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ENTREPRENEURIAL SCIENTISTS AT THE INTERFACE OF ACADEMIA AND BUSINESS
A narrative study on identifying with a profession spanning across sectors

ABSTRACT

Laura Hautala: Entrepreneurial scientists at the interface of academia and business – A narrative study on identifying with a profession spanning across sectors
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Founding science-based university spin-off firms, also referred as academic entrepreneurship, has gotten an abundance of attention as the third mission of universities – economic and social development of society at large – has been enforced. Majority of the studies conducted on the phenomenon of academic entrepreneurship have included examinations to its' institutional-level implications, while less is known about the individual academics navigating the landscape and driving the practical implementation of scientific knowledge and entrepreneurial activity on micro-level.

Previous research on academic entrepreneurs has largely been based on already successful ventures and established entrepreneurs. Thus, the potentially very formative early stages, when an academic is first considering making the move toward capitalizing on their accumulated knowledge, investigates the commercial opportunities, and is exposed to new networks and ways of working, are left out.

This study addresses the professional identities of emerging academic entrepreneurs and narrative identity work they engage in to construct them. The aim of this focus is to contribute to bridging the abovementioned research gaps in mainly two ways. First, the thesis focuses on emerging academic entrepreneurs, referring to those still working on their first innovation and commercialization projects. Second, rooting the theoretical framing in identity research, more specifically identity work, guides one to scrutinize the individual and personal experiences, attitudes, and reactions and behaviors related to the phenomenon. Narrative identity work refers to a person crafting stories of themselves as they aim to develop their identity and reflect on their experiences and make sense of themselves in relation to their circumstances.

Narrative was embraced as a comprehensive base for this master's thesis. Firstly, the thesis is rooted in the notion of people building their understanding of themselves through stories, and thus it was decided the analytical focus would be on narrative identity work. Secondly, the data utilized in the research was (in part) in narrative form as it was collected through narrative interviews and thematic follow-up interviews with seven informants. Finally, the data was analyzed using narrative methodology, specifically narrative analysis. Through an iterative process of structural analysis and thematic analysis, composite identity narratives were written to depict the professional identities emerging academic entrepreneurs in health and life sciences construct.

The composite identity narratives presented as the result of this study were named Scientist, Adaptor, and Entrepreneur to portray the loci of professional identification of different entrepreneurial scientists. The narrative identity work, that can be observed through the composite identity narratives, is conceptualized as Scientist, Adaptor, and Entrepreneur's sensemaking around six themes inductively analyzed from the informants' narrations.

Keywords: academic entrepreneurship, innovation, professional identity, identity work, narrative research

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1 INTRODUCTION

1.1 Background of the study

The collaboration and linkages between academic research institutions and organizations with commercial aspirations in the private industry have gained an abundance of attention in the past decades. On the one hand, this interest is rooted in the contemporary notion of innovations based on advanced scientific research as crucial sources of economic growth and societal advancement (Fochler, 2016; Haeussler & Colyvas, 2011). On the other hand, universities have encountered decrease of governmental funding of scientific research and higher education, and in order to overcome this, they have turned to new sources of income (Geuna & Nesta, 2006; Ylijoki, 2003). Thus, under the logics of innovation and diversification of funding structure, universities have been growing closer ties to private industry (Fochler, 2016, 260; Ylijoki, 2003, 308) and the transformation extends to the profession of academic science as well (Oliver & Sapir, 2017).

What could be called traditional academic research or 'basic research', has been accompanied by another approach to knowledge production taking place in university settings – commercial science that combines the creation of knowledge and the generation of income (Oliver & Sapir, 2017). To describe this phenomenon, also the term 'academic capitalism' has been penned (Slaughter & Leslie, 2001). Academic capitalism refers to university and its' faculty engaging in both market and market-like behaviors in their scientific work. The former includes profit seeking, which entails activities such as patenting, royalty seeking, founding spin-off companies, and partnerships between university and industry. Conversely, the latter do not intend to make profit, but the activities include competing for external funding from for instance endowment funds, partnerships with industry, grants or student tuition and fees. (Slaughter & Leslie, 2001, 154.) This research suggests that there are many ways in which an academic can engage with industry-side.

The commercial agenda and growing market-orientation of universities have given rise to quite some debate and in the core of the debate is the relationship between conducting academic

research and doing business. While the blurring of boundaries between the two domains has been generally acknowledged, there has been no clear consensus on the extremity of this phenomenon. Some argue that the change in the academia-business boundary is fundamental as an entirely new mode of knowledge production is emerging, while others believe it to be more moderate and regard the recent contextual changes in the university research as part of a rather natural shift in the balance between the two value sets and ways of working (Fochler, 2016; Ylijoki, 2003).

Further, the convergence of academia and business divides opinions on its desirability, too. From the critics' standing point, the blurring has been largely conceptualized as traditional business-related values and practices taking over the academic ones, posing a risk to their integrity and hindering science from contributing to society as it has been expected to (Fochler, 2016, 261). For example, Owen-Smith (2005) examines the relationship between academic and commercial research by for example tracing the number of patents and publications. Owen-Smith (2005, 93) describes these as follows: "Patents, the coin of the commercial realm, and publications, the gold standard for the academy, are importantly different." According to him, the main differences between the two domains are related to the use of research findings and the dissemination of knowledge. He criticizes commercial science and patenting for limiting the general access to the knowledge and argues their efficacy comes from the patent owner's ability to control them, while scientific publications place the knowledge created into the hands of general public and encourage others to act upon the openly peer-reviewed findings. (Owen-Smith, 2005, 94.)

Conversely, those that view the blurring boundaries in a positive light, arguing for 'entrepreneurial science', believe in the productiveness of the relationship and the commercial exploitation of academic research (Lam, 2010, 308). For example, there is evidence of entrepreneurial activity positively affecting the quality and interdisciplinarity of research output of a university scientists (Fini, Perkmann & Ross, 2021). Then again, both sides of the debate regarding academic-industrial relations and commercialization of science have been criticized for relying on Robert K. Merton's scientific norms as a baseline for analysis. It has been argued that the Mertonian approach gives the impression that scientific institutions would harbor distinctive and unique norms and values, while the reality of scientific community is extremely heterogenic. (Jones, 2009.)

There are multiple avenues to commercialize academic knowledge (Haeussler & Colyvas, 2011), out of which patenting and licensing of the scientific discoveries in addition to academic entrepreneurship are the most studied (Perkmann, Tartari, McKelvey et al., 2013). In the context of this master's thesis, academic entrepreneurship refers to founding of research-based university spin-off firms (Krabel & Mueller, 2009; Rasmussen et al., 2011). In addition to universities enforcing their third mission, the spread of spin-off firms has also been explained with an increase in venture capitalists' awareness of and interest in the commercial potential of scientific knowledge produced in universities (Oliver & Sapir, 2017, 36). Thus it could be argued that gaining a better understanding of academic entrepreneurship is of relevance for different stakeholders.

Much of the knowledge on the changing university-industry relationships has been accumulated through investigations from industrial- and organizational-level perspectives (Lopes, Ferreira, Farinha & Raposo, 2020). Therefore, an important research puzzle emerges: how do the individual academic scientists experience the blurring academia-business boundary and specifically academic entrepreneurship, as they undoubtedly have implications for their profession? Enhancing our understanding of academic entrepreneurship requires further knowledge of the several underlying microprocesses closely tied to individual, which among others include identity and identification (Balven, Fenters, Siegel & Waldman, 2018).

The interest among scholars to study "people's psychological experiences and social behavior" through the identity-lenses has been extensive (Côté, 2006, 6) and studies have been concluded in organizational, interpersonal/group and individual levels of identity (Miscenko & Day, 2016). Nevertheless, there have been surprisingly few studies on the latter investigating for instance the motivations of individual academics to engage in entrepreneurial activities, considering these are the key actors behind knowledge transfer between institutions (Miller, Alexander, Cunningham & Albats, 2018, 18). For the objective of encouraging technology transfer and entrepreneurial activity among scientists producing new innovations at the frontiers of existing knowledge, having a broad understanding of the professional identification of academic entrepreneurs is indispensable, as academic scientists engaging in entrepreneurial activities are the active agents of blurring the boundary between academia and business (Lam, 2010).

One's identification with their work and profession is an important indicator of their behavior in that role (Hayter, Fischer & Rasmussen, 2021). As follows, in order to be an effective

entrepreneur, one's identification should be in line with the professional role in question. But then again, it has been proposed that the professional identity of scientists is particularly strong and that their identification with the scientific work remains salient even after constructing a new, entrepreneurial, identity (Jain, George & Maltarich, 2009). Thus, it is apparent that academic entrepreneurship and professional identification related to it, are complicated and multifaceted phenomena that offer compelling research avenues. Notwithstanding, these avenues are uncharted and understudied (Karhunen, Olimpieva & Hytti, 2017, 545).

This thesis focuses on studying academic entrepreneurship from the perspective of the individual scientist living through the changes on the micro level and in the context of their careers and professional life. The concept of identity offers an intriguing framework for the study. It guides the researcher and the reader to not only inspect the different kinds of events and roles an emerging entrepreneurial scientist goes through, but also to scrutinize the personal experiences, attitudes, reactions, and behaviors related to them.

1.2   Purpose of the research, research questions and key concepts

The aim of this master's thesis is to increase our understanding of academic entrepreneurship by giving voice to individual scientists and their personal experiences through their professional identities. The purpose of this narrative study is to examine, how academic scientists engaging in both entrepreneurial activities and scientific research in health and life sciences construct their professional identities through narrative identity work. The transformation of the scientific work poses a need to better understand how academic scientists experience the changes and how they may try to adapt to them in addition to unveiling the personal meanings of their profession.

The research is guided by the following research questions:

How do emerging academic entrepreneurs construct their professional identities through narrative identity work?

What kind of professional identities do they develop?

These questions are answered by constructing and analyzing composite identity narratives based on interviews with seven informants at two points of time. The identity narratives can

both depict the professional identities of entrepreneurial scientists and bring out the narrative identity work they take on to make sense of themselves in their profession. The empirical data utilized was collected via narrative and thematical interviews. The informants of this study come from Finnish universities and have their backgrounds in academic research in the field of health and life sciences. They are engaged in projects and start-ups with the aim to translate the discoveries to health innovations with commercial potential.

This thesis is positioned in the context of *academic entrepreneurship* that refers to academic faculty founding firms to translate and commercialize their scientific knowledge. The business ideas and technologies developed are based on research conducted in academia, and it is characteristic for a spin-off firm that the commercialization of the discoveries has been initiated already in the university before putting a venture in place (Rasmussen, 2011, 449). In addition to this narrow definition, academic entrepreneurship has also been referred to as a concept encompassing activities such as entrepreneurship education or university-industry and university-society collaborations on wider scale (Eriksson, Hytti, Komulainen, Montonen and Siitonen, 2021, 1). For the purposes of this thesis and considering the scope of it, I have decided to focus on academic entrepreneurship in the meaning of founding of science-based firms. Nonetheless, in harmony with Eriksson et al. (2021), I acknowledge that academic entrepreneurship does not only entail economic benefits, but it may have multiple subjective connotations such as having societal impact or fostering creativity.

'Entrepreneurial scientist' or 'academic entrepreneur' is a researcher that has patented their scientific discoveries and has started or are planning to start a firm in order to commercialize the technology and knowledge in question (Gulbrandsen, 2005, 2). Academic entrepreneurs or entrepreneurial scientists often hold dual roles meaning that after founding a firm, they do not leave their academic position and keep their feet in both worlds – the academic and the business-related ones (Gulbrandsen, 2005, 3; Tuunainen & Knuuttila, 2009, 687). Some differences have been drawn between the terms 'entrepreneurial scientist' and 'academic entrepreneurship', but in this study the concepts are used concurrently. In the style of Miller et al. (2018, 6, 13), I refer to academic entrepreneur as a person who is engages in formal knowledge transfer, specifically in the form of founding a science-based firm. Entrepreneurial scientist may be an academic who is considering firm-founding or engaging in less formal collaborative knowledge transfer.

Previous studies on the profession of academic scientist and its' transformation in relation to the rise of science-based entrepreneurship have often been built upon the idea of a central

academic identity prevailing and commercial roles posing a threat to its integrity, but this notion has been challenged (Karhunen, Olimpieva & Hytti, 2017; Mäkinen & Esko, 2022). Thus, I aim to address the professional role identity of entrepreneurial scientists from the angles of both the academic and the entrepreneurial roles. This approach is further justified by the argument that entrepreneurship can be of diverse subjective importance and meaning to the individuals engaging in entrepreneurial activities (Hayter, Fisher & Rasmussen, 2021; Mathias & Williams, 2018).

Former research on entrepreneurial scientists has been criticized for mainly turning to data gathered from university spin-offs already successfully established (Hayter et al., 2021, 12; Rasmussen, 2011, 449). Aiming to bridge this gap, the thesis specifically studies entrepreneurial scientists going through the initial phases of the innovation and commercialization process for the first time: from the basic research within university leading up to the recognition of commercial opportunity and then to the research project being established as a new start-up. Only some of the studied entrepreneurial scientists are working in already founded start-ups at the time of this study. Considering entrepreneurial projects at somewhat different stages of development, enables me to get a diverse view on how such projects unfold in addition to how individuals experience them and for what reasons.

As discussed earlier, academic entrepreneurship has often been viewed in terms of opposites and conflicts. Eriksson et al. (2021) call for perspectives breaking such polarization that consider different kinds of contexts and do not position academia and entrepreneurship as opposites by default. Thus, giving scientists and entrepreneurs the room to express their personal views on their involvement with science-based startups or their career-related objectives is warranted. These are the types of elements inspection of professional identities and narratives related to one's work can bring out. The following quotation from Ashforth, Harrison and Corley (2008, 334) further captures the reasoning behind the choice of approaching the objective of increasing the understanding of academic entrepreneurship through the identity-lenses:

> *The concept of identity helps capture the essence of who people are and, thus, why they do what they do – it is at the core of why people join organizations and why they voluntarily leave, why they approach their work the way they do and why they interact with others the way they do during that work.*

The definition of identity is not a simple one, but at its' core, identity aims to answer the question 'Who am I, both in relation to others and as an individual person?' (Ashforth, 2001; Côté, 2006). Identity contains one's values, goals, beliefs, traits, knowledge and skills, and behaviors (Ashforth, Harrison & Corley, 2008, 330). *Professional role identity* is a sub-category of identity, and it refers to a person's enactment of and identification with a specific profession and aspects associated with it (Chreim, Williams & Hinings, 2007).

The thesis at hand is built upon the assumption that people aim to maintain a sense of self-coherence over time, meaning that identities are not altered at the slightest change in a circumstance (Cinque, Nyberg & Starkey, 2021; Swann, 1987), while also going through life, living through different kind of changes and learning about the surrounding world and ourselves, elicit identity changes (Ashforth, 2001; Ibarra, 1999; Karhunen, Olimpieva & Hytti, 2017; Watson, 2009). For academic scientists, taking on entrepreneurship potentially presents an important change due to the differences between the values and activities related to the two domains. It has been suggested that stepping into the commercial field requires university scientists to modify their identification with their profession (Jain, George & Maltarich, 2009) and manage the boundaries between their now dual professional role (Karhunen et al., 2017).

Identity work refers to the individual's construction and reconstruction of their identity (Alvesson, 2010; Brown, 2015; Watson, 2008). Important dimensions of identity work also include management of the boundaries between personal and social (professional) identities (Karhunen et al., 2017, 548) and dealing with adversity related to work in order to find meaning and inspiration in it, even when facing challenges (Cinque, Nyberg & Starkey, 2021). A central aspect of identity work is crafting narratives of oneself, in other words engaging in *narrative identity work* (Ibarra & Barbulescu, 2010). As a person narrates their own story, they reflect on their past and origin, put together the pieces of the story into a coherent plot developing towards the present moment, and look forward into their potential futures – thinking who they have been, how they became who they are now, and who they could potentially be (Ashforth & Schinoff, 2016; Cinque et al., 2021).

Tuunainen and Knuuttila (2009, 688) argue that studies on the relationship between scientific research organizations and industry have relied heavily on quantitative data or broad illustrations of the contextual changes. This master's thesis utilizes qualitative data focusing on a selected sample of informants presenting a specific scientific domain (health and life sciences) and does not aim to make generalizations about the entire academic landscape. Narratives

provide rich research data with the individual person in focus. *Narrative approach* allows me to explore academic entrepreneurship from bottom up and to outline the professional identities people construct as they engage in entrepreneurial activities.

The core concepts of narrative research include 'story' and 'narrative'. These terms are often used with corresponding meanings, while it may be beneficial to differentiate the two. A story "narrates a chain of related events or happenings that involve certain characters" and it is usually chronological with a beginning and an ending (Eriksson & Kovalainen, 2008, 211). The definition of narrative is not singular and clear since many kinds of materials can be viewed narratively, but not all talk and text is narrative. What is in common with the texts and other materials considered narratives, is their composition of consequentially linked events. In other words, narratives express patterns that have meanings. (Riessman, 2008, 5–6.) According to Eriksson and Kovalainen (2008, 212) narratives are materializations of stories, and they differ in that narratives are highly contextual and presented to specific audiences. Narrative can have a specific point of view to the story (Eriksson & Kovalainen, 2008, 212), which may affect the way its content is told and interpreted.

1.3   Structure of the research

This Master's thesis is divided into five main chapters. In the first chapter, reader is presented with an introduction to the topic alongside with the goal of the research and the research questions it aims to provide answers to. In the second chapter, the theoretical background of the thesis is presented. The chapter reviews the previous literature on academic entrepreneurship and identity research focusing especially on identity work. The second chapter brings together the previously presented elements by discussing identity research among academic entrepreneurs.

The third chapter explains the methodological choices including the philosophical foundations of the research. This chapter also presents the research material and the analytical process. The empirical evidence is presented in the fourth chapter, and lastly, the final chapter presents conclusions, implications, and further research avenues.

2 THEORETICAL BACKGROUND

The theoretical background of this master's thesis aims to develop a framework for understanding academic entrepreneurship from the perspective of individual academic entrepreneurs. The framing is built on the idea that emerging academic entrepreneurs, now faced with new professional challenges both scientific and entrepreneurial, need to revise their identification with their work. The thesis is positioned in the field of identity research as I am examining the phenomenon from the perspective of an individual and their professional identity. My focus is on narrative identity work as a mechanism through which emerging academic entrepreneurs construct their professional identities.

In the following sections, I present a literary review of prior research on the abovementioned topics. First, I focus on the phenomenon of academic entrepreneurship. After this, I explore the literature on identities and professional identities. Finally, I conclude the chapter in section 2.3 by reviewing identity research specifically among academic entrepreneurs, thus bridging together the elements of the theoretical background.

2.1 Academic entrepreneurship and the profession of entrepreneurial science

Academia has had a long history of operating under the logic that "the main goal of science is to pursue the search for new knowledge, whereas achieving practical or applied results is a secondary objective", but today the two objectives, that could also be called academic and entrepreneurial science, are both present side by side (Oliver & Sapir, 2017, 39-40). Innovations, the peak results of new knowledge and its' practical application, are popularly regarded as the drivers of economic wealth and societal wellbeing. Consequently, more eyes have been turned to the direction of institutions of knowledge production, such as universities, for fostering the creation of new knowledge and technologies alongside with facilitating the conditions needed to bring such insights to the wider audience i.e., commercialization. (e.g. Fochler, 2016; Haeussler & Colyvas, 2011.) As follows, in addition to their traditional purposes of academic research and higher education, universities are increasingly contributing to

knowledge economy (Tuunainen & Knuuttila, 2009, 685; Ylijoki, 2003, 308) and they are urged to participate in technology transfer, meaning dissemination of scientific findings from one organization to another for enrichment and exploitation (Geuna & Nesta, 2006, 792; Haeussler & Colyvas, 2011, 42).

Academic institutions and research have traditionally been publicly funded in the name of open science – any member of society being able to access scientific insights free of cost (Geuna & Nesta, 2006), but over the past decade, public budget constraints leading to substantial decline in government funding have put universities in a place where they must seek multiple sources of financial resources (Geuna & Nesta, 2006; Ylijoki, 2003). Thus, engaging in entrepreneurial and commercialization activities gives universities opportunities to both participate in societal development and seek financial resources (Tuunainen & Knuuttila, 2009, 685). This has given rise to *academic entrepreneurship* – academic faculty founding research-based university spin-off firms.

Despite the development of academic entrepreneurship, the perceived cultural differences between academia and business have created tensions in the field. On the one hand, commercialization has been criticized based on the argument that is threatens the notion of open science and its' contributions to the society at large (Oliver & Sapir, 2017, 44; Owen-Smith, 2005). On the other hand, it has been demonstrated that engagement in commercialization of scientific knowledge does not cause one to abandon academic values and norms (Oliver & Sapir, 2017, 47; Ylijoki, 2003, 331).

It should be noted, that in certain scientific domains it is more natural to be commercial and entrepreneurial than in others - consider for example technological fields in comparison to social sciences, where market potential is limited (Oliver & Sapir, 2017; Ylijoki, 2003). For example, in the biomedical area, it has even been argued that it may not be worthwhile to separate scientists' activities to basic research (publishing) and to applied research (technology transfer) as the outputs are relevant to both 'sides' (Geuna & Nesta, 2006, 34). Other domains in which encouraging innovation and university-industry collaboration has been robust include information and communication technologies (Tuunainen & Knuuttila, 2009, 686).

The biotechnology domain emerged from health and life science community, which is the focus of this thesis, in the late 1980s with already a blurrier academia-industry relationship as it was commonplace for faculty to serve as consultants and they also founded their own firms. The trailblazers of biotech encountered significant scientific advancements with such tremendous

practical implications that the discoveries had to be commercialized to spread them. (Berman, 2012, 58.) Geuna and Nesta (2006, 33) argue that in European countries, for instance in Finland, increase in patenting of the discoveries from university research in the health and life science field has been mainly connected to the opportunities of commercialization - the potential of wide-spread benefits - instead of any public policy changes. Further, Mirowsk (2011, 199) maintains that being science-based has always been expected of ethical pharmaceutical firms, and consequently scientific and business endeavors have gone hand in hand. It could therefore be argued that health and life sciences as a scientific field and an industry is interdisciplinary and collaborative by nature and seeking commercial opportunities in this context may not be as incongruous as it might be in some other domain.

Further, at least in the Finnish context, engineering students are more likely to engage and interact with commercial organizations than students in the social sciences already during their studies through for example course case work and internships and therefore view this type of collaboration to be natural part of their academic experience. Krabel and Mueller (2009, 953) support this line of thought as they found that those having experience from research cooperation with private companies are more likely to start their own businesses. Furthermore, peer support seems to be an important driver of commercial activity (Haeussler & Colyvas, 2011, 47) and thus the network of a scientist is potentially instrumental in their decision to go into business themselves rather than sticking solely to academic publications – being surrounded by other entrepreneurial minded people may expose one to explore those opportunities as well.

Nevertheless, simultaneously navigating both the academia and the industry can be complex and conflicting even in situations where commercialization of scientific research is generally encouraged as mostly being public sector organizations, the universities' engagement in commercial activities is largely administered by rules and regulations (Tuunainen & Knuuttila, 2009, 701). From the viewpoint of individual researcher and their research groups, also defining their immaterial property rights (IPRs) (Tuunainen & Knuuttila, 2009) and negotiating their ownership with the university at which the research was originally conducted are time-consuming and challenging undertakings while fundamental for the future of their business.

While university scientists for example in engineering and electronics have been involved with the industry since the 19th century, the line between their academic and business-related work has traditionally remained clear as the hours academic could put in outside their university

position were limited or they went back and forth between the two responsibilities. (Berman, 2012, 58.) In the daily life of an individual academic entrepreneur, managing the working hours for duties related to now both their academic position and spinoff firm has been proven problematic (Tuunainen & Knuuttila, 2009). The scarcity of time and other resources are the key challenges on individual level when combining academic duties and engagement with the industry. One often has to compromise between different responsibilities: the daily activities of an academic, including teaching and research publications, and the exploration required for the entrepreneurial opportunity to move forward. (Miller et al., 2018, 26-27.)

Regardless, there are important motivators to explore academic entrepreneurship. Fini, Perkmann and Ross (2021) found that scientists employed in a public research organization engaging in academic entrepreneurship (founding a venture), were more likely than non-entrepreneurial scientists to explore different areas of research also outside of their current ones. This type of exploration elicits novel findings in addition to interdisciplinary collaboration, again enriching the work of an academic and their research outputs. (Fini et al., 2021.) Further, the cultural characteristics of young science-based companies and the working conditions they create have been found motivating and rewarding by people previously employed both in academic institutions and in big pharmaceutical companies (Fochler, 2016). When pursuing an academic career, it is essential for one to make their contribution visible and get credit for it, which easily leads to clearly separated sub-projects when collaborating with others. In this kind of setting, also the risk of failure is carried by the individual researcher. In turn, in the context of commercial product development taking place in science-based firms, the risks related to research projects are collectivized, and the setting promotes more collaboration and openness instead of competition between individuals. As follows, there is potentially much less pressure for an individual to perform alone in a risk-averse manner. (Fochler, 2016, 271-272.) Working together in an interdisciplinary team is characteristic for these science-based startups and while that may not be a peculiarity either for industrial research or academic laboratories, it potentially has different meanings in this context (Fochler, 2016, 270). Even though the deep scientific expertise is a vital element of a successful university spinoff firm or high-tech startup, the entrepreneurial team needs to be able to solve also for instance legal and economic pieces of their puzzle (Fochler, 2016, 270).

The contextual changes and possibly resulting tensions between the diverse values and norms in the field of scientific research arguably have had and will continue to have an impact on what it means to be an academic scientist by profession. Another intriguing matter to consider is *what*

it means to be an emerging academic entrepreneur – to be a university scientist exploring entrepreneurial avenues as someone who often is not in the beginning stages of their career anymore and thus has functioned under the ideals of academia for a relatively long time (Jain et al., 2009). To conclude, it is apparent that the phenomenon of academic entrepreneurship on individual level is an intricate one. Lopes, Ferreira, Farinha and Raposo (2020) identify seven clusters in the literature on academic entrepreneurship: entrepreneurial universities, university–industry interactions, university–industry knowledge transfers, university–industry innovation networks, university entrepreneurship, university-industry industrial property, and innovation ecosystems. Here, it can be observed that in the field of academic entrepreneurship, plenty of research has been conducted on university and policy levels, but analysis concentrating on the individuals exposed to the intricacies of the field is still scarce.

2.2   Identity research as a window to personal and professional lives

Even though the majority of studies conducted on academic entrepreneurship address its' institutional-level indications, the effects and their significance to an individual professional navigating the landscape are not insignificant. For example, Fini et al. (2021, 4) argue that founding a firm may change the organizational conditions around an academic in two ways. First, they may be socialized into a new context with different priorities compared to their prior professional environment. Second, their social networks are likely to alter and expand, as they must get connections with the necessary resources for the development of their new venture. (Fini et al., 2021, 4.) Further, scientists taking on academic entrepreneurship are likely to have many roles like researcher, teacher, inventor, and entrepreneur. In this context, finding an answer to the question 'Who am I?' can be rather complex. (Balven et al., 2018, 32.) Therefore, identity and identification offer suitable theoretical lenses to study academic entrepreneurship on microlevel, from the perspective of a scientist.

In the following subsections, I will review the literature on identity research. I will first explore the general concept of identity and the rather fragmented research field surrounding it. Then, I will focus on the concept of identity work and particularly narrative identity work.

2.2.1 Identities and identification with work

The emergence of the field of identity research can be traced back to mid-1990s. Despite the vast number of publications made under the keyword 'identity' since, the definition of the term is still problematic as it has gotten a variety of different explanations from multiple perspectives and theoretical standing points. (Côté, 2006.) In everyday life, identity refers to answering questions like who we are or who do we think we are, and where do we belong (Ashforth, Harrison & Corley, 2008, 327). It is crucial to note that individual's identity and its' formation are closely intertwined with the social environment – while identity is an image of a unique human being, it is simultaneously one of a social actor (Ybema, Keenoy, Oswick, Beverungen, Ellis & Sabelis, 2009). Furthermore, it should be noted that half of the meaning of identity as a concept consists of people defining who they are not and how they are different from others (Côté, 2006, 6). In addition to being a multifaceted construct, the concept of 'identity' appears to be rather loose. This manifests as general usage of the simple, unmodified term *identity* to refer to all the different dimensions or levels of it without distinction. (Côté, 2006, 6; Ropo, 2015, 27.) While referring vaguely to *identity* is natural in casual life, one should seek more specificity in analytic discussions, as Côté, (2006, 6) put it.

A common way to classify the different dimensions of identity is to differentiate between social identities and personal identities (e.g. Ibarra, 1999; Kreiner, Hollensbe & Sheep, 2006). *Personal identity* includes individual attributes that make a person unique and differentiate them from other human beings, while their public *social identity* emerges from being a member to a social group or category and being like others in that group (Ashforth, 2001; Kreiner et al., 2006a; Ybema et al., 2009). Another term popping up in identity research is *self* that seems to be used almost synonymously to personal identity whereas identity is sometimes used to refer to the social dimension of an individual's identity (see e.g. Burke & Tully, 1977). From personal identity perspective, identity is 'property of persons' as it is concerned with behavior and mental traits of an individual. In turn, from social identity perspective, identity is embedded in interpersonal relationships and is thus 'property of interaction'. Understanding individual's identity and its' development requires both views – "It [identity] needs to have some sort of storage of experiences and habituated thoughts in memory (in the person), and it needs to be actualized in behaviors and social activities (in interaction)". (Côté, 2006, 8-9.)

Accommodating both the personal and social elements of identity, the notion of identity negotiation refers to the process through which people define 'who is who' in a relationship or social interaction. An underlying assumption behind the identity negotiation theory is that social interaction runs smoothly, when the participants have an agreement on what they can expect from each other and thus establish mutual understanding of identities each person assumes in that relationship. The identity negotiation process is based on the idea that people want to verify their self-conceptions by both confirming themselves and others to view them as they themselves do and thus participate in negotiating the labels they are attached with by others – accepting or resisting them. (Swann, 1987.) In other words, our identities are based on observations and reactions both of ourselves and the others'.

Previous identity research has covered investigations into organizational, interpersonal/group and individual levels of identity (Miscenko & Day, 2016). In this thesis the individual identities are of interest, while it is acknowledged that collective identities such as occupational identities influence the personal notions of self. Whether identities of individuals are stable and remain the same over time or not, has been a debated topic in the literature (Ibarra, 1999, 766; Miscenko & Day, 2016). According to Brown (2015, 27) there is some consensus that personal identities "-- are constructed from a relatively stable set of meanings, which change only gradually". In a similar vein, Swann (1987, 1044) argues that personal identities are not highly malleable, adjusted at the slightest change in the environment, as people are rather inclined to resist social feedback contradicting their own view of self. On the contrary, social identities are far less stable as they are contextual by nature (Brown, 2015, 27). Similarly, in Ashforth's (2001, 27) words: "To switch roles is to switch social identities."

Based on the observation that the contemporary work life and organizational contexts are characterized by instability and ambiguity, this thesis views identities as equally dynamic constructs. The changing contexts affect the embedded social processes, which play a substantial part in identity development, and so identities are also continuously constructed (Ybema et al., 2009). Further, this thesis is built on the finding that identity changes have accompanied status changes such as career transitions. New roles at work require adopting new attitudes, behaviors, and skills, and thus they may generate changes in individual's social identities. (Ibarra, 1999, 765-766.) Moreover, changes in one's status may cause other people to treat them differently leading them to participate in identity negotiation accordingly (Swann, 1987, 1044). Self i.e. personal identity could thus be considered as an integral and central part of an individual that collects and connects multiple social identities. For example Burke and

Tully (1977, 883) describe the self as a collection of multiple (social) identities that are associated with different situational roles. Yet, Ashforth, (2001, 35) makes use of the concept of *global identity* that integrates different aspects of personal and social identities into more or less consistent and harmonious whole consisting of goals, values and ways of thinking and acting.

A closely related concept to social identity is *role identity* (Ashforth, 2001; Burke & Tully, 1977). According to Ashforth (2001, 27) role identity is a set of characteristics, "a persona", connected to a position in a social category. Roles and respective identities, such as wife, Finnish, or manager, all contain certain social rules and norms that influence people's behavior by defining what is appropriate and expected (Ibarra, 1999). While there has been debate on whether a person can have multiple identities or not, it is now somewhat accepted that *multiple role identities* exist simultaneously and that they are enacted in relevant situations. Some role identities are of more subjective importance to a person meaning they are more salient than others and thus they are also self-defining. It is also possible for an individual to occupy a role without particularly identifying with it, but rather just play the part expected of such role. (Ashforth, 2001.)

A sub-category of role identity is *professional identity* that "…is an individual's self-definition as a member of a profession and is associated with the enactment of a professional role" (Chreim, Williams & Hinings, 2007, 1515). Professional role identity is for example that of entrepreneur or scientist. Other terms used almost synonymously are work identity and occupational identity. From now on, I will utilize the term professional identity as it seems the most fitting considering the target group of the study. Professionals are defined as a group of people possessing deep knowledge that when applied to challenges faced in a society, has economic value (Pratt et al., 2006, 235).

Identification refers to "-- the extent to which one internalizes a given identity as a (partial) definition of self (for instance "I am a salesperson")" (Ashforth & Schinoff, 2016, 113). Ashforth, Harrison & Corley (2008) conceptualize identification as something a person can either feel, think, or act themselves into (see figure 1 on the content of identity). Person's identification with their work or profession has been described for instance by specifying, if it is something one *does* or one *is*. For example Karhunen et al. (2017) found that Finnish entrepreneurial scientists related to both of their roles - entrepreneur and scientists - as something they do, instead of them being definitive of 'who they are'. In the same study,

Russian counterparts on the contrary identified with their scientist role strongly and it was self-defining for them, while the entrepreneurial part was more distanced from their personal identity by being defined as something they do. Similarly based on their comparison of professionals and employees, Pratt et al. (2006, 236) argue that organizational membership – an indicator of where one works – might not be fundamental in the identification of professionals. They posit that professionals with specific knowledge and skills are commonly characterized by what they do, while employees rely more on their organizational membership in their identification.

Notwithstanding, following the statement made by Watson (2008, 129), we should refrain from making pre-judgments on to what degree individuals embrace specific role identities as for some being for instance a doctor or an academic is central, while for others it is a secondary aspect of themselves.
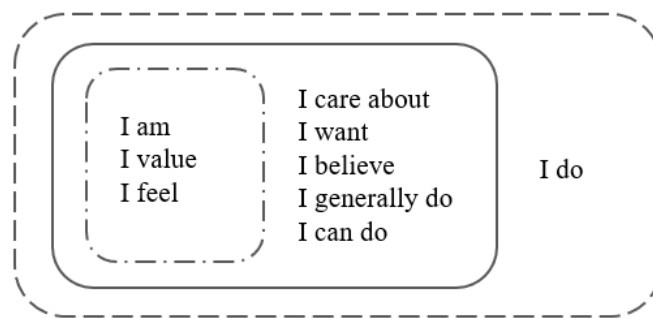
Figure 1. Content of identity. Applied from Ashforth, Harrison and Gorley (2008, 345).

As it has been noted also earlier, identity is a collection of interconnected sub-identities, and individuals can simultaneously define themselves in terms of multiple identities. Based on the fact that organizations in their complexity offer individuals several points of identification – occupations, teams, lunch groups and so on – individuals can have multiple identities also within the context of work (Ashforth et al., 2008, 347). It has been argued that only one identity at a time may be pertinent, but there is also proof of dual identification. Dual identification refers to a circumstance, where an individual identifies with two foci on the same level (individual, interpersonal, or collective) simultaneously. For instance, a consultant may identify with both their home and client organizations at the same time. While dual identification entails the potential of facilitating intergroup relationships, it can also be problematic for example in

such situation where the contents (for example moral obligations) of the two identities differ. (Miscenko & Day, 2016, 233-234.)

Now, it is clear that there are several theoretical perspectives that can be adopted to study identity in the context of organizational research, and the construct of identity offers a diverse framework to study organizational life and people at work (Alvesson et al., 2008; Miscenko & Day, 2016). Alvesson et al. (2008, 8) pose that the concept of identity and its' use in organizational research has been approached from three "metatheoretical orientations": functionalist, interpretivist, and critical orientation. Alvesson et al. (2008, 12) organize the research on identities to following categories: social identity, identity work, and identity control. These perspectives aim to explain "how individuals locate themselves as social and organizational beings, how individuals endeavor to construct a sense of self, and how identity is accomplished through the operations of power" (Alvesson et al., 2008, 12). Identity work presents the interpretivist orientation emphasizing individuals constructing a sense of themselves. Given my interest on emerging academic entrepreneurs working at the interface of academia and business and being in a place where they have to actively work on their view of themselves as professionals, the thesis draws on this approach.

2.2.2   Identity work

Identity construction - the process of a person defining oneself - has different kinds of motivations (Ashforth & Schinoff, 2016). In order to function in their social environments, people "-- need to have a reasonably clear sense of who they are and how they fit into their surroundings" (Ashforth & Schinoff, 2016, 112). Individuals have a need to experience belonging amongst others, but they also need to exhibit uniqueness and be able to enact their values. Moreover, they desire self-coherence and self-continuity, in other words an integrated and consistent sense of self over time. (Ashforth & Schinoff, 2016, 114.) In the context of professional life, an important incentive for identity construction is also to ensure that one's view of themselves (identity) and their work are aligned (Pratt, Rockmann & Kaufmann, 2006, 255). The construction and reconstruction of identities are also referred to as engaging in *identity work*. In this thesis the concepts of identity construction and identity work are used correspondingly, following Brown (2015, 21).

Identity work is defined as "-- people being engaged in forming, repairing, maintaining, strengthening, or revising the constructions that are productive of a sense of coherence and distinctiveness" (Alvesson, 2010, 201). Identity work refers to both shaping the 'self' meaning the internal aspects of identity and working on publicly available external identity, 'social identity' (Watson, 2008). Everyone engages in identity work, but there are variations in the relative activity at different times of people's lives (Watson, 2008, 130).

Scholars have assumed roughly two stands regarding the continuity of identity work: identity construction is more or less ongoing or taking place temporarily and on occasion, (Alvesson et al., 2008, 19). On the one hand, identity construction can be thought to require ongoing maintenance as all of the actions, thoughts, and expressions one holds, shape their definition of self. Thus, people engage in identity work as part of their everyday lives, it is somewhat continuous, and they cannot not engage in it. (Alvesson et al., 2008, 19; Brown, 2015, 25.) On the other hand, identity work has been connected to life changes and transitions such as graduation, starting a new job and crises (Alvesson et al., 2008; Ibarra, 1999), thus taking place intermittently.

In the organizational and work setting, identity construction has been studied mostly in the scenario of a newcomer entering an organization or a person being faced with adversity, while identity construction and reconstruction can be triggered by different kinds of events (Ashforth & Schinoff, 2016, 112). Brown (2015, 25) argues that identity work appears to be more needed and usual when people face surprises or tensions, and as a consequence of "feelings of confusion, contradiction and self-doubt", tend to examine their personal identity. Considering especially the context of work and related identities, being part of organizations and entering new roles within them, people are expected to assume these public personas that are possibly different from the ones they are engaged in in other parts of their lives. This dissimilarity creates tension between the different roles and respective identities. Simultaneously, people need to come to work 'as themselves', presenting themselves as individual human beings, and therefore they also have to adapt and alter these role identities to fit their circumstances. (Watson, 2008, 122.) This implies that people engage in identity work not only to alter their identity in accordance with role demands, but also to reshape role definitions to portray valued aspects of the existing role identity (Karhunen et al., 2017, 547).

The ways in which people engage in identity work have been studied from the perspective of different *identity modification mechanisms*. For example, Pratt et al. (2006) studied identity

customization mechanisms employed by medical residents new to their residency training program to develop their professional role identity. These mechanisms are called enriching, patching, and splinting. They found that medical residents validated their professional identities under construction via the feedback they got from peers and more senior colleagues and via mirroring their desired professional identity to those of their role models (Pratt et al., 2006, 251). While Pratt et al. (2006) investigated professional identity construction of those in the beginning of their career, Chreim, Williams and Hinings (2007) focused on physicians further in their careers as they *reconstructed* their professional identities. They analyzed the dynamics on institutional and organizational levels that pressure and affect the individual's professional role identity construction. As a complementary identity modification mechanism to identity work, Ibarra and Petriglieri (2010) present the concept of *identity play* defined as exploration and experimentation of possible future identities.

Another perspective to study identity construction has been to investigate *boundary work* referring to how people manage the boundaries between their different roles and identities (e.g. Karhunen et al., 2017; Tuunainen & Knuuttila, 2009). Role boundaries dictate where and when the role in question will be enacted. Some roles are clearly segmented and tightly connected to specific times and places. At extreme this could manifest for example as hiding one's profession and work from friends and family, but this kind of clear duality is rather rare. Integration of role identities then again refers to the opposite – for example, smoothly combining one's work as an executive to their hobby in golfing. This could also mean mentally organizing one's work-related selves under one umbrella, thus representing oneself rather similarly throughout the different contexts at work. (Ashforth, Kreiner & Fugate, 2000.) For example Kreiner, Hollensbe and Sheep (2006) studied an occupational group that especially operate under social expectations to separate or integrate their professional and personal identities – priests. They examined the different tactics priests employ as they face these identity demands and broadly categorize them to: differentiation, integration, and neutral/dual-function tactics.

From these examples, it can be seen that identity work has been studied from the perspectives of both the individuals themselves and the external powers surrounding them. Miscenko and Day (2016, 224) identify two predominant theoretical approaches employed to study identity work: narrative theory and poststructuralism. The first emphasizes individual agency in identity construction, while the latter views it mainly being constrained by institutional environment (Miscenko & Day, 2016, 224). Albeit there are overlap points between the approaches, the narrative approach to identity work suits the purposes of this thesis based on this distinction. In

addition to emphasizing the individual agency, this thesis draws from narrativity by focusing on *narrative identity work*. Narrative identity work as a wider concept refers to a person, in their process of identity construction, crafting narratives of oneself (Ibarra & Barbulescu, 2010).

By engaging in narrative identity work and sharing their stories people construct and reconstruct their identities – narrations allow them to not only report their experiences, but rather reflect on them and make sense of themselves in relation to their circumstances (Ashforth & Schinoff, 2016, 123; Ibarra & Barbulescu, 2010). Examining narrative identity work, for example Cinque, Nyberg, and Starkey (2021) are able to exhibit, how individuals working in similar environments and under the same conditions may still find different meanings for their experiences and work. Cinque et al. (2021) studied theatre actors and how they, through narrative identity work, maintained a sense of calling to their work – feeling it is deeply meaningful – even though the work would cause them to face hardships such as low income and a sense of otherness from the general society. They found actors engaged in three types of identity work, narrating the meaning of their profession via: embracing the sacrifices that need to be done in order for them to continue working as actors and finding pleasure in that, considering theater work as a political act challenging and influencing the society at large, and personally framing the work as therapeutic self-care instead of serving others (Cinque et al., 2021).

Identity narratives are both retrospective and prospective, as they include looking back at past events and experiences in addition to wondering about the future of self (Ashforth & Schinoff, 2016, 123). Due to this dual nature of narrative, individuals may engage in reconstruction and change, while simultaneously sustaining coherence and stability (Ashforth et al., 2008, 345). For example Zheng, Meister, and Caza (2021) examined identity narratives and narrative identity work of leaders, as they aim to make sense of themselves in their leadership roles present day, while drawing from their personal histories and the prevailing, publicly available leadership discourses. In their narrations, the leaders sought coherence between their past and present selves. On the one hand, this implies that "early internalized leader experiences influence later leader cognition and behavioral intentions" (Zheng et al., 2021, 1197). On the other hand, the findings suggest that as the identities evolve over time and are reconstructed, individuals can also modify their past views of themselves accordingly (Zheng et al., 2021, 1198).

2.3 Previous identity research among entrepreneurial scientists

Academic culture and its' perceived differences to entrepreneurship and commercial mode of science have often been the baseline for examining identities among academic entrepreneurs. This approach has been critiqued for its' assumption of the academic culture as a homogenic entity (Perkmann et al., 2013). Approaching the study of identities from this perspective may bias one to view business-related endeavors as something that threaten the academic and causes the research setting to be confrontative from the start. Nevertheless, it must be acknowledged that for many academic scientists, for example the competences and networks needed in commercialization of scientific knowledge and entrepreneurship are new (Rasmussen, Mosey & Wright, 2011). Furthermore, it is more likely for an entrepreneurial scientist to be more seasoned and tenured when they start on the path of commercialization (e.g., Haeussler & Colyvas, 2011, 50) and thus they have been strongly socialized in the academia and their professional identification is likely rooted in the scientific work (Jain, George & Maltarich 2009).

With that in mind, it is no wonder there is interest to explore and explain how entrepreneurial scientists manage the combination of 'old and new'. For example, Jain and colleagues (2009) posit that entrepreneurial scientists make sense of their new role with commercialization activities in ways that are congruent with the scientific role identity. They argue that these individuals modify their role identities into hybrids that combine the traditional academic elements with the entrepreneurial and commercial mindset with the academic persona prioritized as more focal. These hybrid role identities were managed through two kinds of identity work: delegating the commercial activities to other actors and mentally buffering to preserve values related to being an academic. (Jain, George & Maltarich, 2009.) Deriving from the idea that academics hold a strong and central scientific identity, more processes-oriented models have also been suggested to depict how entrepreneurial identities are constructed or chosen not to construct (Hayter, Fischer & Rasmussen, 2021). An intriguing element in Hayter and colleagues' (2021) model are the different factors impacting the process of identity construction. One factor it brings attention to is the importance of individual's intrinsic and extrinsic motivations and personal passion for entrepreneurship. Just as motivation and passion

affect a person's activity in entrepreneurship and science, they also determine whether or not that person engages in identity work towards becoming an entrepreneur also 'under the surface' on the level of identification. (Hayter et al., 2021, 6-7.)

Some inquiries have been conducted to map the predictors of engagement in academic entrepreneurship (e.g. Haeussler & Colyvas, 2011; Krabel & Mueller, 2009) and the motivators behind entrepreneurial activity (e.g. Lam, 2011). What is in common between these highlighted examples, is that the samples they utilized consisted of academics already engaged in entrepreneurial activities and industrial collaborations. Still today, both entrepreneurship literature and studies on academic entrepreneurship receive criticism for holding the assumption that those taking up entrepreneurship are motivated to be entrepreneurs or for studying the motivations only after the fact (Hayter, Fischer & Rasmussen, 2021, 12).

The previously described view of identity hierarchy with academic identity being a focal one and needing protection has been recently challenged (Karhunen et al., 2017; Mäkinen & Esko, 2022). In their study on Finnish and Russian entrepreneurial scientists, Karhunen and others (2017, 559) argue "that different sets of values can be integrated into a coherent whole". Their study exhibited that especially the Finnish entrepreneurial scientists in a rather logical manner narrated the entrepreneurial role to be a natural extension to their academic one, while the Russian counterparts weaved together more expressive narrations of their stronger scientific identification (Karhunen et al., 2017). These more multifaceted pictures of the professional identification of academic entrepreneurs and how the hybrid roles are managed seem to have been captured and are emerging in the field. It has been for example demonstrated, that academic entrepreneurs can either make a full transition to entrepreneurship by mentally reframing the domains of academic science and entrepreneurship compatible, compartmentalize the tasks related to the different domains and embrace a hybrid identification, or protect their academic identities by rejecting the hybrid role. (Mäkinen & Esko, 2022, 8.)

Here, it could be speculated whether high-level, singular frameworks of professional identities and their contents are in fact effective, as the importance and prominence of individual aspects of entrepreneurial work are highly subjective. For example, Mathias and Williams (2018) propose that there is no singular 'entrepreneurial identity', but rather individual entrepreneurs hold varying perspectives on the meaning of being an entrepreneur to themselves. Thus, when studying entrepreneurs and their identification with work, they argue that the analytical focus

should be on what entrepreneurs believe to be meaningful in their entrepreneurial roles instead of an external script for the role of an entrepreneur (Mathias & Williams, 2018, 274).

More fluid and challenging typologies of academic entrepreneurs have been created to break the dichotomous portrayal. On the one hand, for example Lam (2010) describing boundary work scientists engage in to make sense of their professional identities as a response to the changing university-industry relationships, places the scientists on a continuum of value sets from 'traditional' to 'entrepreneurial' science. On the other hand, as opposed to being perceived as having hybrid or dual roles, entrepreneurial scientists have been described as liminal, creating their own grouping in between the domains of academia and business (e.g. Gulbrandsen, 2005). In a similar vein with Fochler (2016), Gulbrandsen (2005) argues that academic entrepreneurs have strong group membership neither with purely academic researchers nor entrepreneurs, but they distance themselves from both to some extent.

As a conclusion, it can be observed that as the contextual changes in academia have taken place, also the profession of academic scientist has undergone changes among which are the changes related to professional identities (Oliver & Sapir, 2017, 48). Still, studies on the professional identification of academic entrepreneurs are scarce. It is important to include individuals from different kinds of societal and organizational contexts to gain a better understanding of the subjective experiences among academics (Lam, 2010, 37). This study examines the professional identities of health and life scientists coming from and working in Finnish universities, emerging as academic entrepreneurs. The focus is on their narrative identity work, in other words how they construct narratives of themselves, as they develop their professional identities.

3   METHODOLOGY

This chapter will describe the research methodology of this master's thesis. First, the philosophical foundations of the research will be explained, followed by reasoning for narrative research approach. Finally, the processes of data collection and analysis will be illustrated in addition to describing the informants. Special focus will be given to provide detailed explanation of the analytical process and how the composite identity narratives presented as the result of the research were constructed to ensure the transparency of this narrative study.

3.1   Philosophical foundations of the research

Exploring and explaining the philosophical viewpoints of research helps in setting the research strategy and in turn, gives directions on the path from research questions to the conclusions. Decisions on these philosophical foundations clarify why qualitative research offers interesting avenues and how it can be performed in addition to why certain methods are used in collection and analysis of the research data. Sometimes researchers in the fields of management and organizations consider their philosophical position to be obvious or do not think it is relevant to state them in their practically oriented research and leave these explicit statements of foundations out. (Eriksson & Kovalainen, 2008, 10-11.)

Considering the benefits Eriksson and Kovalainen (2008) present, this chapter is dedicated to disclosing the philosophical foundations of the thesis in question. One of the most common philosophical positions relied on by management and organization researchers is interpretivism and constructionism (Eriksson & Kovalainen, 2008), and the choices made in the making of this thesis also fall under this category. Researchers adopting these positions are curious to explore how people "interpret and understand social events and settings" (Eriksson & Kovalainen, 2008, 19). This type of research does not aim to scrutinize predefined dependent and independent variables, but rather assumes the same data can be interpreted in multiple meaningful ways and zooms in on the complex human experience as a whole (Eriksson & Kovalainen, 2008). Eriksson & Kovalainen (2008, 20) pose that to this day major share of interpretive research has been conducted under the umbrella of social constructionism.

This thesis is positioned in the *social constructionist theoretical orientation*. A variety of different researchers can be placed under the social constructionist umbrella and in fact, there is no clear definition for this orientation (Burr, 2015, 2). Burr (2015) refers to social constructionism as a family whose members are not identical to each other, but rather share some qualities and have that family resemblance.

Burr (2015) identifies four key assumptions that are prevalent in social constructionist research. First of them is the desire to question our beliefs of the reality and ourselves, to challenge knowledge that is considered self-evident. Second key assumption underlying social constructionist research is that we cannot find answers that apply to all people because our understanding of the world is founded on when and where we live. Third characteristic for the social constructionism is the idea that the reality and all the knowledge are built in our daily interactions and hence researchers following this orientation are especially curious for social interaction. Social constructionists highlight that truth - "our current accepted ways of understanding the world" - is produced in the constant social processes between people instead of being developed from objective observation of the world. So, knowledge is sustained by social processes, but the fourth assumption entails that the relationship works both ways and thus, knowledge and social action go together. Depending on our construction of the world, i.e. our understanding and knowledge some social action becomes appropriate. Then again, with the passage of time, this setting may change as the social dealings produce new social constructions and invites us to act in a different way. (Burr, 2015, 2-5.)

The goal of this thesis is to understand, how academic scientists construct their professional identities through narrative identity work as they combine scientific work and entrepreneurship in the domain of health and life sciences in Finnish universities, especially early on in the innovation and commercialization processes. Considering this goal, social constructionism is a suitable foundation for the research as it emphasizes the subjectivity of knowledge. The philosophical tradition also encourages the researcher to look at taken-for-granted knowledge through critical lenses. It can be thus said that social constructionism is a fitting foundation for studying academic life scientists' experiences on engaging with entrepreneurship and commercialization in their social environment.

Narrative research can be defined in four different ways. Firstly, it can refer to theoretical lenses (Heikkinen, 2018, 148): narrative research is ontologically and epistemologically rooted in social constructionism (Eriksson & Kovalainen, 2008, 14, 210). Secondly, narrative can also

refer to the nature of data and thirdly to the ways that data is collected and analyzed. Finally, narratives can also be used as professional tools. This use is based on the idea that people build their understanding of themselves, their identities, through stories. (Heikkinen, 2018.)

Considering these definitions, it can be stated that narrative is a comprehensive base for this thesis. The knowledge and reality are considered relative and subjective. Thus, there is no one truth as people's understanding of both themselves and the world surrounding them is an ever-evolving story (Heikkinen, 2018, 151). A central premise of social constructionism is the social construction of reality, meaning that knowledge and our 'truths' are built in the social interactions between people. Storytelling can be considered as a fundamental form of explaining and understanding life and social relations in addition to being a natural way of human communication. In comparison with non-narrative texts, stories are intertwined with context and are richer, more fascinating, and more difficult to forget. Therein, stories and narratives offer a gateway to understanding human action and experience. (Eriksson & Kovalainen, 2008, 210-211.)

The analytical process is explained in more detail in later sections.

3.2   Narrative research methodologies

Narratives as research material have been described as rich and highly contextual (Eriksson & Kovalainen, 2008, 224), which makes them an excellent means to study professional identities and identity work. Narrative research material can be spoken, written, and visual (Riessman, 2008, 3). This thesis' empirical part is based on material that consists of interview transcripts written in Finnish and English languages. It should be noted that not all talk nor text is narrative as narratives are characterized by storytelling. This entails that the events described are consequentially linked to each other and the descriptions include specific characters - the whole that is narrated forms a meaningful pattern instead of a random combination of disconnected events. (Riessman, 2008, 5.) Thus, it is important to specify that the data utilized in this master's thesis consists of both narrative interviews and thematical interviews that were used in constructing composite narratives that finally are presented as the result of this research. The data collection and analysis will be explained further in the following chapter.

Particularity is an important notion in narrative research. Narrative analysis is not merely a study of story's content, but the researcher must also take note of how, why, where, and when the story is told (Riessman, 2008, 11). Since there are endless alternative answers to these questions, each particular choice becomes meaningful. Narrative knowing challenges the idea of scientific positivism that there are absolute facts that can be discovered with objective empirical investigation and in fact, it is recognized that multiple different narrations may exist of the same events simultaneously (Eriksson & Kovalainen, 2008, 223).

In narrative research, also the researcher is a subject of research, and part of interpreting and construing the reality, instead of merely *finding* the narratives. The researcher themselves has not had a direct access to the actual event and experience, but it is always a secondary one through the informants. Interpretation takes place when working with transcribed materials, potentially even of different languages. As follows, narrative interview needs to be a facilitated conversation between participants aiming at producing elaborated accounts then documented in the transcripts. (Riessman, 2008, 21-23.)

Nevertheless, it is important to note that the interviewer must give the informant significant room to talk in order for them to produce lengthier accounts. The researcher should guide the discussion to the right tracks, but as the story starts to unfold, their main responsibility is to listen carefully and present carefully worded follow-up questions. In the first round of interviews for this master's thesis, all of the six interviews started with the interviewer asking the informant to tell about their study and professional (scientific) background. This triggered the informant to start weaving a narrative around their own professional self. Riessman (2008, 24) argues that in addition to carefully presented questions, "… the interviewer's emotional attentiveness and engagement and the degree of reciprocity in the conversation" are important in creating a fruitful narrative interview environment.

3.3 Data collection

The data for this master's thesis was collected as part of a larger research project led by Elina Mäkinen "The Emergence of Health and Life Science Innovations (HeLSI)" funded by the Foundation for Economic Education. One of the aims of the project is to conduct a longitudinal field study of several university-based health and life science innovations to see how the commercialization processes of the discoveries develop over time. The data on these

discoveries has been collected in the context of an innovation program first developed at a foreign elite research university and then implemented in a number of Finnish universities. Researchers (Elina Mäkinen and Terhi Esko) have interviewed scientists, who have made the discoveries, at two different time points: in the spring of 2018 and in the spring of 2019.

This thesis focuses on transcripts from six selected narrative inquiries and their follow-up interviews, which were conducted thematically. The transcripts were very detailed as for example longer pauses or especially emphatic words were marked in the text. The interview data formed narratives, where health and life scientists coming from Finnish universities that are engaged in innovation and look to commercialize their discoveries, talk about the process of innovation and their scientific and entrepreneurial work.

Table 1. Summary of informants and their backgrounds.

Informant	Innovation	Professional background	1st interview – Spring 2018	2nd interview – Spring 2019	Language
Lena	Treatment for eye disease	Coordinator of the university research group, Postdoc. Studied biochemistry, specialized in molecular biology and epigenetics – PhD in Genetics. Used to work in a science-based startup as research director.	45 minutes	51 minutes	Finnish
Anna	Treatment for dental disease	Physician with exp. from e.g. clinical work and clinical trials, and pharma companies. The research group consists of physicians and engineers – Anna is one of the "original" members and first physician of the group.	49 minutes	-	Finnish
Peter	Same as the former	(Operative) CEO of the science-based startup. M. Sc. in Engineering, Bioinformatics. Doctoral candidate / Starting his dissertation.	-	59 minutes	Finnish
Saul	Medical tool	CEO of the science-based startup. "Med school dropout", was a doctoral student in a research group for neurosurgery.	74 minutes	14 minutes	Finnish

Matthew	Test for toxicity	Principal investigator leading his own university research group. PhD in Genetics. Originally was studying to become a doctor/physician. Later transferred to genetics. Has previously established own research group also in another research organization.	69 minutes	77 minutes	English
John	Cancer drug	One of the founding members of the science-based startup. Works two jobs: the startup / firm and his university position. By the 2nd interview, had established his own research group in the university. PhD in Biochemistry. Graduated from UAS in bioanalytics before continuing to university studies.	52 minutes	73 minutes	Finnish
Ellie	Water quality test	Project manager for research projects related to environmental health, earlier had a wider administrational role across the group's different projects. PhD in Environmental engineering. Has volunteered for NPOs.	61 minutes	72 minutes	Finnish

Table 1 presents the informants. Informants have been pseudonymized because firstly at the time of this research, they were still working on innovations based on unpatented information and capabilities, and secondly them being recognizable does not add value to the research. Protecting the informants from any potential competitive advantage leaking to outsiders has been a top priority for the research project and it is important to respect this trust also in this master's thesis. Still, in order to maintain the storytelling nature of narrative, the informants have been personally named.

The informants of this master's thesis are people leading research groups that have either found business opportunities based on the knowledge (innovation) they have produced or are in the process of exploring the potential for such opportunities. Hence, they represent *emerging* academic entrepreneurs. The informants and their respective research/innovation projects were

chosen based on the professional background of the informant: as this master's thesis focuses on the phenomenon of academic entrepreneurship and the professional identities of entrepreneurial scientists, it was evident to choose informants with academic backgrounds. All of the informants have some kind of a managerial role be it either acting as the (formal) CEO of an already founded science-based firm or managing research groups and projects preparing commercialization. Also, the domain of health and life sciences ordered another factor when looking at the suitability of an informant.

As can be seen from Table 1, Peter and Anna worked in the same innovation project. Anna was the informant in the first round of interviews, but by the time of the second round, she had left the project and the follow-up interview was conducted with Peter. All the other informants were able to attend both rounds of interviews.

3.4   Data analysis and interpretation

Data analysis in narrative research refers to interpreting material in storied form (Riessman, 2008, 11). A distinction should be made between the two basic types of analysis: analysis of narratives and narrative analysis. As Polkinghorne (1995, 12) puts it: "… analysis of narratives moves from stories to common elements, and narrative analysis moves from elements to stories." In narrative analysis, researcher utilizes collected narrations of events to write a story or multiple stories (Polkinghorne, 1995, 12).

I chose to follow the paradigm of narrative analysis, because in this master's thesis I am especially intrigued by the different experiences narrated by the academics. Deriving from the informants' accounts, the aim is to create composite identity narratives that open windows into the professional identities and narrative identity work academics engage in as they work across the boundaries of academy and business. The informant's relationship to and meaning making around certain themes that will be presented later in this chapter is a way to analyze narrative identity work.

In my efforts to find out, what kind of professional identities emerging academic entrepreneurs develop and how they construct them through narrative identity work, I roughly followed a framework of multimethod approach to narrative analysis developed by Nasheeda, Abdullah, Krauss and Ahmed (2019). Their framework is useful in restorying, that is, in creating stories

from interview transcripts by investigating the different elements that make up a story in order to re-arrange them chronologically into a meaningful story told from a certain perspective. In this thesis, I call the stories created through this analytical and interpretative process *composite identity narratives*, as each of the final three narratives represent an identity category and may consist of more than one informant's narrations.

Nasheeda et al. (2019) organize their framework into a 4-phase process consisting of interviewing and transcribing, storying and chronologically plotting, using follow-up interviews for co-creation, and finally developing the story by attaching meanings to it. For the purposes of and to stay within the scope of this master's thesis, I adapted these phases in my own work, and the data analysis and interpretation were organized around three phases (see Figure 2): structural analysis, thematic analysis, and writing composite narratives.

In their phase 1, Nasheeda et al. (2019, 3-4) emphasize getting acquainted with the interview transcripts because it allows the researcher to engage with the material deeply, even though at times they seem like disorganized collections. Since the data for this thesis was gathered by other researchers and I entered the research process only after interviews had already been conducted and transcribed, the importance of familiarizing phase was highlighted, and it was given a lot of time and focus. After getting access to the interview transcripts, I started to familiarize with the material by repeatedly going through all of it. Only after a comprehensive review of the material, I focused on individual informants and their stories.
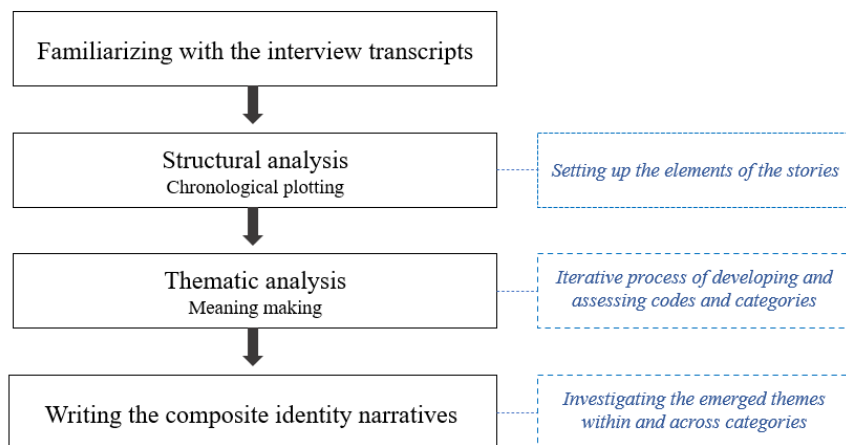

Figure 2. The process of data analysis and interpretation. Applied from Nasheeda et al. (2019).

Looking to find out *what the academic entrepreneurs bring up* when asked to talk about their career and processes of innovation and commercialization, and *how they put into words* these experiences, I utilized elements from structural and thematic analysis. In the following subsequent sections, I elaborate on the process of analysis and interpretation as presented in Figure 2 a phase by phase, and also explain where and why I deviated from the process presented by Nasheeda et al. (2019).

3.4.1 Chronologically plotting – structural analysis

After reading and rereading the interview transcripts several times, I began the analysis with structural analysis aiming to chronologically plot the events academic entrepreneurs narrated, following along the process of Nasheeda et al. (2019). In the structural analysis, I focused mainly on the different elements of narratives, such as events, characters, scenes of events, plot, and point of view, instead of linguistic analysis that would also scrutinize for example intonations and breaks in speech. (Eriksson & Kovalainen, 2008, 218-219.) Chronological plotting forms the building blocks of the story (Nasheeda et al., 2019, 5). While the material created at this stage will not be presented as part of the empirical findings, they have guided the following steps in the analytical process. For instance, when developing the composite narratives, I have sought to present events in chronological order.

Taking the interview transcripts and turning them into coherent and structured narratives requires attention to the structure of the story and what are the different elements of it (Nasheeda et al., 2019, 4). The elements I paid attention to were events and event patterns, narrative voice used to express points of view, and main characters and their roles and positions (Nasheeda et al., 2019; Pentland, 1999). Narratives also portray people's values and assumptions either explicitly or implicitly (Pentland, 1999). The point of view presented in the informants' narratives is their personal one, as they narrate their own experiences and put into words their own values and goals. The elements I discovered from the structural analysis included: timeline and central events. I will elaborate on other elements that surfaced, such as underlying values, in the chapter 4 where I present the composite identity narratives, as they are tightly coupled with the respective identity narrative and its' context.

Timeline

In their interviews, informants do not narrate their experiences in a clear chronological order, but they bounce between the past, the present, and the future. The informants talked about their past especially related to their study and employment background, but also to their upbringing and early lives. They also explained the different stages their project had gone through by the time the first and second interviews were conducted.

The narratives include plenty of retrospection, but there is also a prospective nature to the informants' narrations. As the innovation and commercialization projects the informants work with are still in their early stages, it is quite natural that a lot of the narrations also referred to potential futures. The informants also voiced their visions and hopes for their personal careers in the future.

Significant events

The significant events informants think back on and bring up in their narratives are tightly coupled with their academic careers, innovation processes, and commercialization of their knowledge. The events that were brought up include some formative memories from growing up and study times, that have had an effect on individuals' career choices. The stories of how their innovations came to be are also prominent in the informants' narrations – in addition to being a consequence of hard work and excellent scientific research, there often seemed to be an element of luck present. An important turning point in many of the narratives both personally for the informants and for their innovation projects was a moment in which they experienced a sense of encouragement externally as someone expressed their support for and confidence in their idea. These events varied from securing a significant amount of external funding to inspirational words from a personal role model.

Wider contextual changes in the scientific fields were also brought up and these narrations often focused on the scientific advancement of the respective field. The phenomenon of academic entrepreneurship was a topic initiated by the interviewers and it got varying responses from the informants – these responses will be reviewed in later parts of the thesis, in the composite identity narratives.

This part of analysis aided me in organizing the events narrated in the first interview and in the follow-up interview into a chronological plot. At this stage, despite plotting through the two rounds of interviews, I still examined the narratives individually to each informant to avoid any confusion as to "who said what" and to later enable cross-narrative comparisons. After the individual narratives were structurally crafted, it was clear that these would only serve as drafts, as the narrative conveyed very little *meaning* of the described events to their narrator. Thus, I took a closer look into the content of the narratives. This phase will be elaborated in the following chapter.

3.4.2   Meaning making - thematic analysis

In order to delve into the meaning of narratives, I utilized thematic analysis, where the focus is on *what is told* – on the content of the narrative, such as issues and patterns (Eriksson & Kovalainen, 2008, 218). Riessman (2008, 3) makes an important note saying that narratives do not serve insights on silver platter and thus they require close interpretation from the researcher. Eriksson and Kovalainen (2008, 219) define *theme* as "… a concept, idea, or distinction that emerges from the empirical data". I examined the interviews collectively to firstly explore the emerging themes and secondly to use them in constructing meaningful stories.

In their study Nasheeda et al. (2019) at this phase conducted a structural analysis with a distinct focus on language and how it was used. To stay within the scope of master's thesis and to focus on the purpose of the thesis at hand, I made the decision not to take language into specific focus and conducted a thematic analysis instead. Even though the focus of thematic analysis is primarily on "what" is said, researcher makes their interpretation based on the informant's speech and expressions just as any competent user of language and may occasionally take note of singular choices of words and expressions (Riessman, 2008, 59).

Thematic analysis is a flexible method that can be utilized in different ways and thus, researcher has to make active decisions on their approach. One of these choices is whether to approach the research material inductively or deductively. Deductive analysis is informed by prior theory, while inductive analysis works from bottom up deriving the themes from data. (Braun & Clarke, 2012, 58.) As the purpose here was to explore individual experiences, inductive approach was a natural choice. It should be noted though that in reality, it is quite impossible for research to be purely either or. Also, according to Riessman (2008, 73), "prior theory serves as a resource

for interpretation of spoken and written narratives". In this master's thesis, the analysis was informed by the theoretical framework focusing on academic entrepreneurship and identity work.

The previous phases of analysis had already allowed me to deeply familiarize myself with the data. The thematic analysis started by initial coding. Defining the meaning of codes, Braun and Clarke (2012, 61) make use of the metaphor of bricks and walls: if themes are the walls, codes are the individual bricks. The early stages of thematic analysis produced a lot of potentially relevant codes, but in order to capture something important about the data and to build those walls, a lot of sculpting needs to be done. In practice, this meant clustering similar codes and exploring whether those clusters form meaningful themes. (Braun & Clarke, 2012, 63-65.)

First, I started the coding process by highlighting quotes from the interview transcripts that seemed relevant for the research aims. I then renamed these quotes in English and in my own words, thus creating descriptive-level codes. The purpose was to summarize the key messages and my interpretations of them. This work produced in total 455 descriptive codes. At this stage, the codes were very high-level individual remarks instead of insightful representations of the material as a whole.

Thus, I grouped similar quotes together to develop codes, and these codes were again clustered to form meaningful themes. Central themes that emerged from the research material are:

- Career motivators and important elements of work
- Current (managerial) role
- Teamwork and collaboration
- Money and relationship to it
- (Perception of the) general culture and discourse around academic entrepreneurship
- Future visions for personal career

In this study, I conceptualize narrative identity work as a person's sensemaking around the abovementioned themes related to their work and career. By investigating the informants' relationship to the themes and how they narrate their story around them, I aim to show the ways they engage in narrative identity work.

The themes will be given voice again in the composite identity narratives. Familiarizing with the material and conducting the analysis revealed that while the events people went through

may be alike, the individual scientists attached different kinds of meanings to these and experienced them differently.

3.4.3 Writing the composite identity narratives and developing the story

As the final stage of the analytical process, three composite identity narratives were created. The resulted narratives are presented as empirical evidence in the chapter 4.

The categorization of the individual informants and their narratives into the composite identity narratives was developed through an iterative process moving between the different interviews, highlighting significant instances, developing codes and categories, and assessing their relevance and boundaries.

At this stage, the material created through the structural and thematic analysis were utilized to put together coherent and meaningful stories describing the professional identities the entrepreneurial scientists construct. The narratives were organized around a chronological order starting from study background, previous work experience and the start of the innovation process, ending with the informants' thoughts about the future.

This stage also included editing the informants' language. The Finnish interview quotes were translated into English, and as the informants used a lot of expletives making reading quotations from their interview transcripts more difficult, these were edited out. Also, proper nouns (e.g. names of people and institutions), that could risk the anonymity of the informants, were removed and replaced with a description or pseudonym.

4 EMPIRICAL EVIDENCE

As a result of my master's thesis research, I present three composite identity narratives of Scientist, Adaptor, and Academic Entrepreneur depicting the professional identities emerging academic entrepreneurs construct through narrative identity work as they navigate the interface of academia and business.

In the identity narratives, six themes are given voice from the informants' viewpoints: career motivators and important elements of work, current (managerial) role, teamwork and collaboration, money and relationship to it, perception of the general culture and discourse around academic entrepreneurship, and future visions for personal career. Narrative identity work, that can be observed through the composite identity narratives, is conceptualized as academic entrepreneurs' sensemaking around these themes.

In this chapter, I will present all three composite identity narratives, followed by an overview of empirical findings.

4.1 Composite identity narratives – three stories of engaging in academic entrepreneurship

4.1.1 Scientist

The Scientist composite narrative is based on two interviews from a single informant, Matthew. Scientist identifies strongly with their scientific work, and they actively set boundaries between entrepreneurship and science.

Matthew is the principal investigator of a research group studying and developing a test for toxicity. At the time of the interviews, the group is in the process of investigating and planning for the commercial opportunities of their innovation. In the future, the plan is to set up a spin-off firm and wrap this innovation into sellable products and services, but Matthew does not envision himself being a part of that business:

-- in a situation of really commercializing our idea and getting for instance a company or something like that, I know already that I don't want to be involved in that. It's not my goal. It's not my profession and I would be a disaster in that. But I'm happy to promote youngsters in my group. (Matthew 1)

Throughout the Scientist's narrative, it can be observed that their professional identification is tightly coupled with their scientific work. They actively set boundaries between science and entrepreneurship, while distancing themselves from the latter. The guiding light of Scientist's career has been curiosity, and scientific work fulfils this desire for them. In their narrations, the focus is on scientific achievements and challenge. Matthew describes his passion for scientific research as follows:

I do science essentially for a very hedonistic reason. I have pleasure doing science, and I think I resolved quite early in my life that there is only one reason of life, and it is being curious. So, I do science and what gives me pleasure about science is just to see what's behind the corner. Nothing else. I have never had in mind saving anyone's lives. I couldn't care less. Or doing any service for anyone. Just being curious and get pleasure for asking new questions. For me, the point of doing science is not finding an answer to a question. The moment I find an answer to a question, that topic actually gets immediately, instantly uninteresting, and it's really about asking the question. (Matthew 1)

Already since their younger years, Scientist has found it important to follow their intuition and spend their time with intention on things they are passionate about. Right now, doing science is something they "could not survive without", but nonetheless they are prepared to leave the academic career behind them, if one day they stopped feeling that way. Scientist also extends this philosophy to their research group – they want to facilitate an environment where people feel like they come to curiously "play together" and has instructed people to not show up, if some days they do not find the motivation to do science.

Matthew considers his academic career an atypical one, because it has involved a lot of mobility between different countries and also changes in the field. Originally, he was studying to become a doctor, but coincidentally found lab work more exciting which resulted in a realization: *"I was not into being a doctor and really my motivation was not actually saving anyone's life, I couldn't care less. I was more interested in understanding how the human machine works." (Matthew 1)*

Matthew's current scientific field is bioinformatics, which he regards as a great fit personally since, reflecting his curious nature and need for occasional change, it can be applied for different kinds of research purposes, and he has already been able to switch from neuroscience to cancer and again to the current area of toxicology. Matthew is driven to work in the toxicology field because he views it is rather outdated and there is a lot that can be done to further the field and "be really at the edge of innovation". He takes a lot of pride in being among the first people to bring in new perspectives to the field and he enjoys the challenge of shaking up the generally accepted, but outdated sentiments.

Further, as bioinformatics as a field combines the domains of biology and genetics with computer sciences, Matthew finds it a fantastic combination of his different passions – he is interested in understanding "the human machine" and has really enjoyed working with computers already since his teenage years. The combination has not come easy to him, though:

> *I have suffered a lot myself. Before I could establish myself as a principal investigator, the main problem I had in my career, after my PhD, was actually to let to be recognized as a scientist. People were recognizing me as a technical person, as a service person. I have this data, you crunch it. (Matthew 1)*

The scientific orientation of Scientist's professional identification can be seen also when they talk about their research group and collaboration, as their reference point is consistently in academia. For example, Matthew talks about how the tasks of biology lab and those on the computational side require different kinds of skillsets and usually people are trained for either or. Matthew thinks that having these people in separate silos is not effective. Thus, he hopes that as more educational programs combining the different sides (such as bioinformatics) are set up and students go through them, the attitudes also change. In siloed research groups, Matthew has found tensions and conflicts between different modes and rhythms of working, as everyone is individually reaching for the goal of being the main author of enough publications necessary for PhD in Finland. Having the experience of both sides himself, Matthew has wanted to create change in his own sphere of influence – his research group. The research group Matthew is now leading, consists mostly of computer scientists, but includes also people working in the biology/toxicology lab. Building a collaborative way of working, that facilitates non-competitive and inspirational atmosphere between people coming from different disciplines and working on distinctive tasks, is something Matthew is proud of, and his team's happiness has given him a lot of joy as well.

Scientist conceptualizes the change in their professional role as one from a scientist to the leader of their research group, rather than becoming an academic entrepreneur. Now that they are the principal investigator of their own research group, Scientist finds that they do not get to do the hands-on research work anymore, but their role mainly revolves around team leadership, bookkeeping and other administrative tasks. Matthew refers to this part of his current tasks as "administrative shit and this kind of stuff", which would imply they are not his favorite.

Scientist feels that scientists are not prepared for administrational and managerial work and frankly, not trained for them either, but they think that taking on that kind of work necessary if one wants to advance their career. As such, Scientist now finds meaning in their work indirectly, through the team and their discoveries, and enjoys the challenge of team leadership, while the other parts of the managerial role are "actually just a burden".

> *My task is to ensure that we have money to do funny things, to have fun, and to ensure, as much as possible for my people, to live kind of relaxed and safe as much as possible, while obviously it's their role to do the real science. And obviously in that, nowadays my role is just to supervise and give small pushes to keep them on track. But that's it. (Matthew 2)*

While Scientist does not agree with scientific career advancement ultimately equaling to administrational and managerial roles growing further away from the research itself, their personal career taking this path has not been an accident and they have actively changed their own practices and mentality related to for example engaging in hands-on research work. Having to give up control over the hands-on scientific work and the discoveries has not come without difficulties to Scientist, even though they have almost a parental tone when talking about their team and supporting them in their career endeavors, and they have found enjoyment in the team leadership related work. Thus, Scientist has had an active agency in their personal career and their perception of themselves in it. This is exhibited in the following quote, where Matthew thinks back to the time, when he started recruiting people to his team and became a group leader, not just a leader of himself:

> *I don't make a secret about it, it's very stupid. But I spent several months in the beginning actually secretly redoing all the things that my team members were doing just to make sure that they are doing the right thing. And then I realized that this was so stupid. It was just a waste of energy and resources. And it was the most difficult part. So, I had to detach myself. I had to make peace with the fact that I will not be the one who actually does the*

things. I'm the one who kind of looks from above, or from behind, how they move. And I suffered a lot, for several months. I was really like into this crisis moment. That was like, OK, is this really the right career path I really want to go. Then I made peace with it. So nowadays I do enjoy, still the curiosity, is still this challenge feeling in the science. But it's kind of indirect. (Matthew 2)

In their narrations, Scientist relates entrepreneurship with the objective of making money and distances this aspect from the role of an academic scientist.

No no no no no, I will tell you. I'm extremely far from there. I couldn't care less if in two years I will make money out of a product. That's not the interesting part for me. When that thing, that we have now developed, and if we got funding to commercialize, we got the [support program] and everything. When that thing will come to the market, that will be completely out of my horizon. I'm not interested in that. I'm a scientist, and I'm not after the money. I'm stupid, I know. But I'm not after the money. (Matthew 1)

Matthew later makes a similar remark, but refers to his academic colleagues around him, representing this kind of relationship with money as characteristic for the profession of academic scientist and not only for him personally: *"if money comes, it's a collateral thing. I mean I don't believe that there are too many colleagues around who actually are super money driven. I don't see that. They wouldn't have reached so far in the academic career. They would have given up much earlier."* (Matthew 2)

On multiple occasions Scientist talks about how they would like to see more collaborative mode of science – different fields coming to play together to see what is around the corner and creating new knowledge. Talking about innovations and commercialization has somewhat polarized reactions in their narrations. For example, Matthew comfortably talks about the innovation he is looking to achieve in his career saying: *"I'm not necessarily after inventing a new thing. But making the best use I can, of all the knowledge pieces that I have available."* (Matthew 1)

But when putting on the name tag of "innovation" and adding money-making to the equation raises Matthew's hackles:

Let me clarify what I think for innovation, because I guess that the innovation is one of the most overused words and concepts, and many times they absolutely [mean] nothing. So, I have felt always extremely critical about the trend of the last decade in this country,

because at some points there were politicians who decided that [innovation] is the way to go. As if [innovation] would be something that goes top-down. (Matthew 1)

It should be specified that what Scientist seems to resist is actually the external push they have perceived towards academic entrepreneurship and not necessarily the entrepreneurial activity in itself. They are very supportive of some more junior scientists in their research group that are interested to build a career in science-based firms and commercial science, but on a more institutional level Scientist criticizes the aim of financially profiting from scientists' knowledge. For example, in the following quotation from Matthew's narration, a distaste towards the general discourse around academic entrepreneurship can be felt and seen:

I think [academic entrepreneurship] is an extremely stupid concept. I always like to say, 'Let the kids play in peace.' Let the scientist do what they have been trained for and what they like to do. Which means being curious, looking behind the corner, and that's it. It's not our job to make any profitable shit. It's not our thing. I mean we are not trained for that - we are not good at it. And at the end of the day, what happens is that those who are successful are probably those with the least academic profile, or those who are lucky enough, who find in their teams people who are actually able to drive that thing. I never saw around me any pure scientist who actually would have a sense of money, in the most general term. (Matthew 2)

Regardless of their attitude towards academic entrepreneurship and innovation discourses, Scientist has made sense of their engagement with commercialization and the venture in a few ways that emphasize their professional aspiration to be a scientist. First and foremost, a significant incentive for Scientist to seek commercialization of their test for toxicology has been the people in his research group. As a team leader, Scientist strives to help *their people* grow in their careers on both academic and commercial paths.

In the past, Matthew used to think his job would be to "form next generation of academic people" and he could have chosen to stick to that meaning, but instead, he has actively constructed a view of himself as a team leader serving group members also with aspirations different from his:

And now I can actually say 'I don't understand a shit myself of this stuff, but I have something for you. If you are eager, you can go there.' This was a very strong motivation that has actually helped me a lot to find the right motivation and the right reasoning

behind, positioning this venture correctly into the path that I'm having. So, this was a very impactful factor. (Matthew 2)

Secondly, Scientist has made sense of their engagement in a research project the findings of which will eventually be commercialized by framing it as a vehicle to conduct scientific research with practical applications and a way to feed their curious soul seeking to learn about new things:

I realized that for the type of field of science where we move, there are two ways of approaching this type of science. Either you keep being purely academical. So, you do your research, you publish your paper, you're happy about it, then you forget about it and just do something else. But if you want to do something that has an impact, then you necessarily need to go in that direction. I'm not necessarily after having an impact as such, but I think that going after having an impact is helpful to actually get new ideas. (Matthew 1)

Further, Scientist related the new challenge of engaging in academic entrepreneurship to those more familiar to a scientist:

I think that for many scientists, there is a general sense of playing with the challenge. So, I mean for instance, I had to find this motivation in myself that I just had to convince myself that this was just another challenge, no different than discovering a new thing or publishing a new paper. Only when I put that into this frame, then I could motivate myself to actually do it. It's just a game, it's just a challenge. (Matthew 2)

Finally, while seeking meaning and fitting the venture into their own scientific career path via their research group and the notion of having impact could be considered more as mental models, Scientist is also looking to set up some externally visible boundaries that are tangible and communicate their position to others, too, for example in the form of an official role. Scientist considers their role to be one where they could contribute to the scientific direction of the potential firm and would get to work with clients from that perspective without getting involved in the business-related operations. For example, by the second interview Matthew's view of his role in the spin-off firm-to-be has clarified and he envisions himself as Chief Scientific Officer (CSO): *"Once the company flies, I will be very happy to retain kind of a role of a good scientific collaborator with these parties. That's my goal as a scientist." (Matthew 2)*

4.1.2 Adaptor

This composite identity narrative of Adaptor consists of the narratives from Anna, Lena, and John. Adaptor identifies with their work mainly through whatever the full-time job is at the moment. They set entrepreneurship and science in parallel while separate.

At the time of the interviews, Lena, Anna, and John are working at somewhat different stages with regards to the innovation and commercialization process. Lena is coordinating the daily operations of a research group in the field of eye disease. Her own academic background is in genetic research, and she has previously worked in a university spin-off firm. In spring 2018, the research group has an idea that they would like to further validate and then bring to market, but they are waiting for replies on their grant applications. Soon after the first interview they were able to secure TUTLI funding for the following two years and could continue the development of their treatment for eye disease and start investigating its' commercial opportunities.

Anna is a Doctor of Medicine who in addition to clinical work has worked for example in pharmaceutical companies in the past. The commercialization process of a treatment for dental disease, that Anna is part of, kicked off already in 2016 and when she was interviewed in spring 2018, they were already closing in on the end of their two-year TUTLI funding period and were preparing to found a firm that summer. (The story of that firm continues with Peter in Entrepreneur's identity narrative, as Anna stepped out of the project/team before the second round of interviews.)

John is one of the founders of a science-based firm developing a cancer drug that was founded in 2016. What differentiates their commercialization process from the ones Lena and Anna experienced, is that the university John works in, did not claim the innovation and its' immaterial property rights (IPR) and the research group was not able to apply for the TUTLI funding instrument for investigating its' market potential. Thus, the firm had to be founded for that they could seek financial support and funding, relying on some foundations and business loans in addition to investing both their own and their friends' money into the firm. John reckons this is why they have not been able to take the innovation through the phases of drug development as quickly as they would have hoped to, but at the end of the day, John is proud of their path and the hard work they have put into the innovation.

John has a full-time university position and has to work on the firm-related things during the weekends and holidays. When John was interviewed in the spring of 2018, he was working in a research group led by someone else, but he was considering setting up his own group at some point. When he was met again a year later, he had made this happen in addition to recruiting another person to drive the commercialization project together with him. Leading his own research group then enabled him to organize his work more flexibly around the two jobs and he could now actually take more time for the firm.

This composite identity narrative is named Adaptor because Anna, John, and Lena's professional identification seems to be fluid and dependent mainly on the job they are working on at a given time. Adaptors seem to flexibly move between scientific and entrepreneurial domains, while for them the domains still remain compartmentalized. The following narration from John describes, how his main professional identification comes from his day job – academic research in his university position – but he demonstrates no internal conflict, as he combines it to running his own firm. Rather the challenge for him is on instrumental level, to find time to juggle the demands of two jobs.

> *I do have my feet both on university and firm sides – my day job is with research anyhow. I've planned my research in a way that [the projects] go side by side nicely and I don't need to split my focus to too many different things, but obviously running the firm is completely different. Nowadays I take full days for the firm and then others for research, so that I can focus properly. And now that's possible, but I am still fully academic. (John 2)*

Exhibiting similar train of thought on how Adaptors compartmentalize the scientific and entrepreneurial work, Anna reflects on the potential conflicts between working as a physician and engaging in the commercialization of scientific knowledge:

> *In practice, the work of a physician does not include any kind of commercialization or such – it is about the clinical work. And that entails that no commercial interests affect to work with patients. (Anna)*

> *At the moment, I'm not doing any patient work – I'm working on this job. (Anna)*

Adaptors careers have been driven by their scientific curiosity and the choice of their field has been a conscious decision – for example John thinks back to a time when he had still thought he would want to go to medical school, but during his time in the university of applied sciences,

he had discovered his interest lies more in the "molecule side" which led him to continue his studies and research in biochemistry. However, Adaptors find it motivating to work in versatile roles and purely academic science may not always fulfil this:

> *When I was still studying, I thought that I'd go into research, but that would probably be too slow and focused on one thing. I've been looking for more versatile work – not necessarily the traditional work of physician, but something where you can do many kinds of things. (Anna)*

The decision to engage in commercialization projects and entrepreneurial activities was not one Adaptors actively sought after, but rather they decided to give it a try once the opportunity presented itself.

> *Originally, the purpose was just to do good research, but then by luck, we ended up in this situation. (John 1)*

> *Maybe it was at the time this research project came up, that it crystallized that now I could try this kind of thing. (Anna)*

While for Adaptors engaging in innovation and commercialization projects has not necessarily been the goal in itself, they have considered it to be an option on their career path. They find that working towards commercializing a science-based innovation offers versatility and new kinds of challenges for them. In their narrations, Adaptors often emphasize the scientific achievements, whereas commercialization is a way of enabling the practical application of the accumulated knowledge. They place high importance on feeling their work is useful and meaningful.

> *I think it would be amazing if after years of conducting basic research, it would in the end produce something of use for some people. A lot of great basic research is conducted, but then it just stays at that and no practical applications come out. (Lena 2)*

> *Well, some people are more comfortable with risk than others – I feel like I'm willing to take risks in order to make something meaningful and great, and then some are more careful. (John 1)*

Adaptors frequently refer to new skills they have had to acquire as they are looking to commercialize scientific knowledge. These include for example successfully pitching ideas to audiences from other countries and different backgrounds and understanding the demands of business management and founding a firm.

Me, I'm a scientist with educational background in biochemistry. And finished my doctoral dissertation in molecule biology. But now suddenly, I'm working on this commercialization project. So, you have to study quite a lot of new things and get familiar with completely new terminology and practices. (Lena 2)

At the end of the day, Adaptors enjoy the steep learning curve related to their current positions and projects – academic entrepreneurship is a chance for them to throw themselves into something new. To support their learning, Adaptors have been participating in various courses related to leadership and business management in addition to turning to mentoring programs. They are also actively participating in different kinds of events to network with partners, investors, and hopefully future buyers.

Further proof of Adaptors' fluid identification emerges from John's narrative as he describes how the firm-related work and the skills acquired there actually have benefitted his academic work and vice versa. John for example mentions, how knowing sales tactics has benefitted him in the process for getting grants and how he has gained new perspectives on how to run his own research group. His scientific background is also of great importance for the firm: *"I have this scientific background, that with many things, helps me plan ahead for what I could do, say for example to expand the patent portfolio etc. In fact, I have continued some research projects that in the previous lab were put on hold as I got some grants." (John 2)*

Adaptors consider money primarily in terms of livelihood, and they display no particularly strong emotional reactions to it which could refer to no internal conflict with money-related objectives. Adaptors' relationship with money can be observed in the narratives mainly in two ways. Firstly, getting their research funded has been one of the main challenges in their work both in university and science-based start-up contexts.

I would say that securing funding is always the challenge – it was an issue with research, it was an issue when setting up the firm, it is an issue now that we are taking things forward. (John 1)

You need to get funding somehow. That is the alpha and omega. People obviously have a lot of ideas, but so many ideas stay just that, and they are not turned into practical applications, because there is no money for it. It is a long process to turn an idea into a product. There's patenting – you cannot publish before patenting – and all that. Not everyone wants to go through with it. (Lena 1)

Secondly, on a more personal level, having a sufficient amount of funding and consequently getting a satisfactory income enables one to focus on bringing scientific innovations to market full time.

You see, it is of utmost importance to get salary, because if you do not, you have to do something else on the side. And that does not work in practice that you do something else and then only have the evenings or weekends for it. If you want to take something forward, you do need to focus on it fulltime. (Anna)

In addition to enabling focus, for example John notes that considering what a huge effort it is to commercialize scientific knowledge, it is no wonder one of the motivations is to get well paid in the end. In his narrative, John jokingly recalls a discussion that took place in a mentoring meet-up: people described the meanings and end goals of their innovations in noble ways, which prompted him to wonder out loud, tongue in cheek, why no one says money motivates them.

Adaptors' perceptions of the general culture and discourse around scientific innovations and academic entrepreneurship seem to be twofold – on the one hand appreciating the support and interest of other academic colleagues and on the other hand acknowledging some incongruences between science and entrepreneurship. John's narration paints a picture of generally supportive and positive attitude towards science-based product development and commercialization in his university community:

Actually, I've noticed, for example when chatting with people at the Christmas party, that a lot of them had been wondering 'Oh I have this idea, could this be commercialized…' and were interested about what I've been working on. So, I don't really feel like the people at the university look down on it. Of course, there are some of those old people, who think it's wrong to mix business and research, but mainly, in my experience, people have quite positive and interested attitudes. (John 1)

Anna's perception of the healthcare industry has a more critical tone:

In my opinion the whole healthcare industry is very anti-commercialization, despite the fact that all the tools used are developed, designed, and commercialized by someone – someone has to make them for healthcare. And a lot of money is paid for that. But still there's this thought that commercialization and business is somehow wicked, and it has to be shut out of healthcare. (Anna)

Taking a closer look at Adaptors attitudes and beliefs about the relationship between science and business, it can be presumed that they place the responsibility of the attitudes and the level of entrepreneurial activity on individual university scientists rather than on institutional level actors. In Adaptors' view, academic entrepreneurship is a career one can individually choose to explore and they have been the one's to choose this type of work for themselves. One of them recollects a conversation with another university scientist:

> *And I told them that of course the university won't do anything, but you yourself should have carried it forward. They just said, 'But I have my research job, so I cannot do this other thing simultaneously.' So, it's not yet acknowledged as an option that you could actually leave the research job and start commercializing your idea. I think there are plenty of ideas, but many people don't even come to think that they could do something about them. Maybe with the power of example and by creating those opportunities, people would start to think 'Hey I could go and try that path'. (Anna)*

Notwithstanding the Adaptors' emphasis on individual agency, they do believe academic organizations bringing more visibility to different role models would support university scientists in seeking opportunities outside their current positions and taking the actions to commercialize their knowledge. Further, Adaptors address the shortcomings of their educational background in supporting entrepreneurial activity: *"Thinking about my own education, the university did not really support innovative, or product- or service-oriented thinking." (John 1)*

The team leadership aspect of the Adaptors' roles does not get much coverage in their narratives, which could be interpreted as Adaptors not giving notable meaning to their scientific and entrepreneurial work through their teams, as they do through their personal careers and motivations. Naturally, the absence of Adaptors' reflections on team leadership could also be a consequence of team's current composition or person's official role description (for example Lena is not the professor of the research group, but she coordinates the daily activities).

Regardless of Adaptors' excitement around learning new skills themselves, they do still think it is beneficial to consider outsourcing where it makes sense and to participate in interdisciplinary collaboration.

> *Interdisciplinary collaboration is very important, because often no matter what is being developed, you'll need different kinds of competences and no one person nor people from the same professional field can have all of it. You need those with business competence*

and often you need those with some technical capabilities – be it coding or building or something else. (Anna)

Collaboration is also a way for Adaptors to maintain the scientific-focus/-core of their own work. For example, by the second interview, Lena has found herself a colleague who is focusing more on the commercialization activities, while Lena continues with coordinating the research activities.

When narrating the future visions of their careers, Adaptors continue their almost "we will see what comes up next" type of attitude. Nevertheless, they indicate no desires to give up their scientific work – rather the opposite. In her narration, Lena implies that as a whole the research group is developing in the direction of academic entrepreneurship, but she distances herself from the business-related roles by assigning them to other professionals:

> *Well, that [academic entrepreneurship] is what we are headed towards. That is what we are trying to achieve here (laughs). I of course create the foundation, but then for that business world, we need other people – an actual CEO and marketing people etc. But I mean, I'd be interested to be part of it myself" (Lena 2)* Continued by: *"We have started to think about the team with which we could start carrying this forward. But I'm not saying, that would include these people here, because well, we are all scientists. But we have thought about what kind of people we may need and what is the minimum assembly. But no jobs have been delegated. (Lena 2)*

Anyhow, Lena's approach to career planning or dreaming is quite careful, which could to some extent be explained with the firm founding still relatively far in the future at the time of the second interview – the research group had a roadmap for the next 18 months focusing on the validation of their innovation and investigating the commercial opportunity. As is congruent with the Adaptor's narrative identity work, Lena makes sense of her professional identity through her current role, and she is still uncertain of what her part will be in the possible start-up in the future.

For John, the end goal of his start-up is clearer: they are eventually looking to sell it to a bigger pharmaceutical company that can take over the next phases of drug development. Thinking about his personal plan, John has recognized similar opportunities in his other research projects and views a career of "serial innovator" a potential one for himself, even though he has had challenges with time management juggling two jobs. It is quite clear that John is not looking to leave his job at the university and enjoys his role in leading a research group.

Anna left the project before the second round of interviews were conducted. In spring 2018, Anna was already thinking about possible career plans if she did not continue as one of the start-up founders. As seems natural for Adaptors, she states: *"Of course there is always a plan B – then we do something else." (Anna)*

4.1.3 Academic Entrepreneur

The composite identity narrative of Academic Entrepreneur consists of narratives from Saul, Peter, and Ellie. Entrepreneurs identify with their work strongly through the entrepreneurial challenges. They set entrepreneurship and science as natural extensions of each other.

Saul is the CEO of a start-up based on scientific research and development of a medical tool. Saul is fairly young - he started his studies at medical school right after upper secondary school and the development of his innovation was set in motion during his doctoral studies. Saul never finished his medical degree and thus refers to himself as "med school dropout".

Peter too is the CEO of a science-based startup developing a treatment for dental disease. Peter has a master's degree in engineering, specializing in bioinformatics, and as he runs the operations of the start-up conducting scientific research and going through the commercialization of their first product, he is also starting to work on his own doctoral dissertation.

Ellie works as part of a global research group, and having her educational background in environmental engineering, she is the project manager for research projects related to environmental health. One of the projects involves development of a water quality test and the group is looking into possibilities of commercializing this idea. When Ellie was interviewed in spring 2018, she still had a wider administrational role as she acted as the representative of their research group in the absence of the professor leading the group. By spring 2019, she was happy to be focusing on a more selected area of research in the role of project manager.

Despite Ellie's official role differing from Saul and Peter's start-up CEO roles, she was still grouped into this composite identity narrative of Academic Entrepreneur, as the focus is not on the phase of an innovation or commercialization process, but on professional identities and the narrative identity work the informants engage in. What is in common for Saul, Peter, and Ellie, is that when they talk about their work and recent challenges they have faced or their visions

for future, they often recollect things related to firm-founding and entrepreneurship. Ellie, who at the time of the interviews is not part of a start-up, refers to her working style as that of an entrepreneur already:

> *A lot of people have told me that I work like some entrepreneur, because I don't count my working hours when something needs to get done or something is intriguing. I don't even notice the passing of time – suddenly I notice it's 7 pm and think 'Oh did I need to be somewhere. Hope not. Well, they'll call me.' So yeah, being an entrepreneur is something I could see for myself. (Ellie 1)*

Academic Entrepreneurs are proud of the scientific background and the level of academic tenure and knowledge in their teams, and they admire their colleagues and their achievements in science, but their narrations revolve closely around commercialization and entrepreneurship, which can be interpreted as their intention to narrate their professional story and identity around entrepreneurship and growing into that role. Further, this could be interpreted as a reflection of Academic Entrepreneurs' view of entrepreneurship and science as natural extensions of each other. For example, rather effortlessly blurring the scientific and entrepreneurial elements, Saul reminisces about his decision to seek specialization into neurosurgery, because he views it as one of the most challenging areas of medicine, but then in his narrations he very comfortably talks about topics such as business models in addition to proactively referring to himself as an entrepreneur. Another example of Academic Entrepreneur intermingling elements of business and science in an uncontentious manner arises, when Peter refers to firm's revenue – an extremely business-oriented KPI – as the most meaningful indicator of the impact their treatment is having:

> *I guess revenue means the most as it represents how widely we are able to launch our treatment, so actually it's the measure of our impact as well. Of course, profit, too – we have to make the firm profitable as soon as possible, because the impact runs short, if we don't. So those are our primary foci in order to have some kind of impact on societal and global levels. (Peter)*

Academic Entrepreneurs believe that over the course of their career, one could hold both academic and entrepreneurial positions and could switch between the domains without feeling internal conflict. They view that great scientists and entrepreneurs have similar qualities, but Academic Entrepreneurs do acknowledge the differences between doing academic science and running a science-based firm in their mode of working. As Peter puts it,

I think a good scientist is also an excellent entrepreneur – it takes the same kind of discipline, doing things for yourself, being driven, collaborating with others… I have seen excellent scientists, who would for sure make it as entrepreneurs. But then again, when you're doing it for the firm, you need to have a certain focus and maybe then you lose some of that academic freedom. (Peter)

Drawing differences between academia and science-based firm, while clearly positioning oneself in the latter, would suggest that Academic Entrepreneurs want to distance themselves from academia. Academic Entrepreneurs mental distance to academia does not amount to distance from science and scientific work, though. The Academic Entrepreneurs of this sample that already work for their start-ups - Peter and Saul - both regard the scientific background of their firm highly and doing scientific research is a core process of the firm, but the meaning and purpose they assign to it is different from academic science:

The focus of our firm's research is on product development – how to make [research] more efficient and faster, [how we get] new business opportunities and investigate them. Writing research articles in a medical firm [serves the purpose of] the knowledge of getting peer reviewed as is required for it to be believed. -- So, I view it more as a marketing effort to publish papers." (Peter)

Being an entrepreneur is an important part of Academic Entrepreneurs' self-actualization. Representing Academic Entrepreneurs' mindset of not wanting to merely work for a living, but spend time and effort on something meaningful, Saul puts his reasoning behind the decision to pursue the entrepreneurial career:

I think people ought to remember what is actually meaningful and essential in life. Through that, you gain perspective to what entrepreneurship means and maybe get some energy for it. Entrepreneurship can really be a pleasant and fun job [if your priorities are aligned]. And I think that, personally for me, it is the most suitable profession. While I think it definitely takes courage – there are some scary steps. But in my opinion, looking into the future safety of any job is rather relative at the end of the day. Thus, I think the best and the safest thing to do is to invest in your human capital, invest in learning – I mean, you really learn a lot through entrepreneurship. (Saul 1)

For Academic Entrepreneurs, becoming an entrepreneur and developing one's firm is not only about the tasks one takes on, but they also engage in internal inspection and prospection about themselves in the role:

If you are transitioning from being a scientist to being an entrepreneur, [you need to think] what you are what you want to really be, and what you value and what motivates you. These things I think will transfer to the firm and that working environment, too, and you need to be able to create that culture. (Saul 1)

Academic Entrepreneurs also make sense of their entrepreneurial role and career in retrospect by reminiscing about their dreams of inventing something new themselves in their younger years or recalling how their experiences and knowledge accumulated over time have led to them to this kind of work.

From the beginning, this has felt like completely down my alley – kind of like 'This is what you've been waiting for your whole life!' This combines everything I have studied, and not just that but learned, in this life. This certainly is the thing I'm going to see through, whatever the ending may be. (Ellie 1)

When I was younger, I used to think that it would be really cool to one day be in a position that I'd invent something that could then be patented. (Peter)

I think I've always had this true desire to make something completely new, something I developed myself, something useful. I suppose it's something we have in common with a lot of our team members actually. And I believe that is rooted in my upbringing, childhood, and school, so one should be really happy about those things, too. (Saul 1)

Albeit the entrepreneurial role takes a lot of working hours and there is also a lot of financial risk involved, especially if one invests their own capital into the firm, Academic Entrepreneurs are specifically motivated by these kinds of challenges.

-- usually when you set up the firm, it can be very motivating to drive it further. The stakes can potentially be very high - everything is pushing that person to do their best for that mission. And the number of things you have to learn is immense, so you acquire absurd levels of new knowledge. (Saul 1)

It seems that the personal characteristics combining Academic Entrepreneurs – optimistic, solution-oriented, and determined – have helped them take on the roles of an entrepreneur and an innovator although these roles have also led to challenges.

You cannot affect everything – what is the demand and the general situation out there. But when you do it as well as you can, [even it does not work out] you can say 'That's it, there are more fish in the sea'. (Ellie 1)

I think from [my background and upbringing] I have gotten a solid self-confidence in that I can do these kinds of things, really develop stuff, or maybe even invent something no one else has. (Saul 1)

Academic Entrepreneurs' narrations in particular take into account their teams – colleagues in firms and research groups – and the work culture and atmosphere among them. For example, in his first interview Saul makes an explicit note of rather talking about "us" than "I" when referring to the firm and its' path. Academic Entrepreneurs emphasize the importance of having a shared sense of the firm's philosophy and having sustainable and enjoyable working conditions that then enable innovative and effective operations. Shared philosophy and values have rather practical implications, such as guiding decision making around outsourcing and internal investments, but they also connect people and create trust.

We share common values. For us the most important thing is to work with good folks: work is quite important for us, so it's great if you can enjoy it, and no one maltreats others, and we have a good open atmosphere that fosters creativity. That is when you perform at your best, but only then. And this is extremely important for us – respecting other people. (Ellie 2)

By the same token, Peter addresses the importance of the team for his own motivation:

I like that you can at least choose your own team. Meaning that when you found a firm together, you build a grew that you want there, and if it's not what you want, it is very likely you won't be part of that grew. Starting a firm like this takes more hours than a basic 9-to-5 job. Of course, there are challenging jobs among those as well, but here you also have the financial risk involved because often you need to invest your own money. And you really need to make the firm work and then you obviously need to be able to trust that grew of yours. (Peter)

It is worth noting that team and working culture are not elements Academic Entrepreneurs feel they are externally exposed to but consider the CEO's/leader's role highly influential in constructing them among the other elements of the firm: *"I believe the role of the CEO is significant in that. And then, it would be good that you'd also want to continuously grow as a person or learn new things about yourself and others." (Saul 1)*

While Academic Entrepreneurs view the CEO's role as central, they do not demonstrate a need to be in the spotlight or above others. They rather posit that as a leader it is important to

acknowledge the job is primarily about listening to the team members and supporting them – almost making oneself unneeded in the daily operations. Further, Academic Entrepreneurs do not attach themselves to the role of leader/CEO per se, but for example Peter describes his engagement with the start-up:

> *Let's put it this way – [I'd be willing to take] any role required to. I'm not that kind of a person that needs to be in charge all the time. Right now, I'm the CEO of this company, because that is the best for the company, but based on how things evolve and what the company needs, my position will also be redefined. Most likely I'll always have some kind of an executive role, though. (Peter)*

In Academic Entrepreneur's minds, leadership is shared and does not culminate to a single title – while they experience a high level of autonomy in their work, they find team-level conversations and alignment important.

It is important to note that Academic Entrepreneurs have not conjured up the idea of building a career in innovation and entrepreneurship out of thin air, but they all call attention to their experiences of meeting people - role models - who have been very supportive in the area of commercial science and have gone through innovation, patenting, and firm-founding processes themselves. They also give thanks to their study backgrounds and upbringing for offering environments, where trying new things were encouraged and the collaboration between scientific and commercial communities was part of the day-to-day operations.

Discussing the perceived tensions or differences between academia and business, Academic Entrepreneurs (vigorously) emphasize the fruitfulness of the collaboration between academic scientists and commercial organizations in producing solutions for practical, real-life issues:

> *[Industry] is where you get the real needs from, so that you aren't way off beam, somewhere in the corner of your lab thinking 'This is a great idea, wow – probably everybody wants this', and nobody even wants to hear about it. So, in order to serve some real need, to answer a question, I think being in touch with the world outside keeps up a certain realism and helps you react to [the real needs]. (Ellie 1)*

A related aspect is Academic Entrepreneurs' relationship with money and profiting of scientific research. Academic Entrepreneurs do not demonstrate money being of particular importance or a pivotal motivator for them. In other words, their relationship with money is neutral and it therefore has mainly an instrumental character. Nonetheless, they do acknowledge the tensions

around the topic in the academic community, which comes across in the following quotation, as Ellie makes an effort to demonstrate her rationale:

I think there is a balance. You need to accept that without money you cannot change the world, that's just a fact. The more you have it, the more impact you can have with it - it just is kind of a necessary evil. And when you have enough of [money], you don't need to think about it all the time and it is not the main [issue], but you can focus on the research. (Ellie 1)

Thinking about their prospective futures, Academic Entrepreneurs see themselves growing as entrepreneurs. They do not only wonder about their personal future, but the firms' or innovations' futures are also present in their narrations suggesting mental proximity between them and their firm.

[The firm] has to be able to continuously develop new things, to evolve. And personally, I hope that I would get to continuously develop something new. When the team and the thing is in place, it is the optimal platform for that purpose. So, I really have a desire to plan the future of [the firm] and develop it in way that is supports innovation. And that it continues to progress and evolve. (Saul 1)

By the second interview, Saul's idea of being a serial startup entrepreneur has strengthened and he could see himself going through the process of developing a new product or service again. He deems it possible, that he would exit the current company through a potential acquisition. Saul feels that the successes they have had going through the process of research and innovation and then founding the firm have enabled him to grow a liking for the job of an entrepreneur.

Since Ellie's project has not yet, at the time of the interviews, been set up as a firm her narrations of the entrepreneurial role are more prospective, but she mentions throughout the interviews that she would be 100% available for the firm work.

Peter is now involved with the firm and is looking to finish his doctoral dissertation. He is looking to stay with the firm and open to have his role evolve based on needs that may arise.

4.2 Overview of the empirical findings

Overview and summary of the empirical findings is provided in the table 2. The categorization of the composite identity narratives - Scientist, Adaptor, and Entrepreneur – and their content illustrate the professional identities emerging academic entrepreneurs develop.

The narrative identity work Scientist, Adaptor, and Entrepreneur engage in, as it is conceptualized in this master's thesis, to develop these identities comes across in the narratives as Scientist, Adaptors, and Entrepreneurs discuss and make sense of six themes: their career motivators and personally important elements of work, their current role that to some has managerial and leadership elements to it, teamwork and collaboration, money and their personal relationship to it, their perception of the general culture and discourse around academic entrepreneurship, and their future visions of their careers.

Table 2. Overview and summary of the empirical findings: Identity categories and the themes of narrative identity work.

Themes	Scientist	Adaptor	Academic Entrepreneur
	Identification strongly through the scientific work – setting boundaries between entrepreneurship and science.	Identification mainly through whatever the full-time job is at the moment – setting entrepreneurship and science in parallel while separate.	Identification strongly through entrepreneurial challenges – entrepreneurship and science set as natural extensions of each other.
Career motivators and personally important elements of work	Scientific curiosity, operating at the edge of existing knowledge. Sense of "playing together".	Enjoyment of versatile roles. Scientific role is the baseline/permanent part, AE as a way of enabling practical application of knowledge.	Having impact. Joy of work – work is more than a living. Dream of inventing something new.
Current (managerial) role	Giving meaning to one's current role through serving and supporting the team.	Giving meaning to one's current role through personal development.	Entrepreneur and CEO roles' meaningful in building the team and firm culture.
Teamwork and collaboration	Encourages more collaborative mode of science.	Equals delegation of commercially oriented tasks.	One of the main motivators. Shared leadership and sense of the firm's philosophy.
Money and relationship to it	Money-related goals are incongruent with being academic scientist.	Money mainly related to livelihood. Getting research funded one of the main challenges.	Money is a tool / an instrument to make an impact with new knowledge in the society.
Perception of the general culture and discourse around academic entrepreneurship	Innovation is a "hype word" and AE is mainly politics pushing scientist to do profitable things, which they are not good at.	Varying experiences from how commercialization in perceived among academic colleagues. Highlight individual responsibility over the attitudes and engagement in AE.	Important experiences with entrepreneurial role models and supporters. Collaboration between academic and market/business-side brings up fruitful use-cases of science to solve real-life issues.
Future visions of career	Remaining in science in the future start-up. Making sense of this externally: visible boundaries (role of CSO) and internally: being supportive of others' careers.	Taking one step at a time, seeing what happens next. Interested to be part of the firm, while motivated to hold on to university and/or scientific roles.	Internally and externally: driven to become and grow as science-based entrepreneurs. Developing the firm closely related to personal development.

The composite identity narratives describe how the emerging academic entrepreneurs make sense of the themes in relation to themselves, in other words engage in narrative identity work. While the six presented themes emerged from each of the categories of professional identities, it can be observed that their subjective meanings and importance to the informants are diverse. It can be concluded that academic entrepreneurship can have different connotations and serve contrasting purposes for the professional lives of scientists, depending on the individual's views, values, and background.

5 DISCUSSION AND CONCLUSIONS

In the following sections of this chapter, I will present the findings of the research, answering the research questions. The conclusions are presented in the light of previous theoretical discussion. Further, I present managerial implications and finally conclude the thesis by examining the limitations of the study.

5.1 Discussion of findings

The purpose of this research was to increase the knowledge on *emerging academic entrepreneurs and their engagement in narrative identity work as they construct their professional identities* while navigating both entrepreneurial activities and scientific research in health and life sciences. I created identity narratives through which the professional identities and narrative identity work can be comprehended. The research goal was motivated by the observed changes in the profession of academic science in the midst of blurring boundaries between academia and business. By framing the study in the field of identity research and approaching it narratively, individual-level experiences and perspectives were given the central stage. The data utilized consisted of interview transcripts from seven informants that were first interviewed narratively and then a year later thematically. The theoretical framing of this master's thesis was built upon the previous literature on academic entrepreneurship and identity research, more specifically identity work. The findings of the research are summarized in figure 3.

The research was guided by two research questions

> *How do emerging academic entrepreneurs construct their professional identities through narrative identity work?*
>
> *What kind of professional identities do they develop?*

The answers to these questions were sought via narrative analysis. I started the analytical process by familiarizing myself with the interview transcripts and then continued first with structural analysis and then with thematical analysis. Finally, based on the earlier stages I was

able to create three composite identity narratives depicting professional identities and narrative identity work of emerging academic entrepreneurs. In this master's thesis, narrative identity work was conceptualized as informants' sensemaking around six themes emerging from their narrations (see figure 3). Informants were deductively organized into three identity categories representative of their professional identities and these identities were named Entrepreneur, Adaptor, and Scientist.
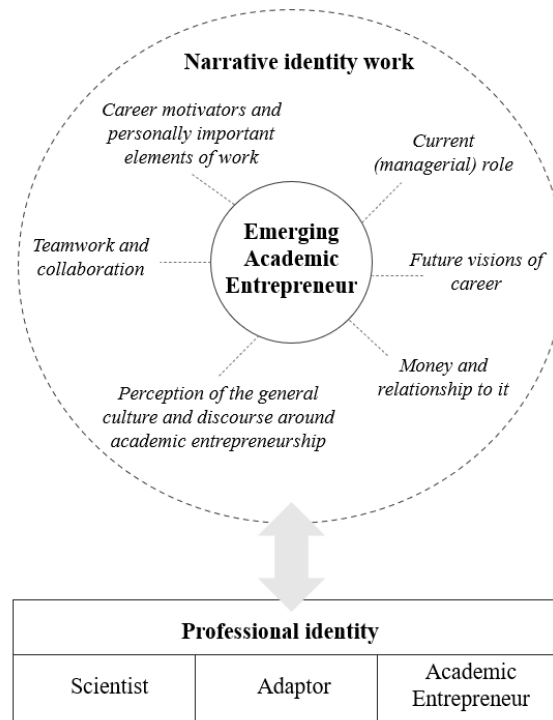

Figure 3. Emerging academic entrepreneurs construct their professional identities through narrative identity work.

Ashforth and Schinoff (2016, 124) state that "[n]arratives are typically anchored to memorable events" meaning that both big and small, both negative and positive events and experiences people come up against, will have a place in their personal narrative based on their subjective significance. Some consideration should be given to the claim that the tone of one's narration may also change depending on the experiences they have recently had, for example losing one's job may cause them to produce more pessimistic narratives until they gain success again (Ashforth & Schinoff, 2016, 124). The research results suggest that similar themes are relevant to university scientists making sense of their professional selves while participating in entrepreneurial activities despite their orientation in relation to academia or business, as the afore-presented themes of narrative identity work emerged across all the identity categories,

although their subjective meanings differed. In the identity narratives, Entrepreneur, Adaptor, and Scientist narrate their stories around the themes displaying and developing their relationship to them in ways that establish their professional identification.

Academic entrepreneurship appeared in the narratives as a profession spanning across the sectors of academic science and business. As portrayals of individuals navigating the landscape, Scientist, Adaptor, and Entrepreneur relate themselves to the two sectors in their narratives. For all three, their scientific background is an important part of their professional identification. Scientist emphasizes their curiosity and almost insatiable need to be seeking answers to new questions as their purpose of undertaking an academic career. In their narrations, science is portrayed almost poetically, and research work is described as play between inspired experts. Academic entrepreneurship, in the Scientist narrative, is juxtaposed with pursuing financial gain, which Scientist views incongruent with the role of an academic. Adaptor alike mentally separates the domains of academia and business, but in their personal professional life, they straddle the two. Nevertheless, the academic in Adaptor is more salient than the entrepreneur as the scientific work and university positions are the professional elements they want to hold on to, while delegating more business-related tasks to other professionals. In the Entrepreneur narrative, an effort to distance oneself from academia can be detected and the academic career does not come across as having such personal importance to Entrepreneur as it does to Scientist and Adaptor. Nonetheless, Entrepreneur is not indifferent towards the scientific elements of their career, but those have a different meaning to them: scientific research is one of the key components of their start-up's success. In Entrepreneur's narrative, entrepreneurship was solidified as the best fitting profession for them combining the different elements they find valuable and enjoyable in work.

Across the identity categories, but especially among Scientists and Entrepreneurs, informants express their passion towards work and give the impression that work is more than a livelihood for them. The results suggest that an important individual-level driver of academic entrepreneurship is to see impact – patients' and doctors' quality of life improving as treatments become better – via the practical application innovations created at the frontiers of existing knowledge. Expressions of career motivators and important elements of work could also be considered as signals of identification. Applying the model of identity's content from Ashforth et al. (2008, 345), presented in figure 1 on page 21, it could be argued that in Adaptor's narrative identification takes place mainly on behavioral level, as Adaptor often refers to their actions as they are taking on the scientific and commercial work simultaneously. Entrepreneur and

Scientist on the other hand, notably express their cognition and emotion relative to their profession. Their 'thinking' into their respective professional identities is conveyed by referring to their relevant skills and abilities, values and goals and their beliefs. 'Feeling' one's way into identifying as Entrepreneur or Scientist materializes as the informants introspect their selves and voice the feelings their scientific and entrepreneurial roles evoke in them.

Accounts for being in a managerial role and becoming a leader were more prominent in the narratives of Scientist and Entrepreneur. This could be interpreted as Adaptors not assigning notable meaning to their scientific and entrepreneurial work through their teams, but rather through their personal daily life on the job. It should be noted though, that the absence of Adaptors' reflections on team leadership could also be a consequence of team's current composition or their official role description. In turn, Entrepreneur considers any start-up leader's role, theirs included, fundamental in creating the culture of their firm. Being a leader is not the end goal for them, though, but rather the leadership is shared and non-hierarchical, which seems natural for small and young companies. For Scientist, supporting their team in the role of the leader is a major sensemaking strategy for their participation in commercialization of science even though it goes against their own values.

The narratives illustrate diverse perceptions of the general discourse around academic entrepreneurship and innovation. Especially in Entrepreneur's accounts, the supportive and positive encounters with peers and more senior colleagues in academia have provided important sources of inspiration and role models. Also Adaptor recognizes around them the university colleagues intrigued by the entrepreneurial career options. Nevertheless, across the identity narratives, tensions between academia and business are acknowledged as informants reflect on the attitudes they recognize in their respective scientific fields. The results suggest that although for Scientist academic entrepreneurship would be a career path incongruent with their professional identification, they are supportive of those people that want to pursue it, even in their own research group. It could be inferred then that Scientist specifically criticizes the perceived external push of scientists towards entrepreneurial activities and intrinsic motivation does not fall under their disapproval. Similarly, Adaptor seems to give priority to individual's own motivation and action in making career decisions. The results indicate that while scientific elements of their work are highly important to Adaptor as they are to Scientist, Adaptor differs from Scientist in that their criticism is directed mainly at academics not daring to seek alternatives for their careers and at those looking down on commercialization of scientific knowledge.

One important observation from the results was how Entrepreneur, Adaptor, and Scientist make sense of themselves as professionals by drawing on their past, present, and future. Even though adjusting to changes in their professional roles, such as giving up hands-on work and taking on managerial responsibilities or learning new terminology, was visible, equally present was the pursuit of sustaining coherence and stability. For example, Scientist evoked a memory of a covenant they made with themselves in their youth to follow their intuition and every day make the decision to spend time on things they then deem valuable – if science one day was not among those things, they would drop it. Similarly, Entrepreneur validates their decision to work in a science-based start-up by referring to their dream of inventing something that is of use for others. In this manner of retrospection, they preserve their desired identification also in relation to their past. The composite identity narratives end with the future visions Scientist, Adaptor, and Entrepreneur have for their professional lives.

5.2 Theoretical contributions and suggestions for further research

This research makes a requested contribution to the research of academic entrepreneurship by studying professional identities and identification of the individuals navigating the field. Although academic entrepreneurship has gained an abundance of attention among scholars, less attention has been paid to the micro-level of the phenomenon. Studying identities in a context such as academic entrepreneurship, where people inhabit multiple professional roles simultaneously, is particularly interesting and crucial, since one's identification with their roles is likely to affect their enactment of those roles (Balven et al., 2018; Hayter et al., 2021). This master's thesis adds to our understanding of how scientists within similar fields (health and life sciences) engage in academic entrepreneurship for diverse reasons – both reluctantly and enthusiastically – and identify with their work differently, thus also displaying contrasting views of the futures of their careers.

Similarly to e.g. Karhunen et al. (2017) and Mäkinen and Esko (2022), the findings offer support for the notion that the roles of an academic and entrepreneur may reside simultaneously in an individual's professional identification. For example Lam (2010) has provided illustrations of university scientists and their entrepreneurial orientation by developing a continuum with one end representing traditional academics and the other entrepreneurial scientists. The professional identities of Scientist, Adaptor, and Entrepreneur could be

positioned on such continuum based on the degree to which they identify with entrepreneurship or academia.

This master's thesis also makes a methodological contribution. By having narrative as a comprehensive foundation, I wanted to give voice to individuals and paint a rich image of academic entrepreneurship and the multitude of meanings it may have. On a more general level, the analysis provided themes relevant across the categories of professional identities. The narratives also opened the windows to examine and interpret different positions people may hold from their personal perspectives.

In the light of the findings of this research, one intriguing avenue of future research would be to study the relationship between academic entrepreneur's identification and the success of their start-up on different metrics. The findings of this research suggest that Entrepreneurs are more motivated to see their own business performing well, which could potentially prompt them to advance the firm for instance with higher investments and in faster spurts. The economic or social impact of university spin-off firms was far off the scope of this master's thesis, but the topic came up in the narratives.

Although the data sample of this research was inclusive in terms on informants' gender, the study of academic entrepreneurship could benefit from examining the engagement of females in science-based entrepreneurial activities. Some of the informants pointed out that for example in their commercialization mentoring meetings, the participants are mainly male. Similar observation on the male-dominance of the start-up field can be made also on a wider scale: in 2021, of venture capital funding for European start-ups only 1 % went to companies with only female founder and 13,6 % to those with both female and male founders (PitchBook, 2022).

5.3   Practical implications

The research on professional identities of emerging academic entrepreneurs can provide useful insights for universities and other research organizations in addition to different kinds of support organizations reinforcing the commercialization of scientific knowledge, such as mentoring programs. The study demonstrates explicitly in the informants' narrations, that they have had diverging experiences of their transactions with their "home universities". Those reporting their experiences for example on IPR negotiation in positive light, came from

universities that exhibited their support and hold only a small portion of the ownership. Choosing the entrepreneurial team and having active participants among the owners of the science-based startup were important motivators in starting one's own business.

The importance of role models and visibility of career options also clearly came across from the narratives. Thus, for example universities could benefit from bringing attention to spin-off firms founded by their faculty and alumni. Taking a longer-term perspective to advancing academic entrepreneurship, having natural linkages between students and private industry seems to have an important influence on the individual attitudes about commercialization of scientific findings and the collaboration between academia and business.

5.4   Research quality and limitations

Considering the limitations of this study, it should be firstly noted that the research philosophical foundation and methodological choices set certain demands. Falling under the category of interpretative research, it was from the beginning acknowledged that the same data could be interpreted in multiple meaningful ways (Eriksson & Kovalainen, 2008) and thus no one version of truth is achievable. Rather the aim was to bring forward experiences and perspectives of individuals. This master's thesis does not claim to capture and present all perspectives on academic entrepreneurship (in Finland), but rather it aims to illustrate the ones of these specific university scientists. Narratives present certain viewpoints that are worthy of interest in themselves, and with choosing narrative methods, comes the acceptance of this feature (Fachin & Langley, 2017, 315).

Having a larger number of informants could potentially aid in producing even more fine-grained illustrations of the professional identities of academic entrepreneurs and the narrative identity work they engage in.

Due to the scope of the master's thesis, the longitudinal view to identity development is limited. The accounts were collected in interviews within one year from each other, but they offer view not only to present but also to past and future as informants reflect on past events and voice hopes for the next developments in their careers. Also, narrative approach to process research by nature puts more emphasis on the informants tell their stories and interpret the events, than the long-term observation (Fachin & Langley, 2017, 315). The data for this master's thesis was

collected as part of a larger research project, which may offer insights derived from longer time frame than was possible here.

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