneurs could experiment with the technology and test different ideas and concepts without risking anything. This became a chance for the entrepreneurs to use failure as a strategic advantage, as a valuable source of learning and a way to become familiarized with the production setting for VR. I observed a process that contributed to welcoming failure as a source of learning. At the end of the Lab all the teams shared their prototypes and key learnings from the process, with an emphasis on what had gone wrong. This was encouraged by the organizer and the mentors. Openly discussing failures became a source of learning for everyone present. At one occasion one of the entrepreneurs shared a technical problem, where someone from another team had similar experience and was able to share a possible solution (FN_05). The entrepreneurs explained that their risk-taking behavior was influenced by the attitude of the others present. For some of the entrepreneurs, their willingness to risk of failure was inspired by others who were engaging in ambitious, complex concepts for the prototyping. Jenifer explained

"I remember the neuro group wasn't even sure if they could do what they wanted to, and they just tried and that's something that's good to see. That there is still place to experimenting, and people who are willing to try with you even though they don't know what they are doing"

The entrepreneurs described how experimenting with the technology in a safe environment empowered the them, leading to stronger belief in their own capabilities and problem-solving abilities. I could see how experimentation during the Lab could lead to optimizing future processes of VR Creation. Since experience cannot be taught in a traditional way, experimenting, getting hands on training and thereby gaining experience was described as valuable by the entrepreneurs. The data from the interviews indicated that experimenting with the technology was used by the entrepreneurs as a strategy to mitigate the risk of financial loss in the future.

"I think, especially in VR if you have a project, and you experiment with the money of your business partner and it fails, that something that could be really fatal for your company.

So I think these safe spaces are really needed before you start working with customers.

It can be very expensive if you don't know how to budget a VR project"

Jennifer (I,7)

Selecting the right type of people was described as a parameter for fostering collaboration at the Lab, where the entrepreneurs could practice teambuilding. The organizer selected participants who were assumed to be interested in forming collaborations during the Lab because the execution of a VR production unfolds as a multi-disciplinary team effort.

"I think it's also because Astrid has chosen people who like to work in a collaborative way. She takes a lot of time choosing people, she takes weeks to choose the right people to work together and she makes it clear before and during the LAB that it's not about competition."
Karolina (I,8)

Creating a safe culture at the lab was described as having an impact on how collaborations were formed, and how ideas were developed. Entrepreneurs described an open space where they could exchange ideas and knowledge, free from competition. Some explained how they

were less afraid to share their ideas with others, comparing it to the Film Industry. Openly sharing ideas led to essential feedback, which could be incorporated into concepts being developed. The Lab became a space where the entrepreneurs could cultivate collaborative skills and open up to form collaborations that might not have occurred in a competitive environment.

"I really enjoyed this immensely open creative energy and it was very little competition, like the feeling of competition, it was very much about sharing and being interested also in the other projects and that was a very new experience when it comes to my world and like, working creatively together, I know usually its like "Mine! I'm not sharing any ideas, you can steal it or something like that" which is really stupid when it comes to creativity, because its exactly that it is built on that you, you know connect and start to build up something together" Julia (I,3)

The entrepreneurs mentioned other factors that they believed had an impact on the process of building a safe culture, one of them were not bringing any commercial interest into the Lab. This was perceived as contributing to lowering competition and making the entrepreneurs become more collaborative

"It wasn't a space where people came to do programs because somebody paid them to do a project. This was more about art and experimenting and investing in ourselves, because we had all paid to be part of this. But definitely not being a commercial venue, I think affected this, and it made us become more available to each other." Kasia (I 6)

Another action that contributed to this process was the mentors and their functioning during the Lab. The entrepreneurs commented on the encouraging feedback they had been given during the lab, indicating a feeling of support over time which informed their process of creating new, innovative concepts. The mentors had an impact on the entrepreneurs conceptual understanding of the production of VR, they also contributed on a more practical level during the prototyping of new conepts. They helped the entrepreneurs utilize their skill set and targeting strategies to overcome technical issues during the creation process. The mentors were an essential part of guiding the entrepreneurs through the process of iterating their ideas during the Lab. Through the process of experimenting the entrepreneurs had to embrace the messiness and multifaceted components of creating a story in VR. Christina

described the process at the lab like a micro-entrepreneurial journey that was affected by the support by the mentor's present

During the prototyping sessions it was so valuable to have the mentors present, just hanging around and you could reach out and ask them anything. If you tried to start your own VR business you would be left to yourself and have to figure out absolutely everything yourself, which could be hard without any experience. Now, we had all this knowledge from these professionals available at all times, such a good opportunity to learn from them and to work with them." (I,3)

The organizer described a process she believed contributed to creating a perceived level playing field, providing everyone involved at the lab a fair chance to actively participate and succeed. Astrid decided to not have a formal introduction of everyone at the beginning of the Lab as a way to remove people from their context and history and situate them all as equals in the setting at the Lab. The entrepreneur's previous achievements and titles were not given any focus, as a means to create a feeling of equality among the people because this could have an impact on people's interaction.

"I did not ask people to introduce themselves with four sentences, there was just a sticker with your name and nothing else. This is completely on purpose. Because..it starts to be a sub conscious competition. As soon as the first person tells, I have been running a VR company for the last ten years and I won this and that award, you start thinking what can I tell about me and it isn't that VR skill or professional skill only that counts in that lab. You may have skills that you're not even aware of -which are tremendously important"

Astrid (I,4)

The data revealed that the intended effect of feeling safe had an impact on the entrepreneur's behavior, identity and how they engaged with others. For some of the entrepreneurs who lacked previous technical experience, "feeling safe" became a critical component for active participation and for asking questions of all ranges

"this was a safe place to explore, and ask questions without feeling stupid. I do know Astrid, she has this ability to get these people together who would honour that also and take it in as a gift and use it and also the people that were there as mentors, to help us over the course of the whole week they were very open, supportive" Julia (I, 3)

The process of *Building a safe culture* creates an environment where the entrepreneurs can overcome the experience challenges related to opportunity formation. Given that experience cannot be taught in a traditional way *Building a safe culture* was described as important to let their learning experience unfold; it allowed experimentation with the technology to manifest and unfold in a risk-free environment that welcomed failure, which led to changes in attitude among some of the entrepreneurs who described *Building toleration for risk. Establishing a level playing field* played a role in creating an environment where everyone could actively participate, by mitigating hierarchy and competition. Building a safe space led to an environment where information and ideas was shared freely and the entrepreneurs could engage in *Sourcing ideas in a safe space.* In the Lab, ideas could be formed at an early stage without competition or too much criticism which was important for the creative development of new concepts. *Feeling supported over time* was described as having an impact on the development of the concepts, supportive advice and information from the mentors helped enrich the process. The characteristics of the opportunity in this case, using VR for storytelling, requires a team effort for the development. The process of experimenting in a multi-disciplinary team was part of *Learning the value of collaborations.* As a result, the entrepreneurs described *Developing self-confidence* and a strengthened belief in own abilities which could strengthen their performance of building opportunities.

Creating future engagements

This category demonstrates how the entrepreneurs create an active engagement with the future of VR to uncover new perspectives of the creation of opportunities. The entrepreneurs are working with a medium where the language is not fully developed yet, forcing the entrepreneurs to rewire and imagine new production forms and new innovative ways of telling a story. One part of this social process was how the entrepreneurs experienced an increased motivation for being part of the future VR industry based on the imagined potential of the technology. In order to innovate, and to understand how they could possibly shape the future, the entrepreneurs were encouraged to imagine the possible future(s) of VR to force their creative thinking around new concepts. As part of this process, some of the entrepreneurs described developing a feeling of having agency to actively affect the status-quo.

When I studied film- everything had already been invented! I wondered why every movie was in that 3D-like structure, when you look at literature and the narration, there are so many more different structures for narration out there. I asked my teacher about this, why the limits and form is so set, and he said film is expensive, let's not waste money on experimenting. That's what I love about VR- and also gives us great responsibility we explore it- we define it. We define all the norms they are going to teach about in ten year's time. Its inspiring to be part of this "wild west" sandbox playful atmosphere... By creating all these first experiences, we are defining this new medium.

Christina (I,3)

Parts of the program were dedicated to topics that had broader implications for the industry such as the lack of monetization model and lack of mass adoption. I observed that these parts of the program served as a chance for the entrepreneurs to engage with the present state of the industry in order to start *imagining the future*, and the opportunities that could be created. In a lecture by one of the mentors, his style of teaching was not reduced to only focus on the current state of VR and storytelling, but also teaching possible future scenarios, imagining "what could be". This was done by giving rich examples of current changes in the market and reflecting upon the possible impact these could have on the future industry, i.e how new arenas for distribution are opening up with a future paid distribution platform initiated by Biennale Venice Film Festival and another one by the French VR distributor MK2. When, and not if, these will start operating with paid models, it will have massive impact on how entrepreneurs can make money out of VR. He painted a picture of how current markets for Location Based VR Entertainment are growing steadily, such as VR arcades, theme parks or movie theatres and he shared his reflections on which future direction this could take. With his talk he encouraged the entrepreneurs to become forward thinking and not limit their creative ideas to fit into the current state of the world, but rather use this knowledge critically to imagine where the industry is going and position themselves form this movement (FN02). I found examples in the data of the impact these lectures had on some of the entrepreneurs and their cumulative learning experience. Understanding this shifting landscape, created a better understanding of how to act up on it, and how the continuous experimenting with artistic content could help break through the hype of the technology

"I really liked what Michel from Venice said, in the beginning when I listened to him it didn't make all that sense to me than but after a week I could understand what he was talking about.

For example, when he spoke about the hype that we have, and a lot of investments came and now it's like a time after the storm where everything calms down, but if we keep working with VR than it will come something that breaks this state. He also gave a more theoretical part of the business side of things, an overlook, which made a lot more sense at the end of the week than in the beginning." Julia (I,3)

Astrid described how the Lab was intentionally set up in a way to encourage creative processes for idea-generation in an open encouraging way

"I use certain tools, the clay, the playful things to work with, play-doh, haptics, to work in groups, the ideation phase, how to ideate, how to create an atmosphere in a room where you hopefully have as less critics as possible. Or an encouraging atmosphere in a room that opens space, opens the mind. The people in the film industry in Germany are not really familiar with that and I am always surprised that design thinking still isn't a consistent part of education for artists because it can do so many things for you" Astrid (I,4)

During the five days of the Lab, the entrepreneurs described that being in a confined space, shielded from external partners affected their creativity, and let ideas flow more freely. This meant that the ideas were not restrained by factors such as market-fit, rather the focus was on creating the freedom to innovative new concepts with no boundaries.

I think we were convinced pretty fast about the potential of VR because they weren't talking about the tech at all, they were talking about what you can do, the possibilities... I think in these talks we discussed what VR is if you remove all the tech stuff away, what is VR. What can you do with it? Not what's possible in VR nowadays. But what is the essence, what can you do in VR that you cannot do in say, Film, or writing or music.

Pascal(I,8)

One type of problem-solving activity that some of the entrepreneurs engaged in were related to further iterations of their prototypes. A collaboration between the xR Creators Lab and the festival VR Days Amsterdam offered two of the teams the opportunity to continue their prototyping during the VR festival in October 2018. The entrepreneurs described this as a valuable chance to test their concept and get feedback from experts and possible users. The information gathered helped inform the further development of the concepts

"we got some interesting ideas, at the start, the project was conceived as a single-user-thing and it became an audience and user-focused experience, so is it a theatric experience or more a VR experience? I guess that's what we were trying to define in Amsterdam..so we got some valuable feedback from that."

Niall(I,5)

A specific format on the program, named "Meet *name of the mentor*" was set up as informal meetings with industry experts. These were carried out as more casual and informal meetings where entrepreneurs and mentors discussed various topics of interest. The entrepreneurs described these meetings as creating engagement with future scenarios in the following ways. First of all, it sparked ideas about where the industry is headed, and which forms of immersive stories could be part of that future. The entrepreneurs described gaining essential information from these meetings that was valuable for their future creation process. This created a fundament they could later build upon in their creation process.

"I created those meet mads, meet Paul, meet Michel which isn't quite workshop, but in a way it is, you step right in a discussion it was a q&a, they shared what they know, they could have been on stage to do so, but it wouldn't have been the same energy."

Astrid (I,4)

It's an interesting format because it's easier to get to know the people and to get into the work, they are really passionate about their work and they tell you a lot more than they would if they were standing on the stage and talk for an hour.

Jennifer (I,7)

I found descriptions of how discussions with others helped the entrepreneurs open up their minds to new innovative concepts, which they described as having an impact on the development process.

I found things that I became interested in, hints, that I could further research and so I could track my career out from this.I think I was very close minded to VR before the LAB, I had played a few games, watched a few films that I through were amazing and I really loved them. And the possibility of building this language, like two years ago everything you watched was like a brand -new experience, so I think I was close minded and because of the conversations

with other people I have opened up more. VR doesn't really have to be film, it doesn't even have to be 360. Seeing the Immersive theatre part also opened my mind, VR doesn't have to be a experience at home with your goggles, you can go out with your friends and have a experience together.

Kasia(I,5)

The process of *Creating Future Engagements* strengthened the beginning of development process because the entrepreneurs were challenged to think about "what could be", not focusing on discovering possible ways to make use of the technology at its current state, *Imaginative Work* forced the entrepreneurs to see beyond the technology to imagine its potential when they were developing concepts. The characteristics of the opportunity in this case is affected by how rapidly the technology is evolving, the process of Creating Future Engagements helped the entrepreneurs develop a work process that adapted to this dynamic environment. *Upskilling for the Future* descried how the entrepreneurs sought to build capacity during the Lab in order to adapt to this shifting landscape. This created a shift towards more innovative ideas and supported the cognitive process of creating new concepts by imagining future use cases of VR and storytelling and *Building the Language of Future VR Concepts.* Being part of this experimentation process and experimenting with creating concepts that could be a part of the future usage of the technology created a feeling of *Becoming Part of Something Bigger,* which referred to becoming part of a movement of pioneers who will define the medium through experimental work in order to create new innovative stories. *Building Agency* was a consequence of this process, it referred to a realization during the Lab of how the entrepreneurs could actively create change via experimentation with the technology, leading to increased motivation.

Managing Network

This category demonstrates the actions and strategies the entrepreneurs engage in to create a lasting network that creates access to resources, knowledge and possible future partners for the development of opportunities. Managing the network is an ongoing process that was constructed and influenced by several factors. Producing content in VR would require a mix of people with a technical background and people with a creative background, generates a

need for having a network in order to form collaborations that can develop an opportunity by turning ideas into concepts. In this core category I comprise the actions described by the organizer and entrepreneurs that were aiming to create and sustain a network during and after the Lab. A recurring theme in the data was how the entrepreneurs were seeking others out of necessity because they were aware of the complexity of creating content in VR. Operating in the context of a technology like VR creates a need to engage with others in order to navigate in a complex field, and to increase the likelihood of going forward with turning an idea into a concept. The complexity seemed to have an impact on how the entrepreneurs created collaborations. The complex production phases require an extensive array of methods, techniques and strategies for turning an idea into a VR experience. Collaborating with others was described as imperative when working with a new technology like VR. For the entrepreneurs who had little experience with these new technologies before the Lab, understanding the production cycles and realizing that collaboration is crucial for VR productions was a key learning.

"I learned that collaboration is key, because you can't do it alone...That's something I do a lot of, projects alone but in VR and AR that's not possible"

Jennifer (1,7)

Like one of the entrepreneurs explained, the process of producing content for VR is an integrated whole that requires a collaborative team effort to solve problems. Outsourcing of each element would not be an option, and this specifies the conditions for the production as a natural integrated process, as opposed to a fragmented work-process. A consequence of this, the need for collaborations, and a need for a network in order to succeed with creating content for VR. Another crucial element is having an understanding of how the medium works in order to select the right type of ideas or concepts that could make sense to produce in an interactive, 360-format like VR.

Its different from the projects I have done earlier, I get an idea and if it's a good one I get people onboard and give parts away, someone does the sound, people take care of different bits, but here in VR its all integrated; every element it's a part of the larger experience and the viewer is so important.

Kasia (I,6)

The process of maintaining a network stretched beyond the actual Lab and an activity that contributed to sustaining the network after the Lab was often frequent communication via social media. This was described as having an impact on creating long-term relationships between the entrepreneurs who were spread across Europe. A Facebook group served the purpose of a mutual platform where they could reach out to others for advice, find new partners and create transparency around opportunities in the European VR scene. Here they would i.e share content related to funding opportunities, call for festival entries or competitions eligible for xR content. It could also be content related to new projects and experimental work aiming to inspire the entrepreneurs and their respective opportunity creation process. The group served as a source of information that extended the entrepreneurs co-learning process beyond the Lab. The organizer played an active role in keeping their communication channel active.

"Even though we all live in different countries. We still have our FB group where Astrid posts things and connects us."

Kasia (I,6)

"it's good to see that the ecosystem is growing its kind of the feeling with family and friends when we meet and also I see that "creators lab fb group" is growing and its vital, normally those groups are dying eventually, people are going away or you don't get any likes or comments and this is still living and I think the idea is working out; to start a platform where European artists can meet and develop and start collaborations – and go back home and work on their projects and find new partners and grow"

Astrid(I,4)

Beyond creating relationships over time, I found that having a support system was important for the entrepreneurs because the technology develops rapidly, which created a need to have someone to rely on with problem solving and to manage expectations during the process turning ideas into concepts

Still, we start learning the language and dealing with the technology but still technology is galloping away and its really hard to keep pace what they do from every three to four months there is something completely new

Astrid, (I,4)

It was evident that the network was part of mitigating future funding challenges, by creating access to capital via cross-national collaborations. Niall described that he was actively searching for financial capital through the network he created at the Lab

"and also looking to see was there other people across Europe we could partner with. So, hearing that there is a fund in Norway for example, that's interesting to me. And the same with Charlotte from Belgium, trough her I learned about quite a good Flemish Film Fund that you know support VR Projects. You know, I was mostly interested in that kind of Pioneer European Collaborations that we could get involved in because Ireland is quite a small country and the Film Funds here don't really fund any of the new media content "

Niall (I,8)

The Network represented access to resources needed in the future to create content for Virtual Reality. Julia explained how the network represents access to the human resources needed to act on a future opportunity

"you need to find people that have the same goals and then later when the opportunity comes along you need to get you phone book out and call the people you already know are going in this same direction" (I3)

Some of the entrepreneurs described the structure of the program as having an impact of their networking experience. The two first days of the program were comprised of tracks of workshops that the entrepreneurs could choose from. These were held in small groups, which became a chance to interact with the others present in a more confined space, and through engaging in topics of mutual interest.

"I think that during these five days I talked to everyone present there, at least for a few minutes. This is interesting, I didn't count how many people that were in the group, maybe fifty all in all. With a mix of countries and backgrounds, that's what made the dynamic so interesting. I mean. I think the exchange was richer like this."

Sneja (I,1)

Figure 12 The Location for where the xR Creators LAB was held

THE MUNICH RESIDENZ / BAVARIAN ACADEMY OF FINE ARTS
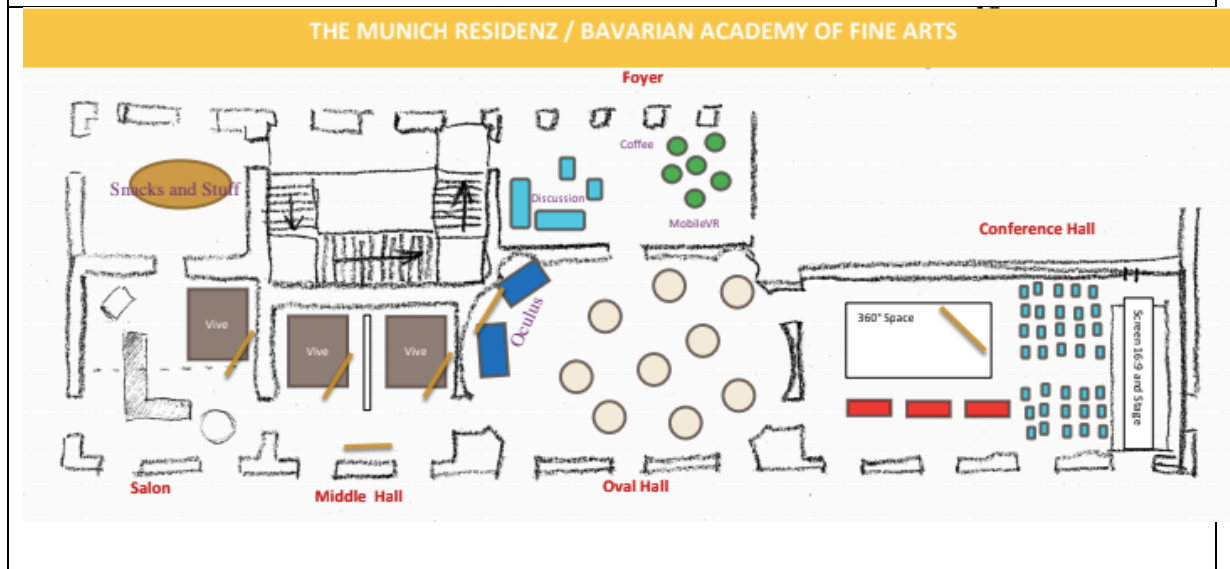
Some of the entrepreneurs explained that through the network they learned how to find new markets for their already existing concepts. Niall explained that the network represented an opportunity of finding new markets for his start-up

"So we are looking at places where there might be a market for what we do.. So we are planning a trip to Norway, Sweden and Denmark also, going to see Mads as well. Again, the thing with Ireland is that it's a small country so we are always looking for co-productions or we are always trying to export I guess, because its just not enough in Ireland to sustain what we do I guess".

(Niall, I5)

The Network represented access to resources needed in the future to create content for Virtual Reality. Julia explained how the network represents access to the human resources needed to act on a future opportunity

"you need to find people that have the same goals and then later when the opportunity comes along you need to get you phone book out and call the people you already know are going in this same direction" (I3)

When the entrepreneurs discussed the network formation at the Lab, several of them elaborated on quality of the network and how they believed the strong connections they made with people would last a long time, and possibly turn into professional partnerships in the future.

"There is a really big potential for this to become a collective of people that you can always approach, and I think that in the future if I end up creating something I will definitely make use of this potential with people who would like to collaborate. "

Kasia, (I,5)

The entrepreneurs were *Networking as a strategy* to create access to knowledge and resources that could help turn an idea into a viable opportunity in the future. Learning that opportunity development does not occur in a vacuum, but exists in a social context was a central part of the learning process. The characteristics of the opportunity in this case is affected by the rapidly evolving technology, where skills become outdated rather quickly, which creates a need to access knowledge and resources that can help the entrepreneurs with *Managing complexity.* A central aspect of this was *Maintaining relationships* over time to create a lasting network that could be used during the development process of an opportunity. A Social Media group was central to build a lasting platform for the new community of entrepreneurs. *Establishing a support system* of people the entrepreneurs could exchange ideas with, seek advice from and get help with problem-solving was described as imperative for opportunity development.

Summary

These three main categories *Building a Safe Culture*, *Creating Future Engagements* and *Managing Network* were understood as being of key importance when teaching entrepreneurs to actively create opportunities in the field of VR and storytelling. This theory shows that managing the entrepreneurial learning process in an open, supportive way created an environment where the entrepreneurs could develop skills, knowledge and a network that would be imperative for building opportunities. An exploratory idea creation process and supportive mentors were important parts of the early development of concepts. The entrepreneurs at the Lab were engaged in a process of risk-free experimentation in a multi-disciplinary environment. Through active engagement with the future they learned how to create new, innovative ideas which represented the beginning of an opportunity development

process. Building a lasting network created access to future resources and knowledge which was crucial to build the opportunity further. This is an example of a program that teaches entrepreneurs how to combine recourses, people and knowledge in order to successfully craft new opportunities. These entrepreneurs were creating opportunities not out of necessity, but because they saw VR as an opportunity to create new disruptive forms of storytelling. Several of the entrepreneurs interviewed were motivated by the fact that VR still remains an unexplored field, and the opportunity lies in the creation of new, innovative ways of telling stories. The study demonstrates the processes and actions that the entrepreneurs described as beneficial for their learning experience and improved chance of forming new opportunities

4.2   Sub Conclusion

In this chapter I have unfolded my theory "Building opportunities for VR" which consists of three components *Building a safe Culture*, *Creating Future Engagement* and *Managing Network*. I have demonstrated what each of these categories entail, and how they contribute to teaching entrepreneurs how to create new opportunities. *Building a safe culture* creates a fundament for the rest of the learning experience, and empowers the entrepreneurs through experimentation in a risk-free environment, strengthening their beliefs on their own abilities, and creating an environment share information more freely and begin to form collaborations. *Creating future engagements* explain the social processes the entrepreneurs to engage with the future, which force creative thinking and concept creation and creates an increased motivation among the entrepreneurs. The process of *Managing network* is part of the entrepreneurs' strategy to reduce uncertainties embedded in the current state of the technology, this process involves building relationships that are meant to last over time and create access to knowledge and resources needed to develop an opportunity.

5   Discussion

5.1   Introduction

This chapter links the substantial theory presented in the previous chapter with the extent formal literature presented in chapter two in order to better understand the contextual issues. The findings in this study will be linked to literature on entrepreneurship education and entrepreneurship education in order to enrich my findings, and to discuss opportunity formation in the context of entrepreneurship education. The literature offers a framework for

how to discuss various types of entrepreneurship programs and their components. This theory suggests a framework to understand the crucial components for teaching how to create an opportunity which is the dynamic interaction between the three processes *Building a safe culture*, *Creating future engagements* and *Managing network*. The substantive theory is situated in a context of entrepreneurial learning for how to use VR for Storytelling. This chapter is initiated with a discussion around adapting entrepreneurship education to a context, further the debate surrounding entrepreneurial opportunities is linked to the findings of this study. The following section (5.2) links the findings of this study to literature on opportunity development and social context. In 5.3 I reflect on the implications of this study and contribute with suggestions for further research.

5.2   How to educate for opportunity creation

Starting from assumption that entrepreneurship can in fact be taught, the substantive theory of "Building opportunities for VR" outlines the importance of creating a supportive, experimental learning process. Like introduced in the literature review, entrepreneurship education does not form one homogeneous group, instead it can be used with different objectives. Hytti et.al (2014) divides entrepreneurship education program into three main groups based on the aim of the program. Based on their model I would place the empirical case, the xR Creators Lab, as a program that seeks to develop entrepreneurial behaviour, skills and attributes. The grounded theory presented in chapter four offers a framework that explains the processes involved in an entrepreneurship education program that aims to teach entrepreneurs how to actively form new opportunities. Their mode of teaching were focused on developing entrepreneurial skills and attitudes that support the opportunity creation process. In the complex context of VR and storytelling, entrepreneurs are required to develop a set of soft skills in order to succeed. These include collaboration skills, building relations, self-confidence, and a positive attitude towards uncertainty and risks.

A central question, that is relevant to ask in the domain of entrepreneurship education dealing with rapidly evolving technology, is can a search for opportunities be managed in a world of unknowable uncertainties? In the literature review I gave a short introduction to entrepreneurial opportunities and the surrounding debate to whether they are discovered or created. Like stated earlier, this study supports the creation view of entrepreneurial opportunities. However, like, Wood et al(2014), I find it useful to distinguish the type of opportunity being pursued to discuss the *type* of entrepreneurship education needed. My study shows how the complex production of VR technology requires a particular set of skills from

the entrepreneurs if they are going to create opportunities in this domain. Wood et al(2014) explains how different opportunities, requires different entrepreneurial actions. Developing an already known product would demand a different process than that of a radical innovation. This applies to the empirical context in my study, where the development of an already known format in VR would require a different process than what the entrepreneurs in this study were engaged in; to create new forms of storytelling that challenge the current technology. An example from the Lab illustrate this. One prototype was in the form of location-based entertainment where the use of VR was mixed with a physical immersive-theatre sequence. Another prototype was telling an interactive narrative, through the use of game-like components. The opportunity in this specific study lies in the unexplored possibilities to find new ways to use VR technology to tell stories. Hindles(2007) description of entrepreneurship "knowledge transfer regarding how, by whom and with what effects, opportunities to create future goods and services are discovered, evaluated and exploited», I would argue does not apply to the basic social process that I studied, where the entrepreneurs actively create entrepreneurial opportunities, as opposed to discover them. In the case of xR Creators Lab where the entrepreneurs operate in a context of rapidly developing technology and where the market is at a nascent stage, teaching them how to search for opportunities would not be sufficient, opportunity creation is more viable. On the other hand, it is not my intention to go into a discussion on which of these views of opportunity represents the "right" way of viewing opportunities. The distinction between discovery and creation is made in this paper as a way to discuss how to facilitate entrepreneurship education in a field of new technology where the market is not yet fully developed. In the case of the xR Creators Lab, the entrepreneurs were trying to find new innovative ways to tell stories with VR technology without adapting their concepts to the current nascent market. Rather, this was a creative exercise that explored new ways of using the technology to tell stories. I would argue that the term opportunity discovery would apply to contexts where there is already a market, and the entrepreneurs respond to user needs that they "find" in the market. However, this is not the case with VR content at this current time, because they are not innovating out of necessity, instead they try to innovate because they see potential in the medium of becoming powerful for storytelling. But, when looking at the context these entrepreneurs operate under, what is the actual opportunity that is being referred to? I would argue that VR content is still not a mainstream thing at this current time, and we can´t tell how big this market will potentially be or what type of content it will be possible to monetize from in the future. The substantive theory describe how learning happens, not the outcome. The findings in this study supports

what Henry et al.(2005) describe as a need to adapt entrepreneurship education to the specific setting, because learning will differ according to what stage the entrepreneurs are at. In this study, the entrepreneurs are at an early stage, where the focus is on idea-generation and the early stage of opportunity formation. The creative ideas and concepts developed during the Lab may turn into viable entrepreneurial opportunities in the future if the entrepreneurs locate the right team and resources to build them further. This will be further elaborated in 5.3. Based on the substantive theory, I would argue that it shows the need to adapt entrepreneurship education to the specific context. In the case of the Lab, the focus was on developing new innovative ideas, without restricting this to factors related to venture development. *Creating Future Engagements* was a creative process, where the entrepreneurs engaged with the future, in order to create new innovative ideas. This category can be linked to Hjorth and Johannissons (2009) description of Entrepreneurship education as a *creation process*, teaching how to practice the playful making of opportunities. This resonates with the creative development process at the Lab where the entrepreneurs were encouraged to actualize innovative concepts. My findings resonate with their description of how learning in the case of entrepreneurship needs to be an entrepreneurial process, not focusing on learning what to do but learning how to do *new* things(Hjorth & Johannisson, 2009). *Creating Future Engagements* explained the creative elements linked to the entrepreneurial process at the Lab.

5.3   Opportunity development and social context

The substantive theory presented in this paper shows how *Building a safe culture* and *Managing Network* were important components in the opportunity formation process, which situates the basic social process within a social context. In this paper I argue that I see opportunity discovery as more focused on filling a gap in a market, where opportunity creation involves imaginative work of the entrepreneur to envision a future that the new, innovative product is a part of. In the discovery view, opportunities are simply a part of the environment, as given objects, existing independent of human agency, time and place. Opportunity creation however is situated because it is linked to the entrepreneur's actions, rooted in a specific social context. Given this, I find it fruitful to links my findings to the extant literature reviewed that situate the entrepreneurial opportunity development within a social context.

Firstly I will review my findings in the light of DeKonings(2003) model of opportunity development. Her concept *thinking-through-talking* applies to my findings related to how the

entrepreneurs learn through discussions with others. The author highlights how this occurs most frequently in the entrepreneurs' inner circle, she does however state that it can also occur with strangers. In my findings discussions are a central part of the entrepreneurs learning process, as a means to understand the industry better, to form new ideas and to build relationships. "Thinking-through-talking" could be argued to be a central step in these entrepreneurs' early opportunity development, where through discussions articulated ideas, leading to actually forming ideas. The individuals in DeKonings theory is mainly interested in forming ideas trough discussions with people who they know can offer strong advice or expertise. My findings support this to some level, based on the data indicating how the entrepreneurs valued conversations with the mentors, which for some represented access to inside information for others it helped spark ideas for future concepts. My findings also showed how the entrepreneurs were interested in discussing ideas with a high quantity of people, was not reduced only to people who were experts. The process of building a culture plays a role here, more specifically *Establishing a Level Playing Field*, which contributed to making the entrepreneurs feel like equals and fostering active participation during the discussion. My dataset showed the entrepreneurs felt they had created meaningful relationships and a strong network during the Lab. The term "VR-Family" was used in-vivo in several of the interviews to describe the bonds created at the lab, giving rise to the assumption that some of the entrepreneurs formed strong bonds that could become part of what DeKoning refers to as *the inner circle*. The Lab can be argued to be part of the entrepreneurs *Action set*; a strategy to form a network to pursue a specific opportunity. The entrepreneurs and the organizer described how they strived to build a network that would last in order to access resources, information and knowledge in the future. DeKoning described how entrepreneurs relied more on existing relationships in order to build the action sets, meaning the recruitment of human resources. My empirical findings showed how the entrepreneurs used social media in order to sustain contact with the established network, extending the access to resources for opportunity development beyond the Lab.

De Konings(2003) model of entrepreneurial development, highlights the process in which the entrepreneurs interact with their social contexts in order develop and shape ideas into attractive opportunities. Her model shows that information gathering through a network is imperative for opportunity development. The findings from this study also shows the importance of having a network to get access to advice, expertise and to locate resources. The dynamic process of *Building culture* matters for entrepreneurial opportunity development

because it can create an environment where information can be shared freely, leading to a richer idea exchange between the entrepreneurs. Linking the findings from this study to some of the central concepts in DeKonings (2003) model contribute to a richer understanding of why social context matter for entrepreneurship education.

In Stevensons (1985) definition of entrepreneurship, an imperative component is the individual's belief that reaching the desired state of growth or change is possible to achieve. He further describes that entrepreneurs who deal with nascent technologies often needs to deal with uncertainties in the search for new concepts. This could be related to my findings which show that building self-confidence during the learning process was strongly linked to the entrepreneurs' motivation for further engaging in the development process of new opportunities. The findings from this study suggests that the process of building a safe culture impact the entrepreneur's attitudes, behaviour and that it to some extent also guide actions. Entrepreneurs described how welcoming failure and learning to take risks affected their creation process. Leading to a strengthened belief in their own capabilities.

Following Sarasvathy's (2001) distinction between causation and effectuation logics, I could argue that the substantive theory presented here has elements from an effectuation-oriented approach. She describes how the goal of the opportunity process should be guided by the entrepreneur's available resources which resonates with the networking process described in this study.

5.4   Implications and Future Research

This research seeks to direct academic attention to entrepreneurship education, and the entrepreneurial learning processes. The substantive theory presented in this paper "Building opportunities for VR" make a contributing to one of the central debates surrounding entrepreneurship and entrepreneurship education; the debate on entrepreneurial opportunities and whether these are discovered or actively created by the entrepreneur(s). This study supports the creation view. The entrepreneurial processes initiated in study did not stem mainly from an external deficiency, rather they were initiated because the entrepreneurs saw a potential in this new technology becoming a powerful medium for storytelling.

I would argue that the development process described in this study is a creative endeavour from a multitude of actors (Dimov, 2007), this shift in focus has an impact on how we view entrepreneurship education and the entrepreneurial learning process. This study presents a

framework that is deeply rooted in its social context, however it can enrich our understanding of how to teach entrepreneurs to actively crate opportunities, as opposed to discover them. The substantial theory presented shows how the opportunity development process is strongly linked to a creative process that seeks to go beyond "what is" in order to create "what could be". This type of imaginative work is an important component of the development process, which can reflect the fact that entrepreneurship is a new academic field that needs to be understood on its own terms, and not solely on inherent models and terms from neighbouring disciplines. Reframing entrepreneurship and entrepreneurial learning needs more empirical studies that seeks to enrich our understanding of these disciplines. I encourage future research of entrepreneurial processes to take a similar approach and to create a study grounded in the data themselves. This led to a deeper understanding of the entrepreneurial process as a creative process and context-dependent learning process. In a young academic discipline like Entrepreneurship, using grounded theory methodology to create a richer understanding of the entrepreneurial learning process could be a fruitful approach. Lastly, I would suggest studying the entrepreneurs and the opportunity development process over time to see how it unfolds.

5.5   Sub Conclusion

This chapter links my substantive theory to the extant literature presented in chapter 2. The substantive theory "Building opportunities for VR" has three components, these were *Building a safe culture*, *Creating future engagements* and *Managing network*. My findings were reviewed in the light of the debate on entrepreneurial opportunities, and a discussion around adapting entrepreneurship education to a context was conducted (5.2). The findings from this study was linked to literature on opportunities and social context (5.3). The chapter ended with reflections around the implications of this research and suggestions for further research (5.4).

6   Conclusion

A consistent theme within this study has been the need for a substantive theory that explains an entrepreneurial learning process that aims to create opportunities, which is where this thesis contributes. The theory presented in this paper "Creating opportunities for VR" has three components and *Building a safe Culture, Creating Future Engagements* and *Managing Network*. This study demonstrates *a* way of facilitating an entrepreneurial learning process that aims to teach entrepreneurs to actively create opportunities.

This substantive theory does not demonstrate one final method for how to teach opportunity formation, it is a contribution to broaden the understanding of the entrepreneurial learning process. The substantive theory provides a rich description of an entrepreneurial learning process, grounded in the data themselves. This thesis demonstrates how the early stage of an opportunity development process can be understood in terms of being a creative endeavour, where the role of the entrepreneur(s) is to seek to go beyond the status-quo and imagine new, innovative concepts and bring these into the creation process. The findings shows that managing the entrepreneurial learning process in an open, supportive way created an environment where the entrepreneurs could develop skills, knowledge and a network that would be imperative for building opportunities. Also, an exploratory idea creation process and supportive mentors were important parts of the early development of concepts

As society is changing, entrepreneurial education will need to adapt to these complex changes. Like stated in the opening of this paper, entrepreneurship can prove to be a forceful driver of economic growth and technological change. This study contribute with important insight into how an entrepreneurial learning process can be adapted into a field of rapidly evolving technology.

The substantive theory was linked to extant literature from the field of entrepreneurship education, and discussed based on contributions from de Koning(2003), Hjorth and Johannisson (2009), Wood et al., (2014), Sarasvathy(2001) and Stevensson(1990). An important question that this thesis has shed light on is that of what should be taught in entrepreneurship education, demonstrating that the dominant view of "Opportunity Discovery" is not sufficient, especially in a field of nascent technology. This thesis demonstrated the importance of adapting the entrepreneurial learning process to the context in order to succeed.

Although this substantial theory needs to be considered in its context, it does contribute to create a richer understanding of the opportunity formation process that can re-conceptualize how we think about entrepreneurial learning processes.

7 Reference List

Ardichvilli, A., Cardozo, R., & Sourav, R. (2003). A Theory of entrepreneurial opportunity identification and development. *Journal of Business Venturing*, *18*, 105–123. https://doi.org/10.1007/s00128-017-2113-7

Davidsson, P. (2015). Entrepreneurial opportunities and the entrepreneurship nexus: A re-conceptualization. *Journal of Business Venturing*, *30*(5), 674–695. https://doi.org/10.1016/j.jbusvent.2015.01.002

de Koning, A. (2003). Opportunity Development: a Socio-Cognitive Perspective. *Advances in Entrepreneurship, Firm Emergence and Growth*, *6*, 265–314. https://doi.org/10.1016/S1074-7540(03)06009-4

Dimov, D. (2007). Beyond the Single-Person, Single-Insight Attribution in Understanding Entrepreneurial Opportunities. *ET&P*, (860), 713–731.

Eriksson, P., & Kovalainen, A. (2008). Qualitative Methods in Business Research. London: SAGE Publications Ltd. https://doi.org/10.4135/9780857028044

Fayolle, A., & Gailly, B. (2008). *From craft to science: Teaching models and learning processes in entrepreneurship education*. *Journal of European Industrial Training* (Vol. 32). https://doi.org/10.1108/03090590810899838

Gartner, W. B., Carter, N. M., & Hills, G. E. (2003). The {Language} of {Opportunity}. *New {Movements} in {Entrepreneurship}*.

Henry, C., Hill, F., & Leitch, C. (2005). Entrepreneurship education and training: Can entrepreneurship be taught? Part II. *Education + Training*, *47*(3), 158–169. https://doi.org/10.1108/00400910510592211

Hjorth, D., & Johannisson, B. (2009). Learning as an Entrepreneurial Process. *Revue de l'Entrepreneuriat*, *8*(2), 57. https://doi.org/10.3917/entre.082.0057

Hytti, U., Kupusjarvi, P., Vento-Vierikko, I., Scneeberger, A., Stampfl, C., Gorman, C. O., … Hermann, K. (2014). *STATE-OF-ART OF ENTERPRISE EDUCATION*.

Stevenson, H. . (2000). WHY ENTREPRENEURSHIP HAS WON! *Coleman White Paper*, 1–8. https://doi.org/10.1145/3132847.3132886

Strauss, J. C. & A. (2012). An Introduction To Qualitative Edition 3. *SAGE Publications*. https://doi.org/10.3390/toxins8020037

Thornberg, Robert and Charmaz, K. (2013). In : The SAGE Handbook of Qualitative Data Analysis. *The SAGE Handbook of Qualitative Data Analysis*, 380–393.

Thornberg, R. (2012). Informed grounded theory Informed Grounded Theory, (56), 243–259.

Wood, M., Welter, C., Artz, K., & Bradley, S. W. (2014). Discerning opportunity types: Implications for entrepreneurial action and entrepreneurship education. *Advances in the Study of Entrepreneurship, Innovation, and Economic Growth*, *24*(October 2017), 119–144. https://doi.org/10.1108/S1048-473620140000024005

Appendix

Appendix

XR Creators LAB, Europes Exclusive XR Training

July 23th–27th, 2018

xR Creators' Lab: Europe's exclusive training- and development lab for Virtual Reality, Augmented Reality and 360° Film!

Immersive technologies develop and improve in a breath-taking tempo, but same time the challenge is to create quality content for the new medium. We learned a bit over the last few years, but we are still in a state of exploration and discovery once it comes to sensorial and spatial narratives or Cinematic VR. Not to mention Augmented Reality that just has been landed a few months ago with the release of new devices.

In 2017 we organized the first European VR Creators' Lab and hosted 50 participants, partners and mentors from 22 nations. The creative sandbox turned into vibrant networking space, where like-minded creatives exchanged knowledge, teamed up for rapid prototyping sessions and became family and – co-workers and co-producers.

In 2018 we will open up the lab not only for Virtual Reality and 360° Film, but also for Augmented Reality and all technologies in between. We focus on narratives and storytelling, on content creation and the creative challenges of immersive worlds.

The xR Creators' Lab addresses to all writers, VR/AR developers, game designers, programmers, 360° filmmakers, techies, creative producers, media enthusiasts, artists and all with a solid professional background and a huge amount of curiosity and open-mindedness.

The 5-day training with intense expert sessions, mentored pressure cooking development, guided rapid prototyping and hands-on inspirational workshops. It is a safe haven to learn, explore, experiment and work together – in a completely non-competitive, multidisciplinary, creative, sparkling and enjoyable environment. What happens in the lab – stays in the lab! Creativity, inspiration and expertise will come together in one of the most iconic historical venues in Bavaria: the Munich Residenz thanks to our hosts, the Bavarian Academy of Fine Arts.

We are proud to work with some of the best creators and artists as mentors: Kevin Tsukii,Emblematic Group, Isi Azu, Magic Leap, Mads Damsbo, Makropol, Sönke Kirchhof, INVR. Space, Fabrizio Palmas, Straightlabs, Paul Raphaël, Felix & Paul Studios, Michel Reilhac, Biennale Venice VR, Tamiko Thiel, Media Artist, Sara Lisa Vogl, xR Base, Benjamin de Wit, xR Days Europe, Jonathan Yomayuza, Emblematic Group.The xR Creators' Lab is helmed by Astrid

Monday 23rd	Conference Hall	Oval Hall	Middle Hall	Salon	Foyer
Get Inspired	09.00 Reception				
Special Guest Mentor:	09.30 Welcome Dr Carolin Kerschbaumer (Bavarian State Chancellery) Ingeborg Degener (Creative Europe Desk Munich) Sebastian Sorg (FilmFernsehFond Bavaria)	09.30 – 11.00 Photocall for ALL Location tba Be prepared for Group Fotos			
Christoph Anthes					
	10.00 – 10.30 Opening Astrid Kahmke				
Johannes Steurer	10.30 – 11.00 Christoph: Time travel through VR-Space				
	11.00 – 01.00 Workshop Sönke: CinematicVR	11.00 – 01.00 Christoph: Introduction to Unity	11.00 – 01.00 Kevin, Jonathan: Photogrammetry capture of objects and environments	11.00 – 01.00 Martin: Introduction to Spatial Audio for 360 & XR	11.00 – 01.00 Meet Paul Raphaël
	01.00 – 02.00 Lunch Break	01.00 – 02.00 Lunch Break	Lunch Break	01.00 – 02.00 Lunch Break	01.00 – 02.00 Lunch Break
	02.00 – 02.30 Isi: Interaction Paradigms				
	02.30 – 03.00 Sara: Health/Meditation /Learning				
	03.00 – 03.30 Mads: VR Installations				
Closing 08.30 pm	03.30 – 05.30 Johannes, Andreas: The ARRI Alexa Omnicam 360° Demo	03.30 – 05.30 Isi: Methods for interactive experiences	03.30 – 05.30 Fabrizio: Unity	03.30 – 05.30 Meet Christoph Anthes	03.30 – 05.30 Meet Mads Damsbo
	05.30 – 06.00 Wrap				
	06.00 – 08.30 SPEAKERS' CORNER	06.00 – 08.30	06.00 – 08.30	06.00 – 08.30	06.00 – 08.30

Kahmke,

Tuesday 24th	Conference Hall	Oval Hall	Middle Hall	Salon	Foyer
Get inspired	09.00 Reception				
	09.30 – 10.00 Philipp: Neurofeedback in VR / Using VR to treat medical conditions				
Special Guest Mentors:	10.00 – 10.30 Tamiko: AR art + social engagement				
Michel Reilhac	10.30 – 11.00 Michel: Mastering the Art of Production in VR				
Tamiko Thiel	11.00 – 01.00 Philipp: Bio- & Neuro-Responsive VR Environments / How to control stuff in VR with your brain and body.	11.00 – 01.00 Tamiko: AR tools for non-programmers	11.00 – 01.00 Fabrizio: Unity	11.00 – 01.00 Jonathan, Kevin: Getting Started in Unreal Engine	11.00 – 01.00 Meet Michel Reilhac
Philipp Heiler					
Rolf Illenberger	01.00 – 02.00 Lunch Break	01.00 – 02.00 Lunch Break	01.00 – 02.00 Lunch Break	01.00 – 02.00 Lunch Break	01.00 – 02.00 Lunch Break
	02.00 – 04.00 Sönke: CinematicVR	02.00 – 04.00 Isi: Methods for interactive experiences	02.00 – 04.00 Sara: Tools in VR	02.00 – 04.00 Rolf: Let's prototype a working VR experience in 2 hours	02.00 – 04.00 Meet Paul Raphaël
		04.00 – 05.45 Ideation and Team building			
Closing 08.30 pm	05.45 – 06.00 Wrap				
	06.00 – 08.30 SPEAKERS' CORNER	06.00 – 08.30	06.00 – 08.30	06.00 – 08.30	06.00 – 08.30

B

Wednesday 25th	Conference Hall	Oval Hall	Middle Hall	Salon	Foyer
	09.00 am Reception				
	09.30 – 01.00 Rapid Prototyping Groups and mentors work on project	09.30 – 01.00 Rapid Prototyping Groups and mentors work on project	09.30 – 01.00 Rapid Prototyping Groups and mentors work on project	09.30 – 01.00 Rapid Prototyping Groups and mentors work on project	09.30 – 01.00 Rapid Prototyping Groups and mentors work on project
	01.00– 02.00 Lunch Break	01.00– 02.00 Lunch Break	01.00– 02.00 Lunch Break	01.00– 02.00 Lunch Break	01.00– 02.00 Lunch Break
	02.00 – 06.00 Rapid Prototyping Groups and mentors work on project	02.00 – 06.00 Rapid Prototyping Groups and mentors work on project	02.00 – 06.00 Rapid Prototyping Groups and mentors work on project	02.00 – 06.00 Rapid Prototyping Groups and mentors work on project	02.00 – 06.00 Rapid Prototyping Groups and mentors work on project
Closing 08.30 pm	06.00 – 08.30 SPEAKERS' CORNER	06.00 – 08.30	06.00 – 08.30	06.00 – 08.30	06.00 – 08.30

