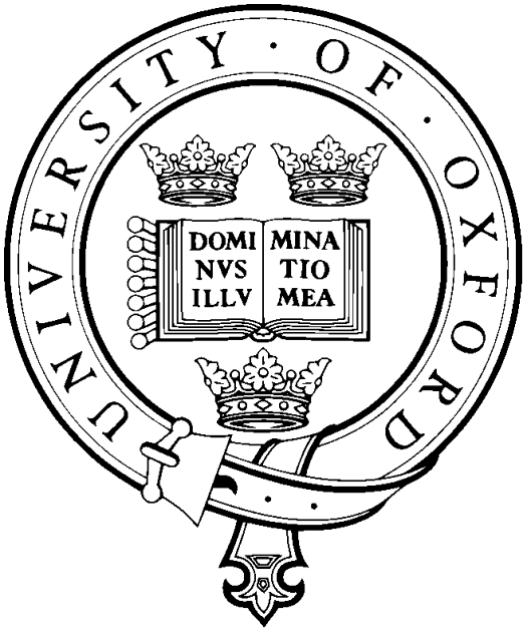
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Essays On Nascent Entrepreneurship



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Declarations

All the work contained in this dissertation (including data collection, analysis, theorizing, writing, and editing) is my own original work. I am grateful to Professors Pinar Ozcan (my primary supervisor) and Richard Whittington who have assisted by supporting and encouraging my work, but, at the point of this submission, every word and contribution is my own.

I also appreciate the feedback from faculty and peers at two doctoral presentations at Saïd Business School (in 2019 and 2021) in helping clarify the early direction of inquiry and the initial theoretical framing. The generous feedback from Professors Alan Morrison and Paulo Savaget in the confirmation viva was enormously helpful and their feedback is directly reflected in this document.

Acknowledgements

I will now confidently contradict myself (before we even get to the introduction!) by saying that, in a sense, this work is hardly my own at all. While I wrote every word and have come to conclusions unique to my perspective, I have been shaped and moulded by the generous attention of so many kind contributors. If this dissertation teaches us anything, it will reinforce the power of one's network, and mine has been world-class.

I am grateful to my supervisors, Pinar Ozcan and Richard Whittington, for answering when I called, and signing lots and lots of mostly superfluous forms. Pinar, in particular, generously took me in in the middle of a pandemic when she had plenty of other important things to worry about. I am grateful to Alan Morrison who is a generous supervisor, mentor, and friend to all. I am grateful to many SBS professors who are giving with their time and encouraging with their words: Marc Ventresca, Eero Vaara, Tom Lawrence, Sally Maitlis, Anette Mikes, Ken Okamura, Marya Besharov, Sue Dopson, Michael Gill, Michael Smets, and many others.

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My wife, Maria, who was wise enough to sneak into my life near the end of my degree, has made this work and my life both meaningful and a joyful experience.

In an existence typified by indefinite beginnings or ends, I can't help but owe everything to my wonderful parents, Marilyn and Mark (and their wonderful parents). Kindness makes it easy to dream and to chase dreams.

Explanatory Note

I am deeply grateful for the willingness of my assessors to engage with my work and am conscious of the high value of their time. The most important parts of this document are ultimately the three papers that make up its bulk, so I have reduced/optimized the supplementary chapters (intro, conclusion, etc.) to decrease redundancies or superfluous kerfuffle.

Introduction

Pre-Firm Entrepreneurship: Ignoring Those Awkward Adolescent Years

The question of what it is like to start a start-up looks different depending on the narrative you anchor on or, more specifically, the *when* of the narrative you anchor on. For most people, the term entrepreneur tends to suggest, depending on their context, anything between wealthy, high-powered, visionary tech stars to scrappy stall owners peddling goods in an open-air market. In both these cases, the images suggest someone who already has a business, a small firm trying to make it in the world. It is easy to see why someone would sign up for that game—the business of running a business.

Fewer people focus on an earlier, but perhaps more appropriately entrepreneurial, narrative: the journey of how the established firm came to be. The image of hundreds of frustrating cold calls to secure an early collaborator or customer. The asking your family for money. The feigning confidence in front of investors when you know there is no guarantee the market will bite. The sleepless nights trying to quiet a mind fretting over dozens of mission-critical concerns. The staggering loneliness of knowing that if you stop, it all stops, and you can chalk up months and years of your life to a learning experience. These images rarely make the cut for headlines or dinner conversations, even though all firms had to first be created, and most entrepreneurs that start on this road will never make it to the "running a healthy firm" part. The messy, sometimes ugly, pre-firm stages are harder to explain or make sense of and are resultantly swept under the rug like photos of our younger, acne-pocked selves.

Entrepreneurship scholars have similarly prioritized the entrepreneurial firm over the pre-firm struggle. Cultural momentum, practicality, and path-dependence all favour a focus on the firm. Studies have oversampled the flashy, extreme cases—the well-established unicorns and tech revolutions that dominate our collective imagination (Aldrich & Ruef, 2018). Scholarship favours large data sets and extensive case studies, but pre-firm entrepreneurial

phenomenon tend to go unnoticed by anyone other than the entrepreneur and a diffuse constellation of participants and are rarely recorded (Bennett & Chatterji, 2019). It is difficult to point to when a person shifts from being a dreamer to an entrepreneur or when their efforts are substantial enough to be considered an operational firm (McMullen & Dimov, 2013). Thus, the vast majority of entrepreneurship research samples young firms who have already been around for two to five years (Bennett & Chatterji, 2019; Davidsson, 2005; Ozcan & Eisenhardt, 2009). The work that does directly comment on pre-firm stages, which we will cover in detail, has often fallen short of strategic or predictive potency; a full decade of research was spent discussing whether valuable ideas are 'discovered' or 'created' (Alvarez & Barney, 2007; Foss & Klein, 2017).

Empowering Practice and Reversing a Lurking Survivor Bias

The result of these trends, both in and outside of academia, is that we know the least about the most difficult and earliest stages of the entrepreneurial journey (Clough, Fang, Vissa, & Wu, 2019; McMullen & Dimov, 2013; Townsend, Hunt, McMullen, & Sarasvathy, 2018). Entrepreneurs are likely unprepared for these almost universally intense moments and our extant theories give very little to go on.

Critically, we don't know how many high-potential entrepreneurs never make it past the early enterprising moments or why. Our limited understanding of the pre-firm experience means that significant survivor bias is likely lurking across most entrepreneurship and strategy scholarship. Huge and persistent gender and racial gaps may be evidence of early, under-theorized filters to entrepreneurial progress (Kanze, Huang, Conley, & Higgins, 2018; Marlow & McAdam, 2012). The truth, both exciting and terrifying, may be that our premiere theories could be severely diluted in their application once the full spectrum of entrepreneurial potential

is acknowledged. We won't know until we consider pre-firm entrepreneurship directly and thoroughly.

What Progress Looks Like

Progress will require a more careful characterisation of pre-firm stages. Extant research has made great progress understanding the why and what, but the when, how, and who of early-stage entrepreneurship remain particularly under-specified.

Entrepreneurship scholarship has been haphazard with terms like incipient, nascent, and early entrepreneurship, impeding clear discussion of definite early-stage patterns (Davidsson, 2005; Dimov, 2010; Felin & Knudsen, 2012; McMullen & Dimov, 2013). The following chapters will lean on the establishment of the firm as a consistent and meaningful[1] marker to differentiate pre-and post-firm activity—the *when*.

The *why* of pre-firm entrepreneurship may vary in terms of entrepreneurial motivation but can be usefully related to a desire to create and/or capture value in the marketplace (Alvarez & Barney, 2007; Arikan, Arikan, & Koparan, 2020; Lepak, Smith, & Taylor, 2007).

The *what* has been gainfully described as efforts to manage uncertainty. Important work has connected the dots between early entrepreneurship, Knightian uncertainty, and the resources, recognition, and legitimacy necessary to start a value-capturing firm (Alvarez & Barney, 2005; Arikan et al., 2020; Engel, Kaandorp, & Elfring, 2017; Townsend et al., 2018).

Much more work is needed to understand *how* and with *whom* entrepreneurs go about managing this uncertainty, however. Entrepreneurship necessarily involves a level of complexity beyond the capacity of a single individual. Extant work points to the critical role

[1] The establishment of the firm is a critical milestone in the entrepreneurial journey for many reasons (e.g., legitimacy, productive capacity, legal distinction) but particularly as it marks a shift in an entrepreneur's experience of transaction costs. The social, financial, and emotional/cognitive costs of engaging collaborators are key strategic factors throughout entrepreneurial stages, and the establishment of the firm dramatically changes the strategic options available to an entrepreneur in dealing with those costs.

of networks as well as social and financial capital (Adler & Kwon, 2002; Aldrich & Kim, 2007; Huang & Knight, 2017), but we don't know how entrepreneurs strategically select, engage, and utilize collaborators (Clough et al., 2019).

Motivating Questions: Establishing the Who and the How

This dissertation builds on extant literature on pre-firm networks and strategy by taking first steps in characterising pre-firm strategy as it relates to collaborative risks and opportunities. Specifically, the following chapters will answer the following questions through a mix of theoretical modelling and empirical inquiry:

- What are the various roles of collaborators in managing pre-firm uncertainties? (Chapters 2 & 3)
- How do entrepreneurs strategically select and engage collaborators in pre-firm stages? (Chapters 1, 2, & 3)
- What is the role of social and financial capital in pre-firm stages? When are they substitutes, complements, or incompatible resources? (Chapters 2 & 3)
- Why do entrepreneurs select paid collaborators over 'free' socially motivated collaborators? (Chapter 1)
- What are the costs of network churn and recalibration and what effect do they have on pre-firm strategy? (Chapter 1)
- How do entrepreneurs mitigate and manage transaction costs in pre-firm stages? (Chapter 2)
- What are the strategic factors that determine the direction of pre-firm activity? What factors determine whether an entrepreneur successfully exits pre-firm stages? (Chapters 1, 2, & 3)

These questions are simple but far from straightforward; studying pre-firm entrepreneurship is fun because the plight of these striving entrepreneurs involves a plethora of paradoxes.

To highlight just a few examples: The great 'Aha!' moment of transaction cost economics reveals that the firm provides an escape from a dizzying assortment of risks associated with a lone entrepreneur navigating a wide portfolio of market collaborators (Coase, 1937; Klein & Sykuta, 2010; Williamson, 1993). Yet, by definition, pre-firm entrepreneurs lack a firm and resources with which to verticalize/internalize productive capacity and can't build one on their own. Thus, the optimal means of escaping the problematic marketplace (building a firm) is only *through* the problematic marketplace. Entrepreneurs, under-resourced and with very little market power, must figure out how to mitigate transaction costs without the easy remedies and when the risks are highest (Alvarez & Barney, 2005; Baker & Nelson, 2005).

Meanwhile, extant research has unwittingly used networks and social capital as a catch-all solution to many of the more vexing problems in early-stage entrepreneurship (Aldrich & Kim, 2007; Clough et al., 2019; Hallen, Davis, & Murray, 2020). No money? No problem! Use your social influence to get free help, advice, labour, funding, and more; social capital has, across the literature, been touted as the key to everything from ideation to capitalization (Elfring & Hulsink, 2007; Hallen & Eisenhardt, 2012; Mannucci & Perry-Smith, 2022). Why then, we might reasonably wonder, do entrepreneurs regularly choose to spend financial capital instead of social capital? Why hire a contractor when a brother-in-law could do it for free? Why not spend your time expanding and deepening your network instead of spending months chasing a little seed funding? The entrepreneurship literature has spent so much time searching for the uses of social capital, we forgot to fully establish its limits (Bloch, Genicot, & Ray, 2007; Casciaro, Gino, & Kouchaki, 2014). If a dark side to social capital in entrepreneurial contexts

does exist (which, if we consider entrepreneurs to be rational, it likely does) they could have enormous implications for a long list of socially related questions in entrepreneurship such as yawning gender and racial gaps (Ahl, 2006; Bruton, Lewis, Lopez, & Chapman, 2022).

Other paradoxes feature more peripherally throughout the following pages: Entrepreneurs need funds to show progress sufficient to raise funds (Clough et al., 2019). They need legitimators to see them as legitimate enough to engage with them (Fisher, 2020; Fisher, Kotha, & Lahiri, 2016). They need a long list of conflicting signals broadcast simultaneously—novelty and surety, confidence and humility, learning and leading, creativity and routine. The dynamic context of pre-firm entrepreneurship renders the questions we tackle in the following chapters both theoretically and practically relevant, as well as intellectually delightful.

The Approach: A Tantalizing Preview

The neglect of pre-firm stages necessitates the laying of significant theoretical groundwork (McMullen & Dimov, 2013; Townsend et al., 2018). While all the findings in this document came about through a combination of empirical and theoretical inquiry, two of the three chapters (chapters one and three) focus primarily on theoretical development. What we are capable of seeing empirically depends on the questions we bring to our environment, so carefully crafted theory is a crucial first step in furthering our understanding of pre-firm activity. We have lots of theories and perspectives *related* to early enterprising, but we need connective tissue relating early efforts to the early firm, social to financial capital, networks to market behavior (Clough et al., 2019). The empirical chapter is concerned with familiar issues (transaction costs) in an understudied stage (pre-funding collaborations). In this case, we can borrow from the extensive theoretical foundations of transaction cost economics and apply it to the context of the earliest entrepreneurial collaborations. The work of framing transaction

costs has been done (Klein & Sykuta, 2010), so we can comfortably investigate what pre-firm entrepreneurs are actually doing to deal with them.

Chapter 1 aims to characterize the strategically significant entrepreneurial risks, efforts, and costs related to the use of social capital, which are hinted at, but unspecified, in discussions of network maintenance, churn, and recalibration (Hallen et al., 2020; Perry-Smith & Mannucci, 2017; Vissa, 2012; Vissa & Bhagavatula, 2012). It outlines the theoretical basis for these "interaction costs" and presents a framework of the costly behaviors necessary to initiate, maintain, and rest network collaborations. Entrepreneurial social networks are presented as a context typified by scarcity, diverse institutional logics, and a thin boundary between the entrepreneur's personal life and business efforts. Entrepreneurs must therefore engage in costly behaviors to actively manage social risks and maintain relationships that invite entrepreneurial collaboration. It concludes by discussing how such costs may shape early strategy, entrepreneurial cognition, and risk perception and lead to heterogenous outcomes in the time spent in nascent stages, the scale of the firm, and the likelihood of failure.

Chapter 2 is an empirical investigation of how pre-firm entrepreneurs mitigate and manage transaction costs (Coase, 1937; Williamson, 1981, 1993). Through an analysis of a novel data set including more than a thousand pre-firm collaborative communications initiated by 26 nascent entrepreneurs, it explains that entrepreneurs are less likely to experience high transaction costs when they engage both socially and financially incentivized actors on a given task as opposed to relying wholly on paid collaborators. It shows how entrepreneurs can leverage social collaborators to strategically disambiguate collaborative tasks, to widen their contextual understanding of the transaction, and to improve contracting efforts in ways that substantively mitigate transaction risks and uncertainties. The emergent theoretical framework emphasizes the role of social capital in shaping early entrepreneurial transactive relationships, and thus challenges extant models that consider early social and market contexts in isolation

as well as expands our understanding of the relationship between pre-firm social and financial capital to include not only resource accumulation but resource application.

Chapter 3 serves to more fully specify the strategic context in which pre-firm entrepreneurs must match tasks, resources, and collaborators across their social and market contexts to achieve their goals under conditions of high uncertainty (Clough et al., 2019). This chapter reviews the early entrepreneurship literature to outline four pre-firm entrepreneurial tasks along with their optimal collaborators: conceptualization, contextualization, substantiation, and capitalization. Each task helps answer the question: how does an entrepreneur turn an idea into uncertainty-reducing signals and the inputs of a firm (support, business plan, prototypes, etc.)? The model it presents suggests that the realization of entrepreneurial intentions often relies not only on having sufficient capital to engage collaborators, but also the strategic choice of when to engage social versus market collaborators and resources.

Each of the three chapters work together to paint a more complete picture of pre-firm activity and collaboration. The relationship between the three chapters is summarized by Figure 1. Entrepreneurs must necessarily get help to accomplish a long list of tasks to actualize a value proposition and establish a productive firm. Ultimately, they have only two options for motivating that help—social or financial capital. Chapters 1 and 2 investigate the risks and costs of engaging either social or financial capital (respectively) in pre-firm stages. Chapter 3 presents an overarching model of how entrepreneurs can optimally manage social and market collaborations to reduce uncertainty and establish the inputs of a productive organization.

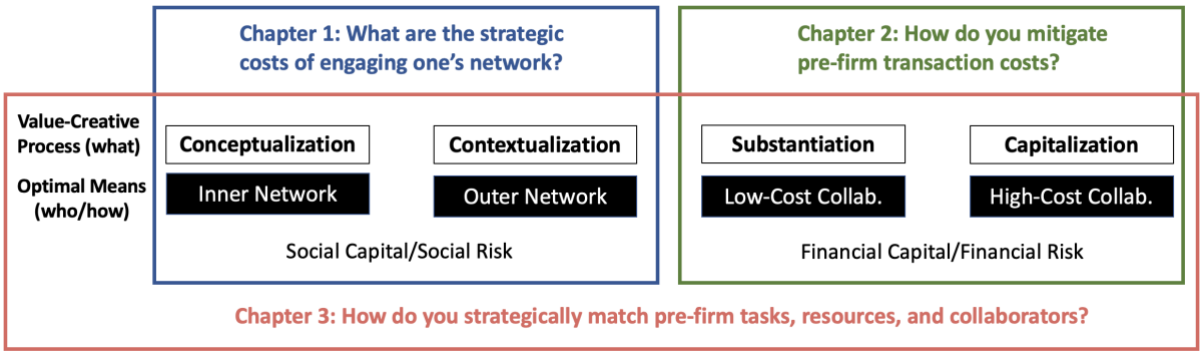


Figure 1: Diagram of Connections between Dissertation Chapters

These three chapters form the body of this dissertation and are bookended by this introduction, a broad literature review, and a conclusion. Aware of the length of this document and the limits of human attention (and sanity), care has been taken to be both brief and parsimonious. These goals, however, are directly at odds with examination regulations. Each of these chapters have a self-sufficient literature review, so the requisite additional review (the next section of this document) will be most useful for those without previous experience with the academic strategy and entrepreneurship literature. It has been structured to be a (hopefully) lighter, more refreshing read. The concluding chapter discusses a few more implications from all three papers for entrepreneurial ecosystems, entrepreneurship strategy and practice, gender and racial gaps across entrepreneurship, and strategy and entrepreneurship research.

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A Review of Relevant Literature

This chapter presents a high-level review of academic contributions related to pre-firm entrepreneurial activity and circumstances. To avoid redundancy with the sections that follow, it focuses on the work of key or useful contributors as opposed to exhaustively treating individual topics. Each paragraph briefly summarizes their contribution and connects it with the relevant entrepreneurial phenomenon. Contributors are organized into three categories: early entrepreneurship, social capital/networks, and transaction cost economics.

Early Entrepreneurship

In 1921 Frank Knight published his award-winning essay entitled, 'Risk, uncertainty and profit.' As a result, we now refer to the type of uncertainty experienced by entrepreneurs as Knightian. Knightian uncertainty refers to risk that is unquantifiable (sometimes referred to as ambiguity):

> *Uncertainty must be taken in a sense radically distinct from the familiar notion of Risk, from which it has never been properly separated.... The essential fact is that 'risk' means in some cases a quantity susceptible of measurement, while at other times it is something distinctly not of this character; and there are far-reaching and crucial differences in the bearings of the phenomena depending on which of the two is really present and operating.... It will appear that a measurable uncertainty, or 'risk' proper, as we shall use the term, is so far different from an unmeasurable one that it is not in effect an uncertainty at all. (Pgs. 19-20, Knight, 1921)*

To an economist, quantifiable risk can be baked into the equation—hedged and compensated for—whereas Knightian uncertainty cannot. When important elements remain ambiguous, we

don’t know enough about what we are dealing with to isolate the variables and determine their likelihood. Knight begs us to consider the fact that it is these unquantifiable risks in the marketplace that drive profits, strategy, and competition (Arikan, Arikan, & Koparan, 2020; Knight, 1921).

Alvarez and Barney use the concept of Knightian uncertainty to consider the various approaches of entrepreneurial firms (2005). The entrepreneurial path is not one set of tasks but many sets of tasks that are inter-related and all uncertain in their outcomes; early-stage entrepreneurs are generally wrestling with untested hypothesis. In pursuing novel paths and valuable aims, there is no data with which to determine their odds of success or failure (Arikan et al., 2020; Koppl, Kauffman, Felin, & Longo, 2015; Townsend, Hunt, McMullen, & Sarasvathy, 2018). Alvarez and Barney suggest that entrepreneurs leverage either collective agreements (clan-based), value determinations (expertise-based), or charisma to overcome otherwise crippling uncertainty and organize a productive firm (Alvarez & Barney, 2005).

Sara Sarasvathy points out that if we assume that outcomes are uncertain in entrepreneurial contexts, the causal logics typically employed in business strategy break down (Sarasvathy, 2001; Sarasvathy & Dew, 2005). Instead, she argues, we should be focusing on how entrepreneurs effectively use the means available to them. By her definition, “causation processes take a particular effect as given and focus on selecting between means to create that effect. Effectuation processes take a set of means as given and focus on selecting between possible effects that can be created with that set of means” (pg. 245, Sarasvathy, 2001). The effectuation approach zooms in on the entrepreneur’s particular circumstance, the elements they can control with the means at hand, and how those elements can be used to further their aims. Entrepreneurs, instead of predicting future outcomes, are shaping the future with choices that allow only affordable losses and acceptable risk (Chandler, DeTienne, McKelvie, & Mumford, 2011; Kerr & Coviello, 2020; Reymen et al., 2015; Sarasvathy, 2001).

Along a similar vein, Baker and Nelson's characterization of bricolage focuses on the on-the-ground means and behaviors of entrepreneurs (2005). They borrow bricolage as a concept from the French anthropologist Levi-Strauss to characterize the essence of early-stage entrepreneurship (Lévi-Strauss, 1962). As opposed to rational planning and optimization, entrepreneurial 'bricoleurs' make do with whatever is readily available to create 'something from nothing.' They argue that trying to predict the perfect path in entrepreneurship is often impossible or that the ideal circumstances are out of reach, and thus entrepreneurs must prioritize and employ the *available* resources and strategies over the ideal (Baker & Nelson, 2005; Fisher, 2012; Plowman et al., 2007).

Greg Fisher's work qualifies a focus on entrepreneurial hustle with an added emphasis of an entrepreneur's perceived legitimacy by key stakeholders (Fisher, 2020; Fisher, Kotha, & Lahiri, 2016; Fisher, Stevenson, Neubert, Burnell, & Kuratko, 2020). To receive help, resources, information, connections, and funding by stakeholders, entrepreneurs must be first deemed as legitimate. This is a difficult requirement for early entrepreneurs still wrestling with high uncertainty and struggling to convey and substantiate their fledgling value proposition. Fisher suggests that the entrepreneurs don't "achieve" legitimacy in one momentous leap but rather encounter cascading legitimacy thresholds as they engage with wider, diverse stakeholders (Fisher et al., 2016). The requirements for legitimate potential vary among stakeholders, and stakeholders are met at different moments throughout the journey. What entrepreneurs must do to get the support of family, partners, and investors—as just three common examples—will differ significantly.

Obstfeld, Ventresca and Fisher provide an "assembly perspective" of early-stage entrepreneurial projects that suggests that these network actors are key extensions to the productive capacity of an entrepreneur (2020). Their 2020 paper is not likely on most doctoral seminar reading lists, but it provides a clean and clear summary of an emerging perspective

consistent with the perspectives hitherto reviewed. They present a model of an early entrepreneur who must produce a motivating projection or goal, articulate that goal in a way that is relevant to stakeholders, combine stakeholder resources and contributions to shape the project, and expand that network to grant the project "distributed momentum." In stark contrast to depictions of the archetypal lone, genius entrepreneur, their perspective suggests that successful early entrepreneurs are experts at network engagement and management (Elfring & Hulsink, 2007; Engel, Kaandorp, & Elfring, 2017; Obstfeld, Ventresca, & Fisher, 2020). The fate of an entrepreneurial project, from their perspective, can be best predicted by watching progress reflected in growing and deepening engagement from network actors surrounding the entrepreneur (Obstfeld et al., 2020).

In contrast, the theory-based view, as proposed by Felin and Zenger, would start inside the mind of the entrepreneur (Felin, Koenderink, & Krueger, 2017; Felin & Zenger, 2018, 2009, 2017). The success of an entrepreneurial project, according to this perspective, is based, at least initially, on the power of the underlying theory to reveal hitherto unseen or uncaptured value. Successful entrepreneurs attune themselves to new ways of seeing the world that reveal value, make a hypothesis about how to bring that value to bear on the marketplace, design and carry out tests to that hypothesis, and then convey that valuable theory to key stakeholders (Felin & Zenger, 2009, 2017). Since these valuable beliefs are what drive recruitment and the social momentum of the project, this theory puts less credence in the networking prowess of the entrepreneur and more attention to whether their motivating vision is valid and valuable. Rejection and disbelief from a large section of one's network, from their perspective, can be a strategic advantage as opposed to a liability; the unobvious nature of a value hypothesis can sidestep competitive forces (Felin & Zenger, 2018).

Perry-Smith and Mannucci contribute by breaking down the innovation process into four distinct stages (2017). The stages are based on what the entrepreneurs need both in terms

of improving the underlying ideas and engaging key collaborators. A key contribution of this work is that no particular network segment will have everything necessary to complete the entire innovation process (Elfring & Hulsink, 2007; Hite, 2005; Mannucci & Perry-Smith, 2022; Perry-Smith & Mannucci, 2017). The structure and characteristics of close, inner-network relationships (e.g., family and friends), could be a boon for early processes but a liability for later processes. They suggest that entrepreneurs must generate, elaborate, champion, and implement their idea by recalibrating their network to include the collaborators best suited to the task (Perry-Smith & Mannucci, 2017). Their empirical work tracks these network evolutionary patterns and supports their vision of the collaborative innovation process (Mannucci & Perry-Smith, 2022).

It is important to note, however, that theirs and other models of entrepreneurial collaboration generally fail to consider more than one form of capital at a time, a fact that Clough, Fang, Vissa, and Wu point out explicitly in their influential review piece (2019). Social capital and networks are not the only active means available to entrepreneurs; financial capital and market actors will necessarily come to play in pre-firm stages. Clough et al. call for a model of early-stage entrepreneurship that "allows for the examination of mobilization attempts across multiple types of resource simultaneously, including the reciprocal interactions between the entrepreneur's human, social, financial, and other forms of capital" (Pg 241, Clough et al., 2019). This missive features in nearly every chapter of this dissertation since its fulfilment is a central goal of this research agenda. The crucial element underlined here is that multiple forms of capital are present in pre-firm stages and *they interact*. How an entrepreneur engages their network may be highly determinative of the success they have in engaging market collaborators and vice versa. The key to success might not just be having social or financial capital or even using either of them well independently, but, rather, the *harmonization* of social and financial capital. The untangling of the relationships between interacting forms of capital will yield a

more complex but, hopefully, more compelling and predictive model of entrepreneurial success and failure (Clough et al., 2019).

McMullen and Dimov provide an additional perspective on what will be required to produce a useful model of early entrepreneurial activity (2013). In their 2013 article, these authors call for more longitudinal process perspectives on the journey. They argue it is necessary to determine more clearly: 1) the nature of the entrepreneurial journey, 2) the beginning and end of such journey, 3) whether and how it can be meaningfully divided into variables or events, and 4) what remains constant throughout the process. They suggest that this progress is necessary to differentiate pre-firm entrepreneurship as a distinct field of inquiry:

> *Indeed, a process approach may be necessary to distinguish the field horizontally from creativity research at the beginning of the entrepreneurial process and strategy research at the end, and vertically from more abstract systems-level concepts (e.g. variation) of which it is an example and from more concrete tasks (e.g. negotiation) that it encompasses* (Pg 1482, 2013).

Theirs and the more recent calls from Clough and colleagues neatly motivate the following contributions of this dissertation (Clough et al., 2019; McMullen & Dimov, 2013).

Social Capital and Networks

Throughout most of the seminal contributions discussed in the previous section, social capital and networks can be seen to play a pivotal role in pre-firm activity. A brief review of social capital and network theory will therefore be helpful in setting up the following chapters.

Adler and Kwon's 2002 exploration of social capital is a pillar of social capital and network related business research. Among other things, they provide a carefully sourced definition of social capital and defend its distinction as a form of capital. They point to the source of social capital as the goodwill between people and one's ability to activate that goodwill towards some end. It is located within the social structure of a particular actor and differs from market and hierarchical impetuses. Finally, they specify that the effects of social capital come from the information, influence, and solidarity that it makes available to those who have it. They suggest we can readily think of social capital as capital; it is long-lived and we can invest in it, it is appropriable and convertible, it can be a substitute or complement to other assets, and it must be maintained (it depreciates). It is somewhat unique as capital, however, in the fact that it is a collective good, exists between actors, and cannot be quantified (Adler & Kwon, 2002; Kwon & Adler, 2014).

It is worth, having discussed the most common definition of social capital across the literature, to now return to one of its original conceptualizers: Pierre Bourdieu. To Bourdieu, social capital was all about cultural context and one's position in it (Bourdieu, 1986, 1993). Class and the implicit understandings one needed to participate in one's social class (along with other important cultural distinctions) help explain what opportunities and power an individual can source from their social sphere. Our social sphere, he posited, presented obligations and connections that could be converted into other forms of capital. Social capital, in its original conception, wasn't so much between individuals as it was possessed by individuals with certain qualities that gave them access to collectively granted power (Bourdieu, 1986, 1993).

This culturally-focused conception of capital has been almost entirely replaced in many academic discussions (including entrepreneurship research) by a focus on network structures (Hallen, Davis, & Murray, 2020). Burt and Granovetter are two scholars who, through their

separate contributions, established and championed a network-driven approach to social capital (Burt, 1997, 2000, 2004, 2017; Burt, Kilduff, & Tasselli, 2013; Granovetter, 1978, 1985, 2005, 1973). Networks can be conceived as a series of persons and relationships (also referred to as egos and alters or nodes and edges) and mapped according to the pattern and position of those relationships. Network descriptors like proximity, clustering, multiplexity, tie strength, and bridging can all be useful variables in predicting the type of network interactions possible and probable (Burt, 2000; Granovetter, 1985, 1973). Network structures can describe who you can receive help from, how much, and in what way. Since social capital can be partially described through these network descriptors, network structures often becomes a short-hand for social capital (Burt, 2000). The tractability of these discussion and their powerful descriptive and predictive utility (as well as heavy academic investments in the age of digital social networks) have put the structural approach to the forefront of sociology and entrepreneurship research.

The downside of this focus, according to Hallen, Davis, and Murray, is that network maps tend to discredit the agentic and evolutionary aspects of network activity (2020). One can make predictions about an entrepreneur's likelihood of success depending on the density or variety of their network, but such an analysis would fail to account for the entrepreneur's ability to navigate and expand that network. Their review shows that past entrepreneurial network research has overemphasized the role of network locality and path-dependence and that new inroads are being made by considering dynamic or path-creating patterns of entrepreneurial behavior (Hallen et al., 2020). This important distinction between structural and agentic aspects of networks provides another powerful cautionary tale of the power of models to both reveal important phenomena yet also leads to severe myopia.

The work of Julie Hite and others suggests that an entrepreneur's network evolves over time (Elfring & Hulsink, 2007; Engel et al., 2017; Hite, 2003, 2005; Hite & Hesterly, 2001). The entrepreneur, as part of the course of establishing a value proposition, will experience a

shift in who they work with and how they engage them. At the beginning, their network activity will consist primarily of socially-embedded, identity-based interactions. As their business develops, however, they will incorporate more arm's-length and instrumental relationships. Hite and Hesterly highlight two other shifts that occur in parallel with these changes: relationships will shift from reflecting cohesion to brokerage and from path-dependence to intentional management (2001).

The work of Balagopal Vissa and various co-authors helps further establish the nature and implications of dynamicity in entrepreneurial networks (Vissa, 2012; Vissa & Bhagavatula, 2012; Vissa & Chacar, 2009). Vissa and Chacar observe that the value of networks is not a given: positive effects of network activity are contingent on strategic alignment and context-specific cohesion (2009). Vissa and Bhagavatula investigate the role of network churn throughout the entrepreneurial process (2012). Churn refers to the changing composition of an entrepreneur's network due to the incoming and outgoing of network participants. How quickly one's network evolves and to what effect depend on their chosen methods and purposes in networking activity. Their treatment of churn and its effects reinforces a perspective of networks as alive and responsive to entrepreneurial decision-making.

Researchers have acknowledged, often in passing, that the application of social capital requires significant effort but have yet to consider the nature and effects of such costly behaviors directly. Adler and Kwon admit that "building social capital requires considerable investment in establishing and maintaining relationships, and, as with any expensive investment, social capital investment may not be cost efficient in certain situations" (Pg. 30, 2002). Hallen et al., point out that "[network] actions… may often entail high costs and efforts" (P. 42, 2020), and Vissa and Bhagavatula emphasize significant efforts needed to manage churn (2012). While

hinted at, we have yet to connect the dots between these networking costs and the strategic choices of entrepreneurs.

Where transaction cost economics (briefly discussed in the next section) explain so much about market interactions and strategic decision making, a gaping hole remains in our understanding of entrepreneurial interaction costs in social environments. We know the risks and costs of financial-transactive relationships, but we haven't accounted for those of a social-collaborative nature. Our understanding of pre-firm strategy is the victim of this omission. This dissertation, particularly the first chapter, takes initial steps in closing this specific, yet crucial knowledge gap.

Transaction Cost Economics

Transaction cost economics, in the tradition of Williamson and Coase (Coase, 1937; Williamson, 1981, 1993), is frequently referenced throughout this dissertation and requires a brief introductory treatment here.

Ronald Coase is considered the father of the field of transaction cost economics. In his seminal paper "The Nature of the Firm," Coase argued that firms exist because the costs of using the market to coordinate economic activity—such as the work necessary for gathering information, searching for appropriate partners, and negotiating contracts—can be higher than the costs of organizing the same activity within a firm (1937). These costs are known as transaction costs. The structure of efficient economic activity, therefore, depends on a comparison of transaction costs across potential contexts and means.

For example, an entrepreneur with a deep and abiding love for ornithology might want to build birdhouses. At first, she hires her next-door neighbour to cut the wood and glue the initial frame. While it didn't take much searching, this crotchety craftsman insists on renegotiating every new request, and she spends considerable time haggling him down to a

reasonable rate. Eventually, she realizes it would be cheaper to hire him, or someone more pleasant, as an employee and pay a standard, hourly rate. This choice is called verticalization—an internalization of productive capacity from the marketplace to the core functionality of the firm. Her little birdhousing venture doesn't need to approach the marketplace any more to cut wood: her own employee can do it and save time negotiating.

According to Oliver Williamson, responsible for establishing transaction cost economics as a field, these transaction costs are the costs associated with establishing and enforcing contracts and property rights and can be classified into three main categories:

- *Search and information costs:* These include the costs of searching for potential collaborators, as well as the costs of obtaining and processing information about product quality, market conditions, and potential alternatives.

- *Bargaining and decision costs:* These include the costs of making decisions about which partners to work with and how, as well as the costs of negotiating and reaching agreements with potential partners.

- *Enforcement and monitoring costs:* These include the costs of enforcing contracts and property rights, as well as the costs of monitoring partners to ensure that they are fulfilling their contractual obligations.

Williamson argued that these transaction costs can be a significant barrier to efficient market operation and can lead to the development of specialized firms, long-term relationships between buyers and sellers, and other institutional arrangements that help to mitigate these costs (Klein & Sykuta, 2010; Williamson, 1981, 1993).

The choice of how to deal with transaction costs depends on the nature of the transaction in question. The frequency of transaction, the specificity of the asset at play (how unique the asset), the bounded rationality of participants, the potential for opportunism, and uncertainty all work together to determine how much risk there is in a particular transactive context (Klein & Sykuta, 2010; Williamson, 1981, 1993). Just the risk of transactive missteps or opportunism is enough to force entrepreneurs to pre-empt or compensate for these risks. No degree of contracting can fully mitigate transaction risks (there are no perfect contracts), and some degree of contractual ambiguity may be necessary for effective collaboration (Bernheim & Winston, 1988; Macaulay, 1963; Ozmel, Yavuz, Reuer, & Zenger, 2017; Poppo & Zenger, 2002).

Having reviewed perspectives on pre-firm entrepreneurial activity and uncertainty, social capital and networks, and transaction cost economics, we are now prepared for the main event. The following three chapters form the body of this dissertation and are followed by a brief, conclusive discussion of wider implications.

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Chapter 1

Interaction Cost Economics: The Strategic Costs of Social Capital in Pre-firm Entrepreneurship

ABSTRACT

Extant research has clearly demonstrated the value of social networks in nascent entrepreneurship. However, it has yet to fully articulate the costs and social factors that shape entrepreneurial network engagement. Recent work on network maintenance, churn, and recalibration hints at, but fails to fully specify or contextualize, significant entrepreneurial efforts and costs related to the use of social capital. This paper takes first steps in outlining the microfoundations of "interaction costs" related to entrepreneurial networking and collaboration. It presents an anatomy of an entrepreneurial network interaction inclusive of the costly behaviors necessary to initiate, maintain, and rest network interactions. Nascent entrepreneurial networking is shown to incur unique interaction costs that remain unaddressed in entrepreneurial search and transaction cost paradigms. Entrepreneurial social networks are presented as a context typified by scarcity, diverse institutional logics, and a thin boundary between the entrepreneur's personal life and business efforts. Entrepreneurs must therefore engage in costly behaviors to actively manage social risks and maintain relationships conducive to entrepreneurial collaboration. We conclude by discussing how such costs may shape early strategy, entrepreneurial cognition, and risk perception, and lead to heterogenous outcomes in the time spent in nascent stages, the scale of the firm, and the likelihood of failure.

Keywords: Conceptual; networks and social capital; new venture formation; strategy

1.0 INTRODUCTION

The earliest stages of entrepreneurship are often typified by a founder's efforts to engage social resources in initiating economic value (Maurer & Ebbers, 2006; Davidsson & Honig, 2033). Incipient, ambiguous entrepreneurial stages are often poorly suited to the accrual and use of financial capital which generally require a more mature and demonstrable value proposition (Alvarez & Barney, 2005; Fisher, Stevenson, Neubert, Burnell, & Kuratko, 2020). Entrepreneurs, therefore, must often employ social capital to activate and engage networks in conceptualizing, contextualizing, and substantiating their evolving value proposition (Adler & Kwon, 2002; Obstfeld, Ventresca, & Fisher, 2020; Alvarez & Barney, 2005; Arikan, Arikan, & Koparan, 2020). Social capital and networks are thus critical to would-be founders (Hite & Hesterly, 2001; Perry-Smith & Mannucci, 2017).

While extant research has demonstrated the value of social networks in early entrepreneurial processes, it has yet to fully acknowledge or articulate the costs and social risks that limit and determine the nature of network engagement (Clough, Fang, Vissa, & Wu, 2019; Hallen, Davis, & Murray, 2020; Kwon & Adler, 2014). Network support is often presented as something close to a given—an entrepreneur's network structure is often equated with the resources or labor it could potentially facilitate without considering the agency and social processes necessary to bring such support about (Adler & Kwon, 2002; Clough et al., 2019; Hallen et al., 2020). "Friends, families, and fools," as a common example, is a shorthand for early funds divorced from rigorous economic consideration and are largely assumed to be available somewhere in an entrepreneur's accessible network. The nodes and edges that make up an entrepreneur's network are regularly conceptualized as a roadmap laden with resources and nascent strategy as primarily an exercise in search (Adler & Kwon, 2002; Aldrich & Kim, 2007; Clough et al., 2019). While the network and entrepreneurship literature increasingly acknowledges that networks must be activated (Mannucci & Perry-Smith, 2022; Nai, Lin,

Kotha, & Vissa, 2022; Zott & Huy, 2007), maintained (Blatt, 2009; Casciaro, Gino, & Kouchaki, 2014), and recalibrated (Perry-Smith & Coff, 2011; Perry-Smith & Mannucci, 2017), they fail to actively factor or articulate the costs of such behaviors.

By failing to consider the role of scarcity, agency, and costs in converting social capital into entrepreneurial and economic ends, we hamper our ability to see the factors that drive nascent strategy (Clough et al., 2019). Social interactions, like market transactions (Coase, 1937; Williamson, 1981), require a unique set of costly behaviors to maintain inertia and reduce risk (Casciaro, Gino, & Kouchaki, 2014; Adler & Kwon, 2002). While the application of transaction cost economics has advanced our understanding of the strategic foundations of the firm, we lack a systematic consideration of the costs using social capital, the "interaction costs", that may drive nascent strategy.

A thorough understanding of the nature and effects of interaction costs is key to solving a few important puzzles in pre-firm entrepreneurial contexts. Perhaps most pressingly, interaction costs have the potential to illuminate the nature and causes of failure in the very earliest entrepreneurial stages (Bennett & Chatterji, 2019). Early processes are dependent on social capital, and understanding its limits in dynamic entrepreneurial environments may be key to pulling pre-firm failure out of obscurity (Davidsson & Honig, 2003; Dimov, 2010). Relatedly, while there has been much attention to post-firm explanations of gendered and social differences in entrepreneurial outcomes (Ahl & Marlow, 2012; Henry, Foss, & Ahl, 2016), there is good reason to believe that the gap is best explained when and where social issues are most salient. In pre-firm stages, the entrepreneur and enterprise are often conflated and social resources are paramount (Alvarez & Sachs, 2021; Davidsson & Honig, 2003). Marginalized entrepreneurs are likely to experience interaction costs in network environments of different natures and magnitudes, transforming the pre-firm strategic landscape. Additionally, conceptualizing interaction costs may help in determining distinct pre-firm stages (McMullen

& Dimov, 2013), understanding how entrepreneurs choose between social and financial capital (Clough et al., 2019), and rendering pre-firm strategic choices more accessible empirically by highlighting new strategically-relevant phenomena (Bennett & Chatterji, 2019; Felin & Knudsen, 2012).

This paper aims to take the first steps in articulating the foundations of interaction costs and outlining their instantiation across the entrepreneurial networking experience. It proceeds as follows. First, we discuss salient definitions and our current understanding of risks and costs inherent to entrepreneurial network environments. We emphasize a subtle tension in the entrepreneurship literature's operationalization of social capital and identify where network costs have been implied but left unfactored in discussions of nascent networking. Transaction cost lenses are considered as a useful starting point but unsuitable substitute for a socially-situated framework. Next, we describe entrepreneurial networks as a social context of interaction and exchange, highlighting the role of scarcity, diverse institutional logics, and the thin boundary between the entrepreneur's personal life and business efforts. These factors lead an entrepreneur to necessarily engage in costly relationship and risk maintenance efforts. We then present an anatomy of an entrepreneurial interaction inclusive of relevant interaction costs to be used in future research, considering the costly behaviors necessary to initiate, maintain, and put to rest entrepreneurial network interactions. We conclude by discussing the implications of interaction cost economics on nascent strategy, the representation of founders from marginalized social groups, and the firm boundary. We discuss how interaction costs may shape entrepreneurial cognition (Baron, 2007; Shea, Menon, Smith, & Emich, 2015), risk perception (Arikan et al., 2020; Camerer & Lovallo, 1999; Dimov, 2010), and agency (Hallen et al., 2020; Nai et al., 2022; Vissa, 2012), and lead to heterogenous outcomes in the time spent in nascent stages, the scale of firm, and the likelihood of failure.

2.0 A REVIEW OF EXTANT RESEARCH

2.1 Definitions and Boundaries

To begin, it is useful to establish the scope of this paper and a few key definitions. While sharing several key terms and concepts with papers that seek to do so, the purpose of this paper is not to explore the well-trod ground of network governance as it relates to the theory of the firm and transaction cost economics (Jones, Hesterly, & Borgatti, 1997). This work has been useful in establishing the efficiency of social structures in organizing transaction and exchange between established firms (Poppo & Zenger, 1998, 1998; Zenger, Felin, & Bigelow, 2011). In contrast, we deal primarily with pre-firm, entrepreneurial network collaborations and seek to understand networks, not as a work-around to the problems of markets and hierarchies, but as an environment dealing with its own determinative costs and scarcity. Network dynamics also exist in markets and firms (Battilana & Casciaro, 2012; Bell, 2005; Dhanaraj & Parkhe, 2006; Hallen & Eisenhardt, 2012; Ozcan & Eisenhardt, 2009), but this paper specifically deals with early, pre-firm network exchanges conducted by an entrepreneur. These exchanges transact primarily on social capital as opposed to financial or other forms of capital.

This paper is concerned with entrepreneurial network interactions, which we define as social exchanges between an entrepreneur and one or more network actors that are initiated or instrumentalised by the entrepreneur with the purpose of furthering their enterprise (see also Davidsson & Honig, 2003; Engel, Kaandorp, & Elfring, 2017; Bardis, 1979). This definition borrows from sociological characterizations of social interactions—these interactions are made possible by engaging the social capital between the entrepreneur and participants (Adler & Kwon, 2002; Burt, 1997, 2000; Granovetter, 1973), are focused and intentional (Goffman, 1961), and may refer to a one-off communication or an ongoing relationship (Bardis, 1979). While both parties may not acknowledge identical purposes in interacting, active

entrepreneurial intent separates these interactions from less instrumental, quotidian social interactions (Elfring & Hulsink, 2019).

By pre-firm, we mean the incipient entrepreneurial activities that pre-date the establishment of an entrepreneurial firm. Ontologically, the establishment of the firm occurs across dimensions of practice (e.g., dedicating money to the business entity or hiring personnel), perception (e.g., establishing an enterprise name and branding), and legal distinction (e.g., registering an LLC) (Townsend et al., 2018; McMullen & Dimov, 2013). For simplicity, we summarize the establishment of a nascent firm as the point when the enterprise and entrepreneur(s) are no longer conflated by stakeholders, a distinction we borrow from the work of Alvarez and Sachs (2021; see also Dimov, 2010). In other words, when stakeholders can relate and interact with the entrepreneurial firm in a way that is distinct from relating and interacting with the entrepreneur, we consider a firm to be established.

While entrepreneurs will face risks and costs in networking interactions well after the firm is established, this paper focuses on the pre-firm stages when 1) social capital and networks are particularly critical to early entrepreneurs, and 2) costs and risks are most likely to have a personal impact on the entrepreneur. High uncertainty makes it difficult for pre-firm entrepreneurs to access and commit financial resources or engage market actors, such that they must rely on social capital in ways they are unlikely to in post-firm stages (Alvarez & Barney 2005; Alvarez & Sachs, 2021; Hite, 2005). Since the enterprise and entrepreneur are conflated and mutually defined in pre-firm stages, the risks and costs of pursuing the entrepreneurial venture are often experienced directly by the entrepreneur (Alvarez and Sachs, 2021; Dimov, 2010).

This paper generally uses the example of a single entrepreneur to illustrate the core concepts and framework. While firms are often established by the coordinated efforts of multiple founders, we focus in on a single actor for the sake of simplicity and because the

presence of co-founders is unlikely to preclude network interactions and interaction costs (for similar treatment see Elfring & Hulsink, 2007; Engel et al., 2017; Vissa & Bhagavatula, 2012).

2.2 Entrepreneurial Networking and Networking Costs

Networks have been shown to be key in nascent stages, providing the foundation for the accrual of emotional support (Hite, 2003; Hite & Hesterly, 2001), idea generation (Perry-Smith & Coff, 2011; Perry-Smith & Mannucci, 2017; Tocher, Oswald, & Hall, 2015), opportunity discovery and rationalization (Alvarez, Barney, & Anderson, 2013; Cornelissen & Clarke, 2010), mentorship and advice (Nebus, 2006; Vissa & Chacar, 2009), legitimacy (Fisher, 2020; Fisher, Kotha, & Lahiri, 2016), expertise (Grimes, 2018; Hite & Hesterly, 2001), financial resources and investment (Ferrary & Granovetter, 2009; Hallen, 2007; Hallen & Eisenhardt, 2012; Huang & Knight, 2017), institutional support and inertia (Felin & Knudsen, 2012; Marti & Gond, 2018; Pahnke, Katila, & Eisenhardt, 2015), partnerships (Milanov & Shepherd, 2013; Ozcan & Eisenhardt, 2009), and competitive advantage (Rindova, Ferrier, & Wiltbank, 2010; Santos & Eisenhardt, 2009). In a nascent, ambiguous environment poorly suited to financial capital and market engagement, social capital and networks are critical to would-be founders (Townsend et al., 2018). Network interactions carry out many of the same functions in early stages as market transactions will in later stages (Clough et al., 2019; Tocher et al., 2015).

While there has yet to be a systematic consideration of interaction costs, they do play a role in extant entrepreneurship and related literature. Networking behaviors have been shown to come with significant social and psychological consequences (Casciaro et al., 2015a, 2014; Casciaro & Lobo, 2015). Networking affects self-perception and is highly involved with social conceptions of reciprocity and fairness (Adler & