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Katharina Scheidgen [*]

Abstract: *»Sozialer Kontext von Teamformierung: Warum verläuft die Formierung der Gründungsteams in unabhängigen Start-Ups und universitären Spin-Offs unterschiedlich?«.* Although the entrepreneurial team has gained increasing attention as a unit of analysis, we still do not understand much about how these teams form. Previous research has focused either on existing social relationships and their role in the search for potential team members or on criteria for selecting team members. Consequently, we do not yet understand the interplay of search and selection. Another long-neglected aspect that is being increasingly recognized in entrepreneurship research is that the entrepreneurial process is influenced by its social context beyond existing social relationships. This social context is another important factor that has to be considered to properly understand team formation. To analyze how specific characteristics of one particularly relevant social context – namely, the entrepreneurial field – impact the search for and selection of team members, I conducted a qualitative, multiple-case study that compares innovative new ventures in Berlin. The study shows that different types of ventures in different phases exhibit different team formation patterns based on their different and changing social contexts. From these patterns, I have derived different team-formation mechanisms and propositions about the conditions under which they apply.

Keywords: Entrepreneurial teams, team formation, qualitative research, social context.

1.   Introduction

Entrepreneurship is increasingly conceptualized as a team effort; the image of the heroic individual entrepreneur is slowly being deconstructed. It is not only the solitary genius tinkering in his garage or the single, heroic entrepreneur who creates an astonishing business all by himself but instead, in most cases, a social group that is composed of diverse individuals or organizations. Team entrepreneurship not only goes against the grain of mainstream research but

*   Katharina Scheidgen, Institut für Soziologie, TU Berlin, Fraunhoferstraße 33-36, 10587 Berlin, Germany; katharina.scheidgen@innovation.tu-berlin.de.

also questions the deeply held culture of individualism in the Western world and the portrayal of the entrepreneur as the heroic person creating all from nothing on his own (Cooney 2005).

More recently, however, the team has been receiving increasing attention as a unit of analysis in research on entrepreneurship (Stamm, Discua Cruz, and Cailluet 2019). The majority of these studies have been devoted to analyzing the impact of team characteristics on venture success. Yet to gain a comprehensive understanding of team composition, team dynamics, and their impact on venture success, we have to understand *how teams form*. The few studies that have addressed the issue of team formation have either considered the search for team members, emphasizing the role of strong social relationships (Ruef, Aldrich and Carter 2003), or the selection criteria. The few earlier studies that do exist focused either on economic, need-based explanations, conceptualizing the addition of team members as a rational process of adding necessary competences (Ucbasaran et al. 2003), or on social factors such as homophily and interpersonal attraction (Ruef 2010; Francis and Sandberg 2000). What is missing so far is a systematic analysis of the interplay between search and selection.

Aside from the growing recognition of the necessity to analyze entrepreneurial teams instead of single entrepreneurs (Harper 2008), there are also increasing voices calling for the need to include the impact of the context of entrepreneurship in entrepreneurship research in general (Welter 2011); the latter being long neglected in research on entrepreneurial team formation. One exception to this is the conceptual paper by Aldrich and Kim (2007), but empirical validation is missing. If the context impacts the entrepreneurial process, we can also expect it to impact team formation as one of its elements. I argue that a profound understanding of the conditions under which specific mechanisms of team formation apply contributes to a more differentiated analysis of team formation in diverse contexts, increases comparability across studies, and avoids the risk of over-generalization.

In this paper, I compare team formation of independent start-ups and university spin-offs in Berlin to show how different social contexts influence team formation. In that region, one characteristic stands out: start-ups and spin-offs constitute distinct subfields despite being located in the same region. Independent start-ups and university spin-offs embed themselves in different subfields and these different social contexts influence team formation in both types of new ventures.

2.   Conceptual Framework

In the research that has paid attention to the entrepreneurial team as a unit of analysis, the dominant question has essentially been *Which team characteristics make a team successful?* (Klotz et al. 2014). Most studies operate on the

assumption that the characteristics and capabilities of the founding team impact the new venture's performance (Jin et al. 2017). Teams are expected to be especially successful when they aggregate human capital such as education, experience, knowledge, and skills, and many studies focused on the cognitive characteristics of the team members (de Mol, Khapova, and Elfring 2015).

2.1   Previous Research on Team Formation

Besides this focus on the factors influencing team performance, a minor part of entrepreneurship research has begun to direct attention to team formation. Recent studies have conceptualized team formation as a process in which members can join and leave the team (Cooney 2005; Vanaelst et al. 2006; Ucbasaran et al. 2003). Two major research interests can be identified, that I will outline in more detail below: first, how entrepreneurs search for team members, which they primarily do via their personal networks (Ruef, Aldrich, and Carter 2003), and second, how they select team members. Here, we can identify two dominant explanations: (a) economic requirements lead to adding team members with complementary skills (Ucbasaran et al. 2003) and (b) individuals are chosen who are similar to the existing team (Ruef 2010).

First, the search for team members primarily takes place on the basis of interpersonal relationships and in social networks. Such networks are the most common source for business partners (Ensley et al. 1999) and, consequently, teams are often comprised of spouses, friends, or loose acquaintances, all of whom are embedded in the same social circle (Ruef, Aldrich, and Carter 2003). In their conceptual framework, Aldrich and Kim (2007) argue that this applies if the entrepreneur is embedded in a "disconnected local cluster" (p. 157), as is typically the case for family businesses. In contrast, individuals are expected to use bridging ties and brokers for a need-based search to find more suitable, but also more distant, team members in social contexts with a more centralized network structure that enables them to access more distant clusters.

Second, the selection of new members is (a) conceptualized as a rational process driven by economic, need-based considerations, mostly referred to as *economic* or *instrumental explanations*. Adding new team members with complementary skills increases team capacities, thus filling skills gaps and providing human capital (Ucbasaran et al. 2003). Forbes et al. (2006) criticize this idea and show that adding new team members does not simply add to a team's capacities but changes them as well. This may also lead to unintended effects and reduce human capital; for example, if the new team member causes conflicts in the team. Team formation is not only based on strategic, goal-oriented choices but (b) relies highly on familiarity and homophily (Ruef, Aldrich, and Carter 2003), mostly referred to as *social explanations*. According to relational demography, individuals choose those team members that are similar to them in terms of age, gender, or their ethnic group. Thus, teams are often composed

of family members, friends, or spouses, often from the same ethnic community and all of a similar age (Ruef 2010). Although most studies focus on either economic or social explanations, both are not mutually exclusive (Forbes et al. 2006; Aldrich, and Kim 2007). Yet we know little about the interplay of economic and social factors in team member search and selection.

Both strands fail to systematically capture the impact of context factors other than social relationships. In contrast, the broader strand of entrepreneurship research, which focusses on other aspects of the entrepreneurial process than team formation, has contributed relevant insights by increasingly emphasizing the contextual impact on new venture creation (Welter 2011; Jack and Anderson 2002). Although this factor has rarely been addressed in team research so far, I expect the context to also influence team formation and incorporate the findings from this broader research stream into the analysis of team formation. Until now we have lacked a precise conceptualization of context. Context mostly describes either the entire environment of the start-up (Keating and McLoughlin 2010) or one specific part of it, such as the industry (Shaw, Wilson, and Pret 2017), region (Feldman 2001; Saxenian 1996), network structure (Ferrary and Granovetter 2009), or a cluster (Boari, Elfring, and Molina-Morales 2016). This calls for an empirical investigation: *Which contexts and which elements and characteristics of these contexts are relevant to team formation?* I take up the call to consider the context of entrepreneurship and emphasize the necessity to specify the relevant contexts, and elements of these contexts, that influence each part of the entrepreneurial process.

The rather isolated discourse on university spin-offs can serve as starting point for an attempt to differentiate types of new ventures and their specific contexts. By focusing on the creation of a new venture in a specific context, we can consider its influence on team formation. Some studies have taken a closer look at team formation. Vanaelst et al. (2006) emphasized the importance to capture the process of team formation since there is a lot of change especially during the early founding stages. Unexpectedly, the cognitive heterogeneity decreases in this process, which supports the homophily argument. During the early stages, the "privileged witness," a coach or consultant who serves in an advisory function, is a central part of the team. This role is mostly occupied by an individual from the university's technology transfer office (TTO) or another actor from the mother organization. In many cases, once the product has reached a more mature state, a "surrogate entrepreneur," an outsider with commercial expertise, is added, often initiated by the TTO (Franklin, Wright, and Lockett 2001). The entrepreneurial teams of university spin-offs have characteristic features since they mostly consist of scientists who want to commercialize their research. As scientists frequently lack managerial skills, a CEO from the outside is often added to the team, but only rarely contributes to the venture's success in the intended way (Clarysse and Moray 2004). These roles and the conflicts that they entail can occur in the founding process of

many spin-offs but are often not found in other types of new-venture teams. This points to the necessity of identifying and discussing the peculiarities of different types of ventures. As Vanaelst et al. (2006) propose, a comparison with non-academic innovative ventures would be very insightful.

Although this growing body of research offers important insights into how teams form and evolve, there remain several blank spots and shortcomings. Problems arise especially when it comes to conceptual clarity. A number of entrepreneurial team researchers have called attention to the fact that the concept of entrepreneurial team is not yet well defined (Cooney 2005; Schjoedt and Kraus 2009; Vanaelst et al. 2006). This leads to incomparable research results since the unit of analysis may differ significantly. The most common aspect of the definition is that the entrepreneurial team comprises two or more individuals who jointly establish a firm. To narrow it down, authors have added several other criteria to the definition, for example, financial involvement (Kamm et al. 1990) or influence on strategic choices (Ensley et al. 1999). The unit of analysis may comprise idea-conceiving founders and equity-based investors (Lim, Busenitz, and Chidambaram 2013) or the technology transfer office and the parent organization (Vanaelst et al. 2006).

Although previous research offers several insights into the criteria applied in searching and selecting team members, we still know little about the actual process of team formation and what triggers the search for new team members in the first place. Since the entrepreneurial process is characterized by high uncertainty and goal ambiguity, the notion of a rational actor engaged in a purely goal-oriented, strategic team formation process is unrealistic (Engel, Kaandorp, and Elfring 2017).

Contradictory findings from different empirical settings indicate that team formation might proceed in different ways in different contexts. Vyakarnam, Jacobs, and Handelberg (1999) compared nine teams, comprising diverse family businesses, start-ups, and spin-offs, and found very different kinds of team formation. Vanaelst et al. (2006) focused on spin-offs and found patterns across several spin-offs and founding stages. I argue that a deeper understanding of the contextual impact contributes to a better understanding of team formation and composition, increases the comparability of research results, avoids the risk of over-generalization, and helps to resolve contradictions in previous research.

2.2   Conceptual Framework

The goal of my paper is to analyze how different elements of contexts impact team formation without neglecting the influential factors identified by previous research. Developing a conceptual framework requires a precise definition of team. With a view to the increasing research on entrepreneurial teams, the divergent definitions, and to the evolving concept of entrepreneurial groups (Ruef 2010), I propose narrowing down the definition of team and differentiat-

ing between team and group. In so doing, I follow Schjoedt and Kraus (2009), who argue that teams are a special kind of group in which members are more closely connected than in a group:

> An entrepreneurial team consists of two or more persons who have an interest, both financial and otherwise, in and commitment to a venture's future and success; whose work is interdependent in the pursuit of common goals and venture success; who are accountable to the entrepreneurial team and for the venture; who are considered to be at the executive level with executive responsibility in the early phases of the venture, including founding and pre-start up; and who are seen as a social entity by themselves and by others. (Schjoedt and Kraus 2009, 515)

Drawing on this definition, I emphasize the aspect of self-perception and conceptualize teams as a special type of social group that perceives itself, and is perceived by others, as the founding team of a new venture, without neglecting other aspects such as executive responsibility. Thus, in most cases, the team comprises two, three, or four entrepreneurs who are strongly and collectively involved in the founding process (e.g., the chief operating officer [CEO] and chief technology officer [CTO]).

Like the entire entrepreneurial process, the process of team formation is also influenced by the context it takes place in. Aldrich and Yang's (2013) question, *How do entrepreneurs know what to do?* can be applied to team formation as well: *How do entrepreneurs know how to form a team and what that team should look like?* The respective social context provides abstract cultural codes and incomplete blueprints. Entrepreneurs learn routines, habits, and heuristics that enable them to make use of these blueprints (Aldrich and Yang 2013). Such learning takes place in the respective environment; templates and norms are communicated through interactions, for example, in the family context, education and training, and work careers (Aldrich and Yang 2012). Since we lack research on what contexts and what characteristics of these contexts have an impact, I will seek to fill this gap by empirically analyzing the features of the contexts that impact team formation.

To capture the relevant organizational environment, I apply the concept of organizational fields from institutional theory (DiMaggio and Powell 1983; Scott 1995). Although institutional theory has increasingly emphasized heterogeneity and the active making of institutions over the past decades (Lawrence and Suddaby 2006; Lawrence, Zilber, and Leca 2013), my emphasis will be on the idea of homogeneity and isomorphism (Meyer and Rowan 1977; DiMaggio and Powell 1983). Without neglecting that there are differences between teams and team formation processes, focusing on their similarities tells us a lot about the mechanisms of team formation that apply across new ventures of different kinds (Meyer and Höllerer 2014). The concept of organizational fields emphasizes the isomorphism of organizations in a single field and highlights that the dominant practices may not necessarily be the most efficient ones but may be the most legitimate choice (DiMaggio and Powell 1983). Fields can center

around a common issue and become arenas in which the meaning of this issue is negotiated (Hoffman 1999; Meyer and Höllerer 2010). In my analysis, the relevant field centers around entrepreneurship and is regionally bound to Berlin.

In light of previous research, I expect social relationships, relevant external actors (such as the TTO), and blueprints to be relevant contextual influences. Furthermore, a search for team members might be triggered by the need for complementary competences and the selection of team members influenced by economic needs or homophily and familiarity. In interaction with their social contexts, such as friends and family, but also with relevant organizations, entrepreneurs learn routines, habits, and heuristics that affect how they search and select team members. My goal is to specify the impact of specific contextual factors and elaborate the interplay of search procedures and selection criteria as well as of social and economic factors.

3.   Methods

The analyzed data is part of a more comprehensive data set collected for a research project that compares the founding processes of independent start-ups and university spin-offs in Berlin. Since team formation is a crucial part of the founding process, this data is suitable for the analysis pursued here.

3.1   Research Design

Since previous research suggests that the social context might impact team formation, I followed a multiple-case study design (Yin 1994) to compare team formation across several new ventures in two different social contexts. In particular, team formation in spin-offs has already been analyzed in qualitative studies with one (Clarysse and Moray 2004) to ten cases (Vanaelst et al. 2006). I will build on and go beyond these studies to identify patterns across cases. Multiple cases are a powerful means of theory building because they permit replication and extension beyond individual cases (Eisenhardt 1991). Considering multiple cases increases generalizability, ensures that the identified processes are not wholly idiosyncratic, and enables the researcher to identify the specific conditions under which the detected mechanisms apply (Miles, Huberman, and Saldana 2014), which is the objective of this research. To analyze patterns of team formation and the influences that shape them, I compared two types of new ventures that vary along relevant dimensions: start-ups (i.e., innovative independent growth companies) and university spin-offs (i.e., innovative growth companies that started at a university or research institute, often commercializing intellectual property developed in research

projects). For each type of new venture, several cases were selected in a process of theoretical sampling (Glaser and Strauss 1967).

3.2 Data Collection

The total data set comprises 54 semi-structured interviews with entrepreneurs and related actors that lasted approximately one hour on average, fieldnotes from participant observation of 17 start-up and spin-off events, and information collected from websites and media. I conducted 29 interviews with entrepreneurs from 19 start-ups and 16 interviews with entrepreneurs from 14 university spin-offs. To mitigate retrospective bias, I chose recently established ventures. Most new ventures were in their early founding stages and between half a year and two years old. In four cases, two or three founders were interviewed. In seven cases, the interviewees were interviewed again after one year to learn about the evolution of the founding process and changes in team formation. Out of this data set, I sampled those cases that were based in Berlin and founded by a team, hence excluding solo entrepreneurs. This led to a database comprising 39 interviews with individuals from 29 ventures[1]. To characterize the context, I used information from eight additional interviews with relevant actors, websites, and media[2].

3.3 Data Analysis

The data analysis proceeded in five steps. (1) To prepare the data for analysis, I coded all information on team formation. This reduced the database to those parts of the interviews that focused on team formation. (2) Drawing on this data, I wrote a case description for each case so that its unique pattern could emerge before generalizing across cases (Eisenhardt 1989). (3) Subsequently, I analyzed the data using qualitative content analysis–not to be confused with quantitative content analysis. I developed a system of categories based on my conceptual framework (Gläser and Laudel 2009, 2013). To keep the advantage of qualitative research, namely, the opportunity to discover new and unexpected aspects in the data, the system of categories remained open so that new categories could be added during the coding process. While coding, text passages were not only marked, but the relevant information was also extracted from the data. These extracts laid the groundwork for step (4): searching for patterns in the team formation processes. To guard against the risk of finding what I was looking for (that is, identifying a strong contextual impact because of selecting cases according to this criterion), I opted for cross-case analysis

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[1] The personal perspective on team formation might impact the story told. To mitigate this effect, I interviewed team members with managerial roles and roles concerned with technology development at both types of new ventures.

[2] All entrepreneurs, new ventures, and other actors are anonymized in this paper.

(Miles, Huberman, and Saldana 2014). That is, I sorted the extracts along recurring themes, not along cases, and clustered similar mechanisms of team formation. In this process, I identified major differences in relation to the founding background and confirmed the initial hypothesis that guided case selection. I then divided start-ups and spin-offs by referring to their founding background. (5) In the next step, I grouped the cases by that dimension and searched for within-group similarities and intergroup differences (Eisenhardt 1989). In this process, three typical patterns for start-ups and two typical patterns for spin-offs emerged. To validate and differentiate these patterns, I chose select cases for a case-by-case comparison: (a) one typical example of each pattern (AIweb and PhysicsTech), (b) a spin-off with above average similarities to typical start-ups (InductInfustion and StyleShop), and (c) a spin-off and a start-up with similar innovations (InductInfustion and SafetySolution).

4.   Findings

My goal is to analyze typical mechanisms of team formation for independent start-ups and university spin-offs and the specific conditions under which they apply. These conditions primarily refer to contextual factors. First, I introduce the analytical differentiation of initial team formation and team enlargement, the two stages of team formation that I derived from my data. Second, I describe the entrepreneurial field in Berlin as the context of team formation in this study. Third, I compare the mechanisms of team formation using empirical examples, first for initial team formation, then for team enlargement. For each phase, I first outline the findings for start-ups, followed by the findings for spin-offs, concluded with a comparison of both types of new ventures in each phase.

4.1   Initial Team Formation and Team Enlargement

As previous research has shown, a team might evolve and its composition might change over time. My analysis identified two phases of team formation during the early founding stages. In the first phase, the *initial team* forms. It comprises those entrepreneurs who started to form a team. The second phase involves *team enlargement* in many cases. In some cases, the initial team and the added team members can merge into a team in which all members are on an equal footing; in other cases, the initial team members might dominate the team. Initial team formation and team enlargement are structured by different mechanisms. To capture these different mechanisms, I identified three different ways in which the relationships between team members are formed. First, if the team members did not know each other in advance, ties are *created*. If they

were connected via a weak social tie, this weak tie is *transformed* into a strong business tie (i.e., the new dimension outweighs the previous weak tie). If the team members had a strong social relationship prior to team formation, this strong social tie is *layered* with a strong business tie (i.e., the new dimension is added).

4.2   The Entrepreneurial Field in Berlin

Over the past years, Berlin has evolved into one of the leading start-up hotspots in Europe and provides a context for entrepreneurship with several peculiarities. It is a metropolitan area with plenty of well-educated, often international young people, has four universities, and affordable cost of living. The founding rates of innovative new ventures have increased over the past decades. Most of the entrepreneurial activity, especially of innovative, independent start-ups, is locally clustered around two neighboring districts. The entrepreneurial field in Berlin is characterized by a partitioning into two subfields: start-ups and start-up-related actors on the one hand and spin-offs and spin-off-related actors on the other. There is no sharp boundary between the two populations, but most entrepreneurs, new ventures, and other actors cluster around one of the two subfields. These two subfields represent contexts with different characteristics.

In the start-up-related subfield, the entrepreneurial community plays a crucial role. This is a community of entrepreneurs and other individuals who are somehow involved in entrepreneurship, such as angel investors (i.e., individuals who invest their private money during the early founding stages). This community shares an identity and understanding of entrepreneurship. Here, we find vivid informal exchange and plenty of personal relationships of varying degrees of proximity between nascent entrepreneurs, established entrepreneurs, serial entrepreneurs, angel investors, and advisors. Venture capitalists (VCs) play a key role and become increasingly important as the start-up grows. Further organizational actors are part of the field, for instance, accelerators (i.e., start-up programs, often launched by established companies, to promote start-up growth), company builders, or co-working spaces.

The founders of spin-offs are mostly scientists who want to commercialize their findings. Prior to founding their spin-offs, they are members of their respective scientific community and have to change to the entrepreneurial field to found their venture. Mostly, the basic idea for a product was already there; they transfer intellectual property (IP) developed at the university. The nascent entrepreneurs need funding to elaborate their idea and build a prototype. To appropriate such funding, they almost always apply for a public funding program called *Exist*. The Federal Ministry for Economic Affairs and Energy launched this funding program to support university spin-offs. It comprises two funding lines: *Exist Forschungstransfer* (Exist FT) and *Exist Gründerstipendium* (Exist GS). Exist FT focuses on the commercialization of IP and finances

teams of up to four entrepreneurs; Exist GS funds innovations that do not rely on IP and gives scholarships to teams of up to three entrepreneurs. Both programs have formal requirements concerning team composition. As the team and venture evolve, they embed themselves in one of the two sub-fields of the entrepreneurial field, namely the one that is dominated by public and semi-public actors. Once Exist funding expires, follow-up financing is mostly acquired from public or semi-public investors, such as a regional bank or the *High-Tech Gründerfonds* (HTGF), a public-private partnership that invests venture capital.

In addition to their specific entrepreneurial field, start-ups and spin-offs are also embedded in the respective industry of their product. Since this embedment did not show any noteworthy impact on team formation in the present study, the analysis focused on the entrepreneurial field and the nascent entrepreneurs' membership in the entrepreneurial or respective scientific community, which did prove to have an impact. The differences in the subfields in which the nascent entrepreneurs and the new ventures of start-ups and university spin-offs are embedded shape the team formation process in distinct ways. The argument that I want to make here is that different influences dominate the two different stages of team formation–initial team formation and team enlargement. In the following, I will compare the patterns of team formation of start-ups and spin-offs in each stage. Table 1 and 2 provide an overview across selected cases.

Table 1: Team Formation of Selected Start-Ups

	Start-up	Initial team members	Initial team formation	Embedded in EC	Initial team	Added member	Team enlargement	Embedded in EC	Team
(1A)	AIWeb	2 business	Studies together, best friends, wanted to found together and then searched for idea	Both	2	1 programmer	Job add, Searched for CTO because VCs wanted one, joint the team later, loose connection to core-team	Yes	3
	StyleShop	2 business	Studied together, best friends, wanted to found together and saw market opportunity	Both	2	1 programmer	joint the team later, loose connection to the core-team; Someone from the founders' personal network introduced him	Yes	3
	WebService	2 business	Worked together, became best friends, wanted to found together and saw market opportunity	Both	2	1 programmer	Met at a start-up workshop; joint the team later, loose connection to the core-team	Yes	3
(1B)	ProjectPlanner	1 business, 1 programmer	Went to school together, best friends	One founder	2	No			2
	Appinator	1 business, 1 programmer	Went to school together, best friends	One founder	2	No			2
	NewBroker	1 business, 1 programmer	Went to school together, close friends	One founder	2	No			2
	ServiceInvest	2 business	Met at business conference, became close friends	No	2	No			2
	CrossApp	3 programmers, 1 business	Went to school together, close friends	Two founders	4	No			4
(2)	RateYourDrink	1 business, 1 programmer	Acquaintance from work and parties	One founder	2	No			2
	FinanceAssist	1 business, 1 programmer	Acquaintance from entrepreneurial community, loose friends	Both	2	No			2
	Rentology	1 business, 1 programmer	Acquaintance from entrepreneurial community, loose friends	Both	2	No			2
(3)	Connector	1 business, 1 programmer	Met at start-up event, combined their ideas	Both	2	1 business	Searched for people who do similar projects, developed equal connections between all three	Yes	3
	SafetySolution	1 programmer, 1 engineer	Met at a start-up event, one of them already had the idea	Both	2	1 marketing	Met at a start-up event, developed equal connections between all three	Yes	3

Table 2: Team Formation of Selected Spin

	Spin-off	Initial team members	Initial team formation	Initial team	Added members	Team enlargement	Team
(1)	PhysicsTech	3 physicists	Studied together, close friends, PhD at different institutions	3	1 business	Requested by Exist FT, job ad	4
	ScieTech	3 physicists	Studied and/or worked together, two made PhD at same institute	3	1 business	Requested by Exist FT, connected via research institute	4
	ManageEnergy	3 engineers	Worked in a research project together, became friends	3	1 business	Recommended by investors, friend of one of the founders	4
	SoftwareService	2 programmers	Studied together, best friends	2	1 business	Requested by Exist GS, job ad	3
	InductInfusion	1 engineer, 1 programmer	Best friends since elementary school	2	1 business	Requested by Exist GS, sports mate of one founder, left after Exist GS	(3) 2
	BioDetect	2 biochemists	Studied together, married each other	2	1 business	Friend from school, wanted his competences for the team	3
(2)	YourFertilizer	1 biologist + 1 biologist	Lead entrepreneurs acquired co-worker, PhD at same institute but no friends before	2	1 business, 1 biologist	Business: Requested by Exist FT, recommended by a friend, left after Exist FT Biologist: Job ad	(4) 3
	AnalyseAll	1 biologist +1 biologist	Lead entrepreneur acquired co-worker, PhD at same institute but no friends before	2	1 business, 1 product designer	Business: Job ad Product Designer: designed their website, joined the team after that	4
	InnoEnergy	1 engineer +1 engineer	Lead entrepreneur acquired the supervisor of his master thesis	2	1 business, 1 engineer	Business: flat mate of a friend Engineer: Job add	4
	NutritionApp	1 computer scientist + 1 physician + 2 programmers	Lead entrepreneur searched for co-founders in his personal network: friends, sport mates	4	No		4
	ResearchService	1 chemist +1 business	Lead entrepreneur searched for co-founder in personal network, friend of spouses' coworker	2	Changing programmers	Current programmer: friend of a loose friend	3
	AdvertApp	1 computer scientist + 1 business	Lead entrepreneur motivated his spouse to join	2	1 computer scientist	Loose friend of the lead entrepreneur	3

Strong social relationships play a key role in initial team formation. Friendships are the dominant way to find a co-founder; familiarity and personal attraction are the dominant selection criteria. However, not all friends qualify as potential team members: the only relevant friends are those that are also members of either the entrepreneurial community (start-ups) or a specific scientific community (spin-offs). Searching in these specific contexts ensures that the friend and prospective team member has certain competences.

Strong social relationships are especially crucial for the constitution of the initial team of a start-up, which usually comprises two founders who have known each other for several years. Often, the two initial founders were best friends since school or university, or at least loose acquaintances that, for example, played poker together for several years. Typically, both nascent entrepreneurs are members of the entrepreneurial community, even before starting the current start-up. Thus, not all social relationships of these entrepreneurs are relevant to initial team formation; instead, only those that are part of the entrepreneurial community. I identified three patterns and, for all three, the entrepreneurial community is crucial.

(1) For this pattern, a pre-existing, close friendship between two nascent entrepreneurs is the basis for forming the initial team; particularly if the two founders studied together, resulting in similar competencies and a shared education in management. The two entrepreneurs who initiated the founding of AIweb, Peter and Paul, studied together at a prestigious private business school several years before founding this start-up together and have been best friends ever since; an example of this friendship being that Peter is the godfather of Paul's daughter. After his studies, Peter founded two start-ups in a row: one of them failed; the other was sold successfully. Paul founded one successful company and , after a time, became bored of it. Peter, meanwhile, had no project after he sold his company, and so they decided to found a start-up together. Thus, the initial team was established through a long lasting, intense friendship and the wish to found a business together. Their next step was to search for an idea:

> We were best friends and said to each other: we have to found something together! […] So, we met in a fancy café, sat together, and asked ourselves: Jeez, what are we going to do? We talked about several ideas, evaluated markets, and searched for potential. (Paul, AIweb)

The main driver to form the initial team was their desire to found a venture with that one specific person, not a market opportunity or innovative idea. The latter was conceived in the second step. The basis of team formation was existing strong social relationships that were often constituted outside the entrepreneurial community but are now part of it. When the team member chosen is your best friend, the search process turns on the selection criteria of personal attraction, sympathy, and familiarity.

(2) In three cases, the founders were loose acquaintances. These contacts were often established in the entrepreneurial community. The founders of FinanceAssist met as participants in an accelerator program in which Enno participated with his previous start-up and Chris was his mentor. After Enno's first start-up failed, they decided to found the next one together. In this case, the need for a co-founder played a greater role, but the fact that Enno pursued his search for a co-founder among acquaintances and buddies in the entrepreneurial community indicates that ensuring personal fit and sympathy remains an important factor. The founders of RateYourDrink were also loose friends and formed a team driven by an opportunity:

> I recognized that I can't continue with my first programmer. And then, I sat in my backyard together with Roy, and we talked a bit. I talked about that problem, and Gino said: 'That sounds interesting! I'm in!' Okay, so he joined the team. Spontaneously and uncomplicated. (Aldo, RateYourDrink)

(3) In two cases, the two founders did not know each other before they founded the start-up and had just met at start-up events. Each of them was already a member of the entrepreneurial community, and being part of this community is what brought them together, making this part of the entrepreneurial field especially significant for their initial team formation. Adrian already had the idea for Connector, met his co-founder Nigel at a start-up event, and pitched his idea to Nigel at that event. Nigel pitched another idea, but both identified potential in combining their prototypes:

> We met at [an event of an entrepreneurial network]. Nigel pitched his idea to create a web platform, and I pitched my idea to found a start-up that matches [couples]. And after that, we talked, 'Hey Nigel, what do you say? Can't we combine your technology and my idea?' (Adrian, Connector)

Now, I will have a closer look at the initial team formation of spin-offs. In all analyzed spin-off cases, the formation of the initial team started with a product idea or market opportunity in the respective scientific community. Neither the entrepreneurial community nor the entrepreneurial field played a role. Nascent entrepreneurs are members of their respective scientific community. Yet friendships and less intense social relationships were still the dominant channels used to search for initial team members. Two patterns of initial team formation could be identified: (1) if the founder was able to find a friend or acquaintance in his or her scientific community with whom to found the envisioned business, they formed the initial team. (2) A lead entrepreneur wanted to commercialize his or her findings and started to search for team members among his or her existing social relationships in diverse contexts.

(1) It is typical of this pattern that researchers know other researchers because they studied together or worked together in a research project or laboratory and developed a friendship. Thus, they are not only connected by their friendship but often by joint work experience as well. The technology then is the initiating factor. Two or three acquainted scientists come together, talk

about their work, and eventually think about ways to commercialize their findings. The team forms around the idea and the motivation to exploit it commercially.

> We, being the scientists that we are, […] are of course very enthusiastic about the technology we developed, no matter if it really helps anyone or ultimately has any commercial potential. (Sven, PhysicsTech)

ManageEnergy is an extreme case in point that illustrates this pattern. The spinning out of ManageEnergy was part of a research project. The obvious choice was to select suitable team members from the project to work on rolling out the product. The possible pool of candidates was thus limited to the researchers that were part of this research project. The project led three engineers to cross paths; they eventually became friends and jointly tackled the task.

(2) In the second pattern, a single lead entrepreneur dominates the initial team formation process. In the cases that fit this pattern, friendship relationships are either missing altogether or the relationships are just loose acquaintances from work. One researcher wants to commercialize his or her findings and searches for team members. This search starts in the researcher's personal scientific network, mostly at his or her research institute or laboratory, but may also extend to the person's wider private network. Since the idea is often based on the findings from this researcher's PhD thesis, that individual is likely to dominate the spin-off's team formation process. The founder of AdverdApp explained this when asked who participated in the founding process: "That was my idea. I am the founder" (Torsten, AdverdApp).

YourFertilizer started with a totally different team when they applied for public funding. The lead entrepreneur had to assemble an entirely new team afterwards. When the founder of AnalyseAll wanted to commercialize his findings, he first went to his co-worker who was also just finishing his PhD:

> Me and the other PhD student sat in one office together, so we shared four years of painful experience. This built a huge foundation of trust and showed that we can work together. (Rudi, AnalyseAll)

Together, they started to form a four-person team. The first team member is often recruited through work (i.e., doing similar research and being members of the same scientific community), sometimes involving a loose friendship or acquaintanceship. The founder tends to consider this initial team as being very important and thus looks for a team member that s/he is likely able to work with. Searching at the same research institute ensures the scientific fit of that team member. The decision as to which person is to be recruited from this setting is guided by personal sympathy and a similar work style.

A comparing of initial team formation in both types of new ventures illustrates the importance of existing social relationships in the search for initial team members, as Figure 1 illustrates. Personal attraction, familiarity, and sympathy are the dominant criteria in selecting these initial members. In most of the analyzed cases, this search took place in the community of which the

nascent entrepreneurs were members. The competences of the prospective team member moved to the background. The founder could afford to neglect this aspect because it is implicitly taken care of by choosing to search in the respective community where all potential candidates can be assumed to have these skills. Differences can be detected depending on the strength of the existing ties. In the case of strong social relationships, such as close friendships, another layer was added: the founders continued their close friendship and additionally became business partners. In weak social relationships, such as acquaintances, these were transformed into strong business relationships: the founders had a looser connection and now became close business partners. This new dimension came to dominate and thus transformed their previous relationship.
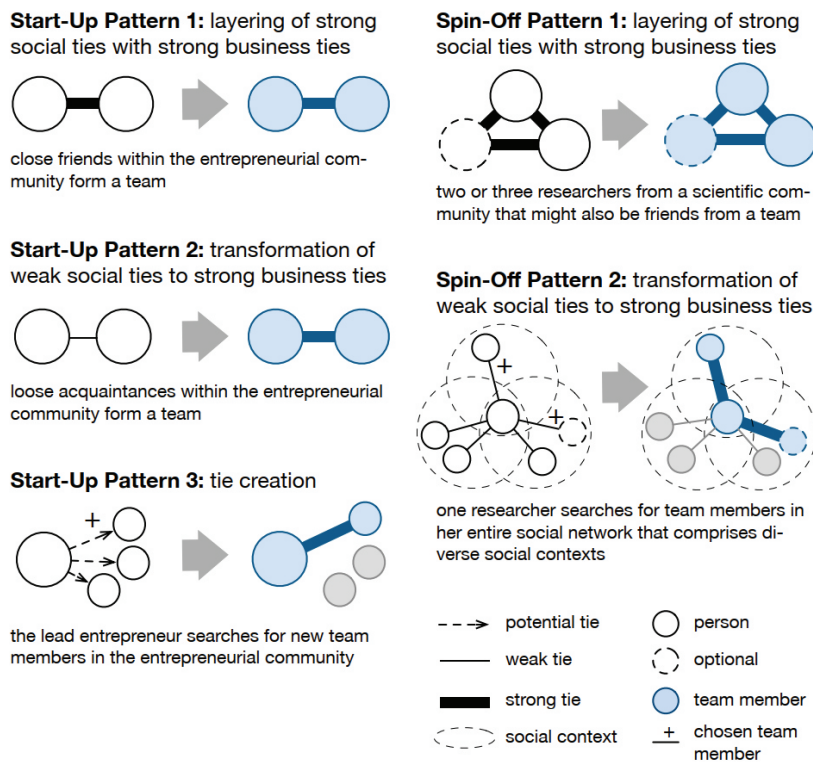
Proposition 1A: Initial teams are predominantly formed inside the community of which the nascent entrepreneur is a member. The rest of the entrepreneurial field is less important in this stage. Familiarity and sympathy outweigh competences and instrumental needs as selection criteria.

Proposition 1B: If a technological idea precedes team formation, the team formation process is more likely to be led by a lead entrepreneur. This person's search for team members might span a wider net of relationships in more diverse social circles.

The entrepreneurial community has less specific entry requirements, also in terms of verified expertise, than the scientific community. It is thus more likely that close friends are both members of the entrepreneurial community. Specific scientific communities are more difficult to enter, highly elaborated, and require specialized skills. Furthermore, the product idea of spin-offs usually already exists *which* entails the need for more specific skills right from the beginning. These conditions impose demands on prospective team members that are more difficult to fulfill. Consequently, although social relationships and interpersonal fit are still highly important, it is more difficult to find a suitable team member inside that specific context. This being the case, initial team formation by building strong business ties on strong social ties can be expected to be more likely for start-ups than for spin-offs, and spin-off entrepreneurs can be expected to be more likely to transform weak social ties into strong business ties or to extend their search to other social contexts. Before a scientist and would-be entrepreneur searches for co-founders among members of the scientific community who are unknown to him/her, s/he will prefer searching for people whom s/he is familiar with in broader social contexts.

Proposition 2: The more specialized and difficult it is to enter the nascent entrepreneur's community, the less likely it is that the entrepreneur will find suitable team members in that community with which he or she has a strong social relationship. This also tends to make it more likely that the entrepreneur will extend the search either to relationships based on weak social ties or to his or her wider network of social contacts in various social circles.

Figure 1: Pattern of Initial Team Formation

Start-Up Pattern 1: layering of strong social ties with strong business ties

close friends within the entrepreneurial community form a team

Start-Up Pattern 2: transformation of weak social ties to strong business ties

loose acquaintances within the entrepreneurial community form a team

Start-Up Pattern 3: tie creation

the lead entrepreneur searches for new team members in the entrepreneurial community

Spin-Off Pattern 1: layering of strong social ties with strong business ties

two or three researchers from a scientific community that might also be friends from a team

Spin-Off Pattern 2: transformation of weak social ties to strong business ties

one researcher searches for team members in her entire social network that comprises diverse social contexts

- - -> potential tie   ◯ person
——— weak tie   ◌ optional
▬▬▬ strong tie   ⬤ team member
⌢⌢⌢ social context   + chosen team member

4.4 Team Enlargement: Instrumental Needs and the Impact of Blueprints and Rules

The fact that the formation of the initial team is predominantly based on close friendships or other social relationships, a good personal fit between the founders, and their mutual membership in the entrepreneurial or respective scientific community tends to result in teams consisting of individuals with homogeneous competences. A result is that the initial teams of start-ups often feature a preponderance of managerial skills, whereas the initial teams of spin-offs are heavy on skills in the area of technology development. In the team enlargement phase, complementary competences are added. However, this does not lead to an alignment of team characteristics between the new venture types. In the following, I will first outline how the initial teams searched for additional team members, as illustrated in Figure 2. Second, I will show why they started this search. Often, it was a response to external expectations or formal requirements

from other organizations in the entrepreneurial field, so that economic, needs-based explanations alone fail to capture the full picture.

4.4.1 Searching for Missing Competences

In the start-up cases in which the initial team already comprised all competences deemed necessary, no further team members were added. In those cases in which the initial founders knew each other from school or other social settings, they often had complementary skills and did not add any further team members (Pattern 2). The variety of skills among the initial team affected whether another person was added and, if so, what skills that person had, as shown in Table 1. In the other cases, the initial team strategically searched to fill missing competences (Pattern 1 and 3). This search was primarily conducted within the personal networks of the founders in the entrepreneurial community. The main driver for team formation shifted from the interest in founding a venture to the addition of needed competences without neglecting the necessary personal fit and sympathy between the team members. Searching within the personal network increases the probability of finding someone personally suitable (Pattern 1). If the initial team comprised two founders with a background in management, they added a programmer to become the CTO. To find this programmer, the founders often turned to their broader personal network in the entrepreneurial community:

> We found our CTO through our network. We mailed several people and said, 'We've founded a start-up and we need a CTO. Do you know somebody?' (Michael, StyleShop)

In these cases, the initial team was a very tightly connected unit that was more stable than the rest of the team, while the CTO was interchangeable. When the founder of WebService talks about the founding process, he mostly uses "we," which includes himself and his initial co-founder, and when referring to the CTO, he speaks of "he" or "our CTO." In the two cases in which the initial team formed via tie creation, the third team member was also added via tie creation (Pattern 3).

Whereas only about half of the start-up cases under study added one team member, nearly all analyzed spin-offs supplemented missing competences during the process of team enlargement, as Table 2 shows. In most of these cases, managerial competence was missing, but sometimes they also needed specific skills for product development, as the founder of InnoEngine explained,

> We developed our prototype until we got stuck. So, we figured, okay, we can't go on with just the two of us; we need someone who really knows how to construct that kind of stuff. (Clara, InnoEngine)

Since the initial team primarily consisted of scientists, they were lacking business expertise. Five entrepreneurs among the interviewees articulated this as

being the main motivation to search for a business team member: "We added a third team member, simply to fill this competence gap" (Richard, InductInfusion).

In contrast to the initial teams of the start-ups, the initial teams of the spin-offs searched their entire personal network for suitable team members, spanning all kinds of social circles such as neighbors, colleagues of the founder's spouse, or sports mates. The founders of InductInfusion searched their whole social circle:

> We were thinking about who we know with managerial skills, scanned our entire social environment if we know someone who could do it. And my co-founder Eric plays tennis with Toni; they have known each other for several years. So, we figured, okay, we think Toni is doing something along the lines of management and so we asked him if he wants to join us. (Richard, InductInfusion)

If they did not find a suitable team member within their personal network, they used job ads. Although the search and selection process may have been influenced by an intentional search for missing skills, in at least half of my cases it was in response to the formal requirements of an external actor.

4.4.2 Triggering the Search for Missing Competences: Impact of Blueprints and Rules

The previous chapter outlined how team members came together; let us now take a closer look at why. The entrepreneurs in this study did search for additional team members that filled certain needs, not only for the sole reason that they really needed these competences but also because they were expected to have them. The teams of each type of new venture look too similar and their products too different to claim that team formation was dominated by the necessary skills required by the product. This begs the question: *How do nascent entrepreneurs know whom they should add?* They searched in their closer and broader personal network, but first they needed to have an idea of whom they were looking for. In the case of the start-ups, team enlargement was guided by the anticipated expectations of VCs, blueprints communicated in the entrepreneurial field, and learned customs. In the case of the spin-offs, the driver of team enlargement was formal requirements set by the public funding program Exist.

Several initial teams of start-ups searched for a CTO among their personal networks. But why did they search for a CTO in the first place? This cannot be explained sufficiently by the need to add complementary competences. AIweb started to develop their technology with freelancers; later they employed a small developer team but did not add anyone from that team to the founding team (e.g., they did not let any of them be part of their inner circle and did not give them any decision-making power or shares). They intended to continue in

this constellation, but their potential investors expected them to name a CTO during their negotiations:

> We started to negotiate with investors and we figured, okay, now we need a CTO, because they want a CTO. So we were thinking, one, two, three, who should do it? Let's take Tom. This is how Tom became the CTO. Very pragmatic. (Paul, AIweb)

This shows that founders anticipate the expectations of relevant external actors, in this case of VCs, and act accordingly. VCs are assumed to invest primarily in the team. This is strongly anticipated by entrepreneurs. They often point to the team as the most important factor for success, not only because trouble in the team impedes start-up success but also because it is easier to raise funding with the *right team*:

> Basically, if you want to raise money, the investors invest in the team, secondarily in the idea, predominantly in the team. They have to trust the team, that, even if the idea does not work one hundred per cent, the team is able to give it a different twist and find a way to still make some money in the market. The founding team is the most important thing. (Daniel, WebService)

He frequently emphasized that their CTO had designed the technology for two successful start-ups before and that this was a major criterion for adding him to the team because it signaled experience to potential investors. The founder of RateYourDrink points to the *way-to-go* aspect by calling it a "rule of thumb" that VCs apply and "the ideal" they expect:

> The general rule of thumb is, no VC invests in a lone warrior. The ideal is a group of three people with different competences, team completed. (Aldo, RateYourDrink)

These perceptions resonate with the criteria that the interviewed angel investors mentioned. Although they also stressed the centrality of the team in evaluating the start-up, one of the angel investors explained that nowadays the competences that they expect the team to have are more strongly oriented toward the needs of the particular start-up. A few years ago, each team was expected to comprise the same roles and expertise. This highlights the normative aspect of the investors' expectations. Founders not only construct anticipated expectations of this kind by interacting with VCs but also by interacting with other entrepreneurs. The notion that *VCs invest in the team* has evolved as a narrative that circulates in the entrepreneurial community – a narrative that functions as a blueprint of what a team should look like. By interacting with others in the entrepreneurial community and the field, entrepreneurs learn *how to found a business* and *how to be an entrepreneur*. The observed processes of team formation are relatively homogeneous across all start-ups even though they vary in regard to several other characteristics, such as their product or the markets they address. This homogeneity in the process of team formation results from being educated in the same entrepreneurial community and field.

In contrast to the nascent entrepreneurs of start-ups, there is no prior entrepreneurial education for the nascent entrepreneurs of spin-offs. As I argued above, in about half of the analyzed cases, the addition of further team members was triggered by needs for complementary competences that were identified by the initial team. In the other cases, the team did not identify the need for managerial competence; instead, the search for a management person was triggered, and sometimes even forced, by the rules of the funding program. In these cases, the team formation process was strongly influenced by the formal requirements of the public funding programs Exist FT and Exist GS. These programs are the functional equivalent to the blueprints that reflect VCs' expectations of what a start-up team should look like. When asked how he joined the team, the ScieTech team member with business expertise explained: "It is a necessary condition of Exist FT to add managerial competence; scientists alone do not receive Exist funding" (Robert, ScieTech).
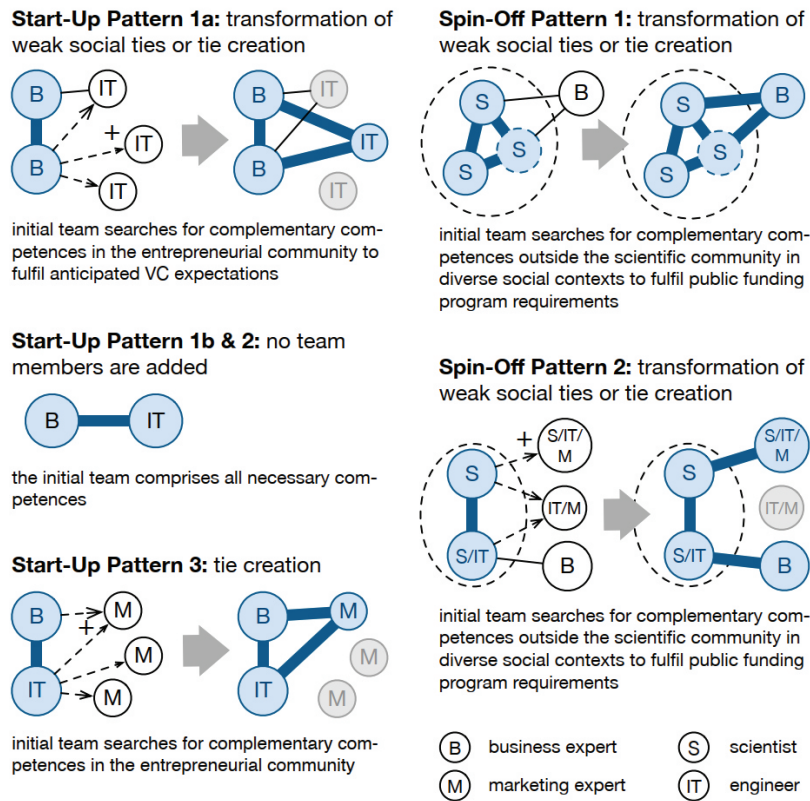
In contrast to the anticipated expectations of VCs that influence start-up team formation, the expectations here are formal requirements of the public funding program. Here, there is no informal entrepreneurial education of those who enter the entrepreneurial community from science; in this environment, nascent entrepreneurs do not learn the customs or routines of entrepreneurial team formation. Some spin-offs retrospectively evaluated the addition of a team member with business skills as useful, but in one case it led to huge problems. The lead entrepreneur of YourFertilizer criticized this requirement as one of the biggest problems of Exist FT:

> We found our management guy via recommendations. But he was a total letdown. That is the only thing I'm really criticizing about Exist FT: they force you to hire a business person. (Bert, YourFertilizer)

This team member was accused of lowering the efficiency of the team, but they could not fire him until the funding ended. This underlines the strong impact of the formal requirements on team formation.

Different mechanisms dominate during the different phases of team formation at both types of new ventures. In both types of new ventures, the formation of the initial team was predominantly based on friendship or acquaintanceship. For team enlargement, a need-oriented search and an orientation toward anticipated expectations of relevant external actors or their formal requirements became important. Although both types of ventures eventually added complementary competences, the forms and compositions of the teams were not the same in this second phase. Figure 2 illustrates the different mechanisms of team enlargement. If the initial team was formed by a lead entrepreneur, not only the initial team but also the enlarged team featured a higher skill diversity.

Figure 2: Pattern of Team Enlargement

Start-Up Pattern 1a: transformation of weak social ties or tie creation

initial team searches for complementary competences in the entrepreneurial community to fulfil anticipated VC expectations

Start-Up Pattern 1b & 2: no team members are added

the initial team comprises all necessary competences

Start-Up Pattern 3: tie creation

initial team searches for complementary competences in the entrepreneurial community

Spin-Off Pattern 1: transformation of weak social ties or tie creation

initial team searches for complementary competences outside the scientific community in diverse social contexts to fulfil public funding program requirements

Spin-Off Pattern 2: transformation of weak social ties or tie creation

initial team searches for complementary competences outside the scientific community in diverse social contexts to fulfil public funding program requirements

B — business expert   S — scientist
M — marketing expert   IT — engineer

Proposition 3: The search for initial team members via strong social ties in one specific community and the selection of team members on grounds of familiarity and sympathy leads to homogenous competences within the initial team. The process of team enlargement, by contrast, serves to add missing competences. Competences are missing because the mechanisms of initial team formation foster skill homogeneity. The competences of the prospective team member thus gain importance as a selection criterion in team enlargement.

The products of start-ups and spin-offs require different skill sets and resources. Since spin-offs commercialize innovative ideas that are developed through years of research, they need scientific competence in their team. In contrast, the products and business models of start-ups demand a stronger focus on managerial competence. This might partly explain the differences between start-ups and spin-offs but not the similarities within each type since the products vary significantly across the analyzed cases. To explain these similarities, the impact of the entrepreneurial field is central. Which organizations are rele-

vant in the specific field and how they impact team formation differ. Different conditions lead to different mechanisms of team formation.

Proposition 4A: Different contextual factors play a role during the two different stages of team formation. While initial team formation strongly relies on social relationships in the entrepreneurial or scientific community, other organizations in the entrepreneurial field become more important in the process of team enlargement.

Proposition 4B: Different (sub-)fields may rely on different blueprints in different ways. The more the blueprints force entrepreneurs to compose their team in certain ways, the higher the probability of conflict and team members exiting.

Two cases show an untypical combination of patterns: the nascent entrepreneurs were previously embedded in the entrepreneurial community and applied for public funding via the Exist program (WebTech, CrossApp). In these cases, the formal requirements of the funding programs were creatively interpreted drawing on customs and following blueprints learned in the entrepreneurial community. As mentioned earlier, Exist GS requires three team members, one of whom has to have managerial competence. The four friends who had the idea for CrossApp decided to share one of the scholarships and hired two more people. In so doing, the official team of three fulfilled all formal requirements. By hiring their first employees early on, they signaled to private investors that they would be able to meet their expectations in regard to the speed of product development. This case underscores the impact of the blueprints provided and customs learned in the entrepreneurial community. The anticipated expectations of potential investors led the entrepreneurial team to make creative use of the public funding program's formal requirements and mitigate their impact on team formation.

In contrast to start-up entrepreneurs, spin-off entrepreneurs change contexts. They move from the scientific community to the entrepreneurial field and respective industry of their product, but in most cases, they do not become members of the entrepreneurial community. Consequently, they do not learn the common blueprints, habits, or routines from other entrepreneurs, neither before nor while forming a team. They have to solve the problem of how to form a team differently: for spin-off entrepreneurs, the formal rules of the public funding program serve as a functional equivalent to the blueprints of the entrepreneurial start-up community.

Proposition 5: If an informal entrepreneurial education is missing, formal requirements have a greater impact on team formation. Prior informal entrepreneurial education enables entrepreneurs to interpret formal requirements creatively.

In contrast to the initial teams of the start-ups, all initial teams of the spin-offs added further team members, as Tables 1 and 2 show. Specifically if initial team formation relied on layering strong business ties on strong social ties

within the respective scientific community, the entrepreneurs' skill sets were very similar. Adding a business person usually became a must since the public funding program required a founder with business expertise. As the entrepreneurial community is characterized by greater skill diversity, the initial teams that form inside that community were more likely to comprise all required or expected skills. In contrast, it was far less likely to find team members with sufficiently diverse skills inside a specific scientific community. Thus, team enlargement was more common for spin-offs than for start-ups. For team enlargement, interpersonal selection criteria lose importance. In this phase, transforming weak social ties into strong business ties and tie creation become the dominant mechanisms.

Proposition 6: A high homogeneity in competences among the members of a specific community decreases the likelihood of finding all necessary team members inside that community. Thus, the search for team members expands to wider nets of relationships, spanning diverse social contexts.

There are more relevant actors in the entrepreneurial field that might impact the further founding process, but these are the relevant actors and contexts for team formation. This underscores the need to specify the relevant contexts for the individual processes and phases of team formation. A single actor – for instance, the public funding programs for spin-offs – can dominate the impact of the entrepreneurial field. For start-ups, the relevant factors are the blueprints provided and habits and routines learned in the entrepreneurial community along with the anticipated expectations of VCs.

5.   Discussion

Team formation of start-ups and spin-offs in Berlin takes place under different conditions. The mechanisms of team formation vary between the two but also show several similarities. In both types of new ventures, the team formation process starts with the formation of the initial team, which might be enlarged in a second step. Different mechanisms dominate the process during the different phases.

This qualitative study makes two main contributions: (1) It has identified two distinct phases of team formation and (2) has shown that different mechanisms of team formation can be identified not only in each phase but also between the two types of new ventures that were founded in different contexts. From these qualitative findings, I have derived propositions that might guide future research.

First, although it is increasingly recognized that team formation is a process (Cooney 2005; Vanaelst et al. 2006; Ucbasaran et al. 2003) and that the team is not a fixed entity throughout the founding process, we still lack a sufficient description or model of the different phases of team formation. Most processual

models focus on processes inside an existing team (Tuckman and Jensen 1977) but not on the formation of the team as such. As for team enlargement, the issue has been discussed with respect to its impact on the preexisting team (Joy-Matthews and Gladstone 2000), but we similarly lack models of how team members join and exit the team. Vyakarnam et al. (1999) also identified two phases of team formation and distinguished the "partially formed" and the "fully formed" team. While the team fully forms, it becomes more formalized. In most of their cases, two "original founders" led this process and became the "inner team," while the added team members were described as "outer team." Although these findings partly correspond with mine, Vyakarnam et al.'s conceptualization of team formation remains fairly unprecise and assumes that a team eventually reaches the stage of being fully formed. This goes against the notion of team formation as an ongoing process in which team members might join but also exit the team (Ucbasaran et al. 2003; Vanaelst et al. 2006). My analysis focused on the early founding stages of the new ventures and the formation of the initial team and its enlargement. It is reasonable to assume that, in later stages, the team will continue to evolve and team members might leave or be exchanged. Thus, there could well be additional phases and different mechanisms of team formation in the later stages of new venture creation. Clarifying this would require additional research focused on the later founding stages. As for the distinction between inner and outer team, my data indicates that team members who join later might, but do not necessarily have to, have a looser connection with the initial team. The differentiation in an inner and outer team seems to appear more likely in those cases in which team enlargement was strongly imposed by external pressure.

Second, I identified different mechanisms of team formation in the two different phases of forming teams. These mechanisms not only varied between the phases but also between the two types of new ventures. The nascent entrepreneurs of both types were members of different communities (i.e., the entrepreneurial or a scientific community) and founded their ventures in distinct subfields of the entrepreneurial field. Previous research has argued that social and economic, needs-based selection criteria might not be mutually exclusive (Forbes et al. 2006; Aldrich and Kim 2007) but has not yet developed a model of how they might be intertwined. My findings suggest that they are temporally layered: social selection criteria such as sympathy, familiarity, and homophily prevail during initial team formation, whereas needs-based criteria such as competences move to the foreground when it comes to team enlargement. However, both criteria are present in each of the two phases: out of all possible friends, those with the most fitting skill set are chosen; and out of all possible people who have the required skills, the most likeable person is chosen. My analysis has further shown that certain search mechanisms already imply specific selection criteria. Most team members are searched for via strong or weak social relationships or via bridging ties. Searching within one's more or less

extended personal network increases the likelihood of personal fit (Ruef, Aldrich, and Carter 2003; Granovetter 1973; Simmel 1908). As recent studies have shown, relationships are more important than skill diversity in determining the effectiveness of new venture teams and should therefore be given more attention (Schjoedt et al. 2013). This underscores the idea that team members who were friends before (Francis and Sandberg 2000) or have some other prior experience with each other (Vyakarnam, Jacobs, and Handelberg 1999) work together better.

If there exists a community that educates nascent entrepreneurs on what is expected of them, its blueprints, customs, and routines strongly impact whether and what kind of team member is searched for. In light of its educational function and the shared identity of its members, the entrepreneurial community qualifies as *community of practice* (Wenger 1998). Community of practice is a concept from learning theory that emphasizes the importance of professional communities in educating newcomers and learning professions. Communities of practice are defined as "groups of people informally bound together by shared expertise and passion for a joint enterprise" (Wenger and Snyder 2000). Newcomers mostly start as legitimate peripheral observers (Lave and Wenger 1991). This position crucially involves participation as a way of learning and becoming a part of the "culture of practice" (Lave and Wenger 1991). This kind of entrepreneurial community plays a crucial role in the start-up part of the entrepreneurial field but only a minor role in the spin-off part. In regard to the latter, other organizations provide orientation by defining formal requirements as to which competences a team must have. Similar to the blueprints of the entrepreneurial community, these rules have a homogenizing effect on team composition in this type of new venture.

Following the ideas of new institutionalism, I have argued that, in a community of practice where nascent entrepreneurs learn blueprints and adapt customs, mimetic and normative isomorphism lead to similar team compositions (DiMaggio and Powell 1983). Where this is missing, formal rules serve as a functional equivalent and coercive isomorphism leads to similarities. The propositions I have developed suggest that, if team formation is strongly influenced by coercive isomorphism, conflict and an exit of team members might be more likely. It might also be less likely that all team members become equal members of the team. As Pahnke, Katila, and Eisenhardt showed (2015), the institutional logics of the investor affect the output of the new ventures. Similar effects can be detected among spin-offs, where the requirements of the public funding program influence team formation. Interestingly, in the case of start-ups, the anticipated expectations of potential partners already impact team formation even before they enter a specific relationship with such partners. This influence is not mediated through interaction but indirectly through blueprints that are communicated in the entrepreneurial community. Thus, field-level organizations that have influence on such blueprints are likely to shape

organizational processes (Lounsbury 2001) – in our case here, the mechanisms of team formation – and this impact might even precede a potential relationship between the two types of organizations, that is, new ventures and influential field-level organizations. The presence and the characteristics of the described mechanisms are not static or stable and might change over time. Changes at the field level might lead to changes in a variety of organizational processes (Windeler and Sydow 2001), for instance, in the mechanisms of team formation. Nevertheless, I argue that changes at the field level (e.g., changes in the formal requirements of a public funding program) might easily lead to changes in team composition and in the decision whether a team member should be added, but these changes do not affect how team members are searched for. If the blueprints are articulated in a community of practice, then the blueprints might be more resistant to change.

As one of my main arguments is that team formation is strongly influenced by the entrepreneurial field, team formation processes might take different shapes in different fields, cities, or nations. I analyzed innovative growth companies in a metropolitan area, and the entrepreneurial field showed a very peculiar characteristic: its division into two subfields. Yet it is unclear to what extent this applies only to Berlin or to other entrepreneurial fields in other regions as well. Other fields might feature team formation processes that are more similar. Or the field might be equally influential, but different blueprints might lead to different mechanisms. The developed framework is a solid starting point for comparisons between different fields and opens up an interesting area for future research: Which mechanisms can be detected across several fields? How do they vary? What is the impact of this variation? My propositions could guide that research and serve as a solid groundwork for future testing.

6. Conclusion

In conclusion, my paper not only emphasizes the necessity to pay attention to the contexts of team formation but also underscores the need to specify the characteristics of each context and their impact. My analysis has shown that there are differences in the mechanisms of team formation between the two different types of new ventures that were founded in the two different contexts, while the new ventures within each type displayed considerable similarities. This not only highlights the benefits of a systematic comparison of the two types of new ventures from these different contexts but also points to the necessity to consider the characteristics of the new ventures and their contexts. Otherwise, the findings are not comparable. I argue that future research needs a more precise and differentiated conceptualization of context, which would facilitate a detailed analysis and the comparison of findings. Proposing to conceive of the entrepreneurial context as a field and the entrepreneurial communi-

ty as a community of practice, and to focus on blueprints, rules, and learned customs, as well as the impact of external organizations were steps in that direction.

To increase the comparability of different studies, we also need a shared definition of entrepreneurial teams. My analysis shows the benefits of analyzing team formation as a process (Schjoedt et al. 2013; Vyakarnam, Jacobs, and Handelberg 1999). Despite the common notion that the team is already complete when the process of venture creation starts, my findings underscore the notion that the team evolves and changes during the founding process – a notion that is increasingly gaining traction in research (Ucbasaran et al. 2003; Hellerstedt 2009). Team formation is frequently conceptualized as an intentional process (Ruef 2010), often dominated by a lead entrepreneur (Ensley, Carland, and Carland 2000). My analysis showed that team formation – and initial team formation in particular – is often either a non-intentional process in which nascent entrepreneurs come together by accident or one that is triggered by a business opportunity. The role of the lead entrepreneur is far more often to be found in spin-offs. This emphasizes the necessity to have a closer look at the actual form and constellation of teams. Contrary to Cooney's (2005) call to think of entrepreneurship as a collective process, the notion of a lead entrepreneur should not be neglected per se. Teams might be composed of team members who are on an equal footing, dominated by an initial team, or by one lead entrepreneur. Furthermore, new ventures also might be created by a single founder (Sydow and Schmidt 2017) as in three of the cases that I excluded from my sample.

If research is interested in how to build a team as successful as possible, the restrictive boundary conditions have to be taken into account. To do so requires a deeper understanding of how teams form and why this happens in specific ways. Forbes et al. (Forbes et al. 2006) characterize the team as a "relatively controllable entity" that can be modified to increase venture success. My findings question that idea. By emphasizing the impact of social relations and the impact of specific contexts, my analysis shows that team formation is highly influenced and restricted by social factors. Teams cannot be composed at whim to increase venture success; different team compositions might suit different contexts. Adding a team member with managerial skills to spin-offs often does not bring the expected success (Clarysse and Moray 2004) and may even decrease team efficiency (Vanaelst et al. 2006), as evidenced in some of the cases in this study.

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