Thursday 26th	Conference Hall	Oval Hall	Middle Hall	Salon	Foyer
	09.00 am Reception				
Special Guest Mentor:	09.30 – 01.00 Rapid Prototyping Groups and mentors work on project	09.30 – 01.00 Rapid Prototyping Groups and mentors work on project	09.30 – 01.00 Rapid Prototyping Groups and mentors work on project	09.30 – 01.00 Rapid Prototyping Groups and mentors work on project	09.30 – 01.00 Rapid Prototyping Groups and mentors work on project
Benjamin de Wit	01.00– 02.00 Lunch Break	01.00– 02.00 Lunch Break	01.00– 02.00 Lunch Break	01.00– 02.00 Lunch Break	01.00– 02.00 Lunch Break
					02.00 – 04.00 Meet Benjamin de Wit
	02.00 – 06.00 Rapid Prototyping Groups and mentors work on project	02.00 – 06.00 Rapid Prototyping Groups and mentors work on project	02.00 – 06.00 Rapid Prototyping Groups and mentors work on project	02.00 – 06.00 Rapid Prototyping Groups and mentors work on project	04.00 – 06.00 Rapid Prototyping Groups and mentors work on project
Closing 07 pm	06.00 – 07.00	06.00 – 07.00	06.00 – 07.00	06.00 – 07.00	06.00 – 07.00

Friday 27th	Conference Hall	Oval Hall	Middle Hall	Salon	Foyer
	09.00 Reception				
Special Guest Mentor:	09:30 – 01.00 Rapid Prototyping Groups and mentors work on project	09:30 – 01.00 Rapid Prototyping Groups and mentors work on project	09:30 – 01.00 Rapid Prototyping Groups and mentors work on project	09:30 – 01.00 Rapid Prototyping Groups and mentors work on project	09:30 – 01.00 Rapid Prototyping Groups and mentors work on project
Benjamin de Wit	01.00– 02.00 Lunch Break	01.00– 02.00 Lunch Break	01.00– 02.00 Lunch Break	01.00– 02.00 Lunch Break	01.00– 02.00 Lunch Break
	02.00 – 03.00 Rapid Prototyping Finalizing /Upload Projects	02.00 – 03.00 Rapid Prototyping Finalizing /Upload Projects	02.00 – 03.00 Rapid Prototyping Finalizing /Upload Projects	02.00 – 03.00 Rapid Prototyping Finalizing /Upload Projects	02.00 – 03.00 Rapid Prototyping Finalizing /Upload Projects
	03.00 – 05.00 Final Presentations, feedback, discussion				
Closing 06.00 pm	05.00 – 06.00 Final Wrap and Farewell				

Appendix 2 Excerpts from field notes

FN_02

Day 2

24rd of July 2018

Bavarian Academy of Fine Arts, Munich Residenz

I just talked to a participant who mentioned that he was on a mentor meeting with Mads and Paul yesterday afternoon. I just realized that what I saw yesterday was a mentor meeting. I walked past the large couch area where people were gathered around with a beer in their hand, listening intensely to a conversation taking place. It was around six in the afternoon, so I assumed that this was just social get together, turns out it was more than that. I did not participate in any of the "meet X" in the last couple of days myself, I have just heard about this format trough the other participants. The person I talked to today said it was very interesting, especially because everyone was so engaged. He said that "everyone" talked, and that this was often not the case at events like this. Usually there is two or three who are "taking the room" and the rest ends up just sitting in and listening. He also said they forgot the time and ended up sitting there for around four hours even though it was only supposed to last for two hours. I asked him what they talked about and he said it was about "absolutely everything", people had asked the mentors a lot of questions about the industry and where they believe it´s heading, and many had seized the opportunity to ask more technical specific questions, some had asked for advice or feedback on their ideas. At the end, the mentor had initiated a spontaneous ideation phase to get people thinking about the prototyping session. This had occurred in an informal setting, where people pitched concepts that were at an idea stage and not fully formed, others could contribute with information or questions to help enhance ideas. During this session they also shared some of their visions for the future industry, and what type of projects they would be interested in working on. A few tentative teams for the prototyping was formed.

Talk by Michel Reilhac, from Venice VR

Even though the style of this lecture was more traditional, with Michel up on the stage with a microphone and everyone else sitting down forming a passive audience, this talk felt very laidback. He did not have a power point, and everything seemed very ad-hoc, like he was improvising.

He browsed through many topics in a short while, however his slow pace left room for reflection, it became an interactive conversation between Michel and the participants. I could also see that these topics fostered a lot of engagement in the conversations that followed that day.

Shared his insights on where the industry has been and where it is going. In an encouraging tone he talks about the opportunities he sees for VR.

Michel talked about that we might feel that the hype has blown over, that's a good thing. There have been waves of companies in the wake, and a new wave of companies coming. The landscape is shifting- Viability/Distribution and new arenas are opening up; Biennale Venice are partnering up to make a paid distribution platform and he says there will be new opportunities for financing. A new tendency, created by Spheres, the VR Experience by Eliza Mc Knit that was acquisitioned by a museum for a high price, and other experiences, that have been acquisitioned. These specific cases illustrate changes in the market. There are many platforms that are looking at paid models; How will they get their money back? Location Based Entertainment is how they get their money back right now, ones paid platforms arrive this will change. MK2, ready to use setups, whole line of content, not paid now but they will develop this. That's another example of a distribution platform that is about to make massive changes that will affect how VR content can earn money,

#Also, there is large shifts in the Asian Market. As an example: IQYI (Chinese Netflix) has 165 million subscribers, in China and they are looking to partner up with talent outside of China. Korea has a large market, Japan is not that big in VR yet. He gave a brief overview of the international scene for VR at this point, giving examples of people who have successfully been able to monetize on content at this state. These were

#He went over to talk about the corporate and commercial landscape and how this could be a viable option to make money on content by creating partnerships to finance a project by letting them have their logo on it- they know the value of social networks, it represents exposure for them.

#The big question of how to foster mass adoption was addressed. Michel talked about how VR Installations are helping. These are touring around the world, its costly, but has a great impact on the audience, it has great emotional impact- and moves the focus to live action VR experience. Right now there are theatrical venues and museums that *need* content. This is a market that is overlooked by content creators, he encourages people to think outside the box in terms of how to finance content at this point of time, and to be creative in terms of where to showcase this. I see Michel roaming around a bit after the lecture, engaging in conversations with some of the other participants.

#Workshop: Photogrammetry.

I attend Kevin Tsuki´s workshop in photogrammetry, one of the more advanced technical workshops at the Lab. Kevin starts of by showing some of the work that he has created together with his US based VR company. He shows a 360 documentary from Greenland, and giving a short introduction to how this had been made, which was a combination of 360 videos and Computer Generated Content. He talked about how their ideas for the documentary to some extent pushed the current state of the technology further and how this form of production (mix 360 with CG) was a very new thing when they started. There is a short discussion around how Kevin and his company innovated with this technology based on a question from one of the participants. There is only four participants at this workshop, once more, the groups are small. We start of by an introduction to the concept of

photogrammetry, which is to create 360 volumetric images using regular photos, meaning that you build 3D Models out from a large number of photographs. We go into some technical details and a run through of the programs that can be used for this before we go into a short production sequence where we borrow a camera and need to collaborate on finding a suitable object that we can do a full, 360 photo session from, which we will upload to the software to get a glimpse of how precicely this procedure works. I.e when you have around 250 images of an object an you render them trough a program to create a 3D Model.

#Workshop: Rapid prototyping session: Aim to create a VR experience in two hours.
I join in on what is described as probably the most ambitious workshop during the Lab, creating a VR prototype in only two hours. We are running a bit late, and the mentor present, Rolf, is having some technical problems setting up. Again, we have a room to ourselves and I notice how much more comfortable people seem at this point. People are chatting while Rolf sets up the gear. He has brought two HMD´s where he shows a short experience that has been programmed using his software program Viond. Rolf says that he needs to make some changes in the program due to the time restrictions, we only have two hours, and we will not do a hands-on workshop as planned. Instead he will give a demonstration of the software Viond, is both a distribution platform and a editing tool for 360 videos. It´s quite simplistic, it´s not for the more advanced type of experiences, this is suitable for rendered out videos that you can try to make a little interactive using his software. First he shows us the already finished video in the HMD and then he shows us how this could easily be done, there is only a few steps needed in order to make a video look and feel more interactive. The example he gave us was trough a 360-realestate tour video. He had two different films, they were both at a kitchen, in the first video the cabinets were closed, and in the second film they were fully open. The only thing he did was to connect the two films by adding a button that the viewer could press, giving a feeling of interactivity. I could see how people are encouraged by how very simple this seems. Rolf started a discussion about content and distribution and he told stories about what type of content they were interested in. Someone in the group was working on some 360 material that he might be interested in distributing. He gives out his business card and states that he is interested in distributing all types of content at his platform, and that he is always looking for new collaborations. One of the women in my group engage in conversation with Rolf regarding distribution of a documentary that she is making and is not sure where to distribute.

#At night: Ideation session
During these two days people have been encouraged to write down ideas and post them on the boards that are placed in the large oval room that is set up in a way that encourages people to be creative and to make something with their hands. There are whiteboards, large post its, colorful pens, and play-doh. The ideas can be anything, there are no restrictions we are told. The post its on the board are short descriptions of different ideas and formats that are suggested for the prototyping session that follows tomorrow. After a long day of intense workshops everyone gathers at six in the afternoon where the organizers have set out beers and finger foods. Mads, one of the mentors, is facilitating the session, everyone else, participants and mentors are seated around the tables, with 5-7 people per table.
People are encouraged to share their ideas, and a handful of people goes up to the board to pitch their ideas. All the concepts are written on post its and put on the board. Each table needs to agree upon one idea that they want to develop and select this from the board.
Back at the table the idea is placed on a large white paper and the teams are given an instruction: For three minutes they will come up with as many association and details as possible to develop the idea/concept further. A messy, collaboration process starts.

My table selects an idea called the memory palace, pitched by one of women seated at my table. The idea is to create a VR experience of Beethovens memory palace after became deaf; his imaginary location where he stored memories that would trigger the memory of sound. The idea is to create a spatial experience, the user walks around in a room and find different objects trigger different memories of sound, we do a open brainstorming together and the following suggestions are put out there: Add a song that triggers memory, let the scenery in the experience be in a open space, a large room where the user can walk around and discover different objects, these can be touched, moved even, which triggers a sound. Use sounds that represents different episodes of Beethoven's life, from child hood to his elderly days,

Use a house-each room has its distinct smell/look/feel that triggers a sound, interconnect different fragments of a memory-see only small pieces and at the end it will form a full memory of an incident

#After three minutes everyone needs to find a new table. For three new minutes, the new groups work with the idea board at the table they sat down at.

Continue to write suggestions on post its for a new idea together with new people. This idea is for a horror experience, it is supposed to be scary according to the previous post-its attached. We start writing post-its individually, not brainstorming or coordinating together, aiming towards getting down as much suggestions as possible.

#Mads orders us to switch tables again and repeat the session. Add more details to the paper!

#I see Mads removing two of the a3 sheets with post-its out of the rotation, and puts them on the floor. He brings in two new ones to the tables.

#Switch tables, repeat session. Add as much details to the paper as possible. My new group goes into a brainstorming session. It is rather unclear what the idea of the paper is aiming for. We try to do as the mentor says "trust our gut feelings, do not judge any ideas yet, just keep them coming". Everyone is trying to be creative under pressure, I scan the room and see everyone preoccupied with passionate discussions. #

#New assignment: Switch tables and Re-organize, eliminate and re-structure the idea at our table. We discuss the concept briefly, it is first now that we start judging the idea, trying to figure out how all these different components/details can form one single concept. We go trough each post-it to figure out if we will keep it or not. We make the decisions collectively. It is difficult to navigate in the chaos of messy post-its, some of them are just sentences that does not make much sense to us. I can see how this iterative exercise sparks creativity among the people at the table, it is now that the crazy ideas will turn into one concept

Ideation Phase
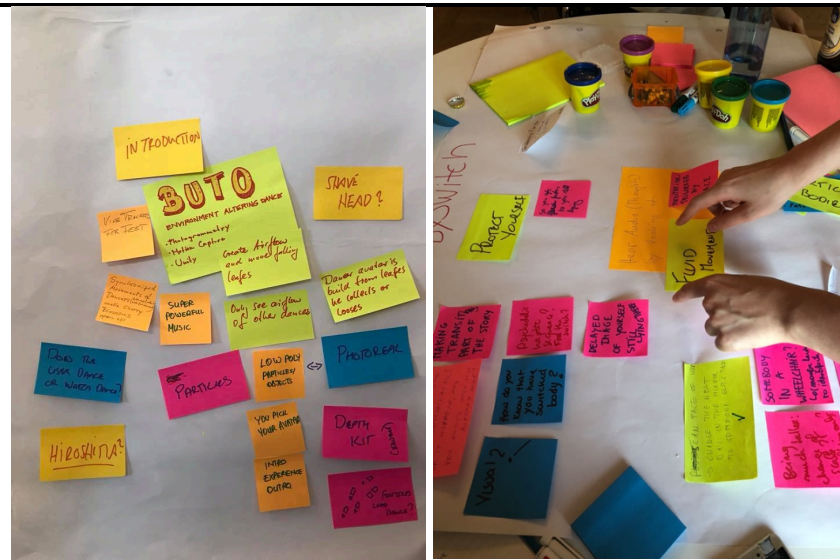
#End of session. All the projects are put up at the large boards. The large a3 sheets are covered in colorful post-its with different instructions, representing details that inform the idea. These are the result from many creative ideas that people shared freely.

#People are gathered around the boards with a beer, the room is buzzing. I roam around a little bit around the boards and I talk to different people about some of the ideas. I notice how easy it becomes to discuss the different ideas since we have all briefly touched base on the development of each of them. There seems to be no "silos", no team formations are settled yet, people are freely and openly discussing the different concepts. The "original ideas" that were pitched in the beginning belongs to everyone now, they have been molded and sculpted into completely new and different forms.

#The message delivered: Choose one project and put your name down on the one you want to prototype. Everyone is told to go home, sleep on it and switch the next morning if they change their mind. The mentors tell everyone that the projects that has the most participants will be prototyped.

After prototyping

Appendix 3 Interview Transcription

<u>Transcribed Interview Niall Campion Interview</u>

Professional background:

Film background, founder of the Irsih VR production company vrai.

Q Could you tell me about your background and why you signed up for the xR LAB?

So, I studied film in college, I graduated around 15 years ago, and I worked in post-production for probably ten years. So from tape operating, so doing dopes of commercials, to graphics and then editing than a bit of editing. The company that I worked for did a lot of exhibition design work so I was doing a lot of directing AV content for exhibitions. So I kind of doing interactive stuff, but not obviously interactive videos, it was more like touchscreens for exhibitions or like big screen projections that were designed to be interactive, like wrapper in screens that felt like you were immersed in the experience. So I have done a lot of that, and than five years ago I decided that I wanted to go freelance. I was working freelance as a editor and director, so that was more straight up PB commercial films, I worked in VFX and film for a while and did a VR project which I kind of enjoyed doing. It was a straight 360 project.

Q When was this?

It was around 2016. So around 2 years ago. And it was something "dome", had we done it before, had we looked into it? And we hadn´t. I was just curious, so I bought a basic 360 camera, the "rigo pita", which is like a 400 Euro camera. I bought that and started playing with it. We did a project suing that camera that went well, and they decided to a bigger project so we did a fully immersive Oculus Rift project. And then that went well, so I thought maybe there is a market for this. So I set up a company with the view to only do VR and AR content. So that's all we do. This company has been running, officially for about a year, unofficially for a year and a half. And then all we do is VR and AR content.

Q Could you tell me about how you got into the training initiative back in 2017 and why you chose to participate again in 2018.

Yeah, so I participated in both 2017 and 2018. I came across it, I believe trough a newsletter from out screen training initiative here, I think they included us in I newsletter. And than we have a bursary that you can apply for cover cost of training, so I applied for that, got that and used it to go to the LAB. And the idea really for me was to see what other people across Europe were doing, as opposed to kind of upscaling myself because, really I just direct the experiences I don't really do much else for like the actual programming or that kind of stuff. But I was kind of more interested in seeing what other people are doing and to see if there was anything we could borrow and take back here, so like were there any interesting techniques people were using and also was there other people across Europe we could partner with. So,hearing that there is a fund in Norway for example, that's interesting to me. And the same with Charlotte from Belgium, trough her I learned about quite a good Flemish Film Fund that you know support VR Projects. You know, I was mostly interested in that kind of Pioneer European Collaborations that we could get involved in because Ireland is quite a small country and the Film Funds here don't really any of the new media content

So it was the idea of being able to partner with people and to come back here and say "here´s what other countries in Europe are doing" so we could kind of use that to motivate our own Film boards to start doing more on that. Plus, when I went in 2017, last year I wasn't sure about going, I though I´ll just go back to see, I think it was actually the woman from Magic Leap who was going to speak- the one who didn't show up due to a last minute medical emergency- was my main motivation to go again this year because I wanted to learn more about what they were doing and to try that technology.

Q And to get to know her as well?

Yes, kind of yes. I felt that was a real benefit from the previous year that because the mentors stayed throughout the whole week it was a great opportunity to have casual conversations with people and safe. I found that this year as well, that having Mads, Paul and Raphael around, going to have a chat and a coffee with them was something that I found a real benefit to that. That was partly the reason for coming back this year.

Q In what way was it a benefit?

Just again, just working out what people are doing. Or like, seeing that even the biggest companies who are making these VR experiences are coming across the same issues that we are experiencing in VR today. Like, that Paul(From Felix&Paul) was saying that he had some issues around tracking for the 360 videos, and we had almost the exact same

challenge in another project. So it doesn't matter how big you are you´re still facing the same issues

Q Were you able to exchange knowledge with the mentors on such issues?

Yeah. So, like, kind of more from the, so they have a close relationship with Oculus who are producing the gear, so more like he gave us a couple of tips for how to deal with that, so he gave us some inside information for what they are planning for the next couple of months and it was interesting to hear from someone who is at the top of the industry, in a sort of casual way, what his relationship with the headset manufacturers were.

Q When you worked with film did you do any similar training initiatives?

Not, pioneer European no, the only ones I had done was in Ireland. When I was at VFX I did one, that was run by screen training Ireland, so they had different professionals from Europe gather in Ireland to study VFX. But I did never go to any outside the country. I probably was never at an advanced enough level, I was working basically job to job, so I wasn't thinking in terms of co-productions or that kind of thing. I was more of an operator rather than trying to run projects myself when I was film.

Q: Considering that Magic Leap didn't show up this year, which you said was your main motivation, what did you feel you got out of participating this year?

 Like I think with these kinds of conferences you always pick up one or two bits of really valuable information, but I think the biggest thing I got from this year was around Location Based VR. It seems to be a lot of talk on that these days, and it was the same at VR Days Amsterdam, there was a lot of talk about that there as well. As a company we try to do allow physical interaction in our immersive experiences, so we always try to add a prop of some kind that you can touch. And I think that, it seems to be that direction the industry is going, so its always nice to see that we are not the only ones who are doing this. I had a really interesting conversation with Mads(Mentor)around his VR Theater. I think they just launched this week, he is trying to set up a network of Location Based VR Spaces across Europe starting in Copenhagen. Its like a theater basically where you watch a VR experience instead of a play, or its kind of like an interactive theatre play. But he would specify dimensions of this space and that tracking system and all that he would use and the same play could be shown at 5-6 different places across Europe and have the exact same experience I guess. So that was really interesting to hear, someone look into this, that there is sort of distribution platform for that kind of content.

Q. Do you experience this as a confirmation of the direction you are working at?

Kind of, but the stuff that we do are kind of client specific, so it will be commissioned by a commercial client and then we will deliver it for them on the exhibition date. But here he was talking about more of a creative endeavor in so. That you need to write a play and there would be a media player distributing that I guess

Q What would you say was the most valuable part of the training initiative

I think I would say the network. Its always the people you meet in these things that are most valuable. So since coming back from Munich, I´ve had regular contact with the group I worked in, preparing for the VR Days Amsterdam where we brought the Bodyswitch project. We have had regular contact between the event in Munich and Amsterdam, probably on a weekly basis. And whether anything will come out of that, we will see but its just valuable to have those perspectives of what other people are doing across Europe. I was told that the Latvians as well, Lithianians, they were doing a project as well, and they were asking me for some feedback on a project related to something similar my company did. Its just bits and pieces like that, I feel like there is more that you are doing that's relevant, I guess it's a networking experience, get to know people in other countries in the industry is always nice

Q: Do you have any plans for how you will make use of the network

Yeah, we are actually planning to go to Norway sometime next year. So we are looking at places where there might be a market for what we do. So, what we are focusing on at the moment are hazard environment training, so training people that are going into situations that are risky or dangerous or remote. So Norway and Sweden might be interesting for us. one of the guys I met in 2017 was from Sweden and is setting up a production company there. We are looking into going to him. So we are planning a trip to Norway, Sweden and Denmark also, going to see Mads as well. Again, the thing with Ireland is that it's a small country so we are always looking for co-productions or we are always trying to export I guess, because its just not enough in Ireland to sustain what we do I guess.

Q How did you integrate what you learned at the workshop in 2017, into your professional life

Don't know if I did very much actually. What did we do. The project we did was around photogrammetry. So for the prototype we experimented with a few different techniques for photogrammetry, where you take photographs to build a 3D scene. And so we actually, in almost every project we have done since than we have integrated some part of that into it. So we basically ran a research project of photogrammetry over three days during last year's

workshop, and there was a direct benefit from that, so I could come back with information regarding what was the best software to use, which techniques that work and then we would work to implement that into projects that we were doing back home and expand that as well. So there was definitely value that. In terms of network, just having the time really is the main challenge. Just finding the time has been challenging, we have been so busy with projects that we are doing here that we haven't had the time to looking into setting up new projects. Which is a good complaint I guess.

Q: How would you describe your overall experience being participant in the 2018 edition?

I really enjoyed it. Again, great to see what other people are doing and to throw ideas around with people because I guess most of the day here I am doing mostly corporate projects with a very strict brief and than I go to the LAB and I am given three full days just to experiment and do whatever you want which is nice. And also, to flip it, at the end of the three days I had probably had enough of it. So it was nice to be there for a few days, and it was also nice to get back to a more structured environment where we have a briefing and a deadline. But. I enjoyed that, being able to play around with the technology and to work on some ideas that you have had, and you could actually go and execute them. And than to see what other people are doing, what are their ideas and to see how they went about to create them, I thought that was interesting as well

Q How did your group go about developing the idea you worked on

So I guess we kind of went through an ideation session. Charlotte had the original idea and then we sat down and talked about the narrative and the design in order to figure out exactly what it was that we wanted to do, and once we had settled for what that was we basically locked the idea down and made a plan for how we would execute it during the three following days. So rather than trying to keep coming up with ideas as we were going along we decided this is what we want to do and we made a plan with all the steps we would have to go through in order to create that. And I guess we were conscious about wanting to do something that was achievable rather than something that required a lot of coding or something we didn't have the resources to do. So we looked at what can we do with the resources we have.

Q. Did you have any programmers in your group?

No, just me, and like I have done a very small amount, which was the same for Michael. So we had to bring in someone else for about half a day to help us with the actual coding part of the project

Q What kind of professional background did the people in your group have

Mostly film based I would say, photographers. Enke who is a producer, Charlotte was a writer and director and Michael has a VR Company in the Czech Republic. I think we worked well together in terms of, we were flexible, there was no forceful personality present that tried to drive the group towards a single idea. We all worked together well I think.

Q How did it go for your group during the open, non-facilitated part during the last three days?

It went okay. Like I said it was alright for three days, but by the end of the third day I was ready to go back to a structured way of working.

Q: How did this process evolve after the training initiative in Munich was over up until you participated in Amsterdam with your project?

Either via email, dropbox, google drive, so we once a week we would have a five-way conversation via google hangout and that was how we stayed in touch and we had a whatsapp group we would keep up-to-date on. And we would use the google share drive with a document that we were all working on

Q. What was you goal with participating in Amsterdam

So that was a problem we had actually, we didn't define that in the start, we just launch into it. Our goal initially was just to get to Amsterdam and than once we got there we didn't really know what we wanted to get out of it that makes sense. So really, I guess our idea was to test the feasibility of the project and to develop it further. So to see, is it a market for it in festivals or is this something like Mads´theatre, to see where do we go next with this I guess. And we got some interesting ideas, at the start the project was conceived as a single user thing and it became an audience and user focused experience, so is it a theatric experience or more a VR experience. I guess that's what we were trying to define in Amsterdam. And we kind of did, we are little further along than when we came to Amsterdam, but we still haven't locked down exactly what this project is. Is it a theatre piece or is it a VR piece, I guess it's a combination of both

Q Will you continue to develop this prototype further?

Yeah, I mean we are still talking to each other and I hope so. For me what it comes down to, I guess it depends on if I want to devote it more time without an end goal in sight- what are we actually trying to achieve. What are we actually trying to get to, are we trying to develop it into something that can actually tuber or is it a project we hand over to someone else or how do we develop it from here I guess. Cause in Amsterdam we all still were in the performance of it and I think that the next time I would certainly like to deploy someone else, to hand it over to real actors. That kind of thing.

Q How was the process in Amsterdam structured?

It was a little bit unstructured again. We should have put a bit more structure on ourselves. The problem was a bit to try to guess what the organizers were trying to get out of it as well, what it was exactly that they wanted us to be doing. Was it to have people wander in and watch the creative process in action or was it to have the audience go trough the experience. We ended up kind of falling between the two stoles of "are we developing it ourselves" or "are we showing it to people". And because it's the nature of it, we didn't want to do to much development in the project and than have the project crash and not be able to show it t people so we kind of sat between to stoles in Amsterdam. And that's an objective we put on ourselves when we didn't clearly define our objective for the two days.

Q Did you end up showing the experience to the audience in Amsterdam

Yes, I would say we put around 15-20 people in it during the festival.As part of the xR LAB they had arranged for us to have mentors as well, so there were mentors who came trough and gave us some advice and that was how we ended up structuring what we were doing, moving away from a single-user performance, and put 3-4 people trough it and arranged for a discussion group around it afterwards to get feedback on what they thought was working and what parts didn't work so well, what could we do better, what could we deploy. So we got some valuable feedback from that. Again we are still not very sure where we will go with it from here.

Q How would you describe the difference between the working process of creating VR in your job versus the prototyping session.

I guess the main difference is the freedom of doing what you want. Its more of a creative process rather than- I mean working towards a brief is a creative process too but your sort of parameters to reconcile, there is always a message that you have to come out with, and they kind of inform each other; working in that structured environment means that the creative process can be more structured, but its just nice to, like I said, take any idea you

might have and throw it in there and see if it works. And I guess that feeds back into the projects that we are already doing, like "we tried this at the LAB" and now we can deploy it into this project because it worked there.

Q Do you think the LAB stimulated you to be more creative in your other job?

I think so, yeah.

(Interview ends here)

Appendix 4 Example Initial Codes

<u>Examples of initial concepts from coding the three first interviews</u>

Getting to know people personally

Helping others developing skill set

Being fascinated by what others are doing

Technical skill-sets become outdated, network lasts

Using other participants to gather information

Using mentors to get information not available elsewhere

Talking with everyone present at the LAB(40-50 people)

Trying to make others enthusiastic about VR

Becoming more enthusiastic about VR´s potential

Having a long-time interest in VR

Searching for a way to make VR a part of professional life

Searching for information about business opportunities with low budgets

Choosing strategically from the open workshops

Learning trough dialogue with mentors

Creating diverse groups where everyone can contribute with something

Building experience and knowledge trough experimentation

Having different backgrounds and level of knowledge creates rich exchange

Socializing outside the working hours helped build culture

Having freedom to choose and customize learning experience was valuable and frustrating

Creating awareness of how to implement VR in own domain

Creating incentives for prototyping

Searching for information about the current market

Exploring areas of application

Becoming aware of opportunities through ideation

Honoring the safe culture

Building creative atmosphere

Creating a Safe space with orientation speech

Setting up for networking

Creating a space where people are free to be creative

Networking as an exclusive opportunity

Creating interesting dynamic and knowledge transfer

Sharing a common background because of the LAB

Using Festivals and Social Media to stay in touch with network

Wanting to switch from film production to VR production

Becoming part of VR family

Being in a space where ideas can flow freely

Feeling no restrictions

Feeling safe to ask dumb questions in the LAB

Describing LAB as a judgement free zone

Locating people with the same interest to become partners

Appendix 5 Example Memos

Memo 9/11
Focused coding
Culture

Connecting the process of building a culture to the process of building confidence. Comparing the interview with Kasia to the codes from Transcript with Julia. Traced some of the descriptions of the process of building confidence(I3) in-vivo code confidence, "Its a confidence in what I am doing and that I know, even though I don't know what I´m doing, that I can do it" I interpret that building confidence is something that occurred during the LAB, which leads to creation of opportunities, crafted trough finding the right people, ask the right questions which may lead to something.

The participants describe a goal of *becoming part of the VR industry*; finding a way for her animation studio to become a part of the industry, "make their living of VR somehow" (in-vivo). Referring to another event, a hackathon, to describe how she does not feel she has enough knowledge about the technology to sign up for such an event Signing up for the LAB meant stretching beyond comfort zone, embracing vulnerabilities, as a result *building confidence.* What are the conditions at the Lab that allows participants to become comfortable and build confidence in the time while they are there. For this process to unfold- the person needs to reside in a healthy environment. Why is the Lab a healthy environment?
The focused code *Mitigating Hierarchy*

In the interview with Kasia, she is describing the process of going "From outsider to insider" of a VR community. Describing how she has felt like an outsider in the polish VR industry, and how this feeling of being an outsider(in-vivo) of the VR World (in vivo) affects her, she has no one to ask questions and collaborate with. This is linked to both processes; The Safe Culture is described as a sharing culture where people would not hold back their ideas and knowledge in fear of someone "stealing" it (in-vivo). Also linked to building confidence, she is describing how becoming a part of a community of people with similar ambitions and interests builds confidence.

The process of Building Culture can be linked to *Experimentation In a Safe Culture,* there are descriptions in I(1,3,6) of how "hands-on" training, experimenting with the technology, building experience also builds confidence. As a result of gaining confidence, the participants are more likely to pursue more ambitious projects, and to continue to stay part of the VR industry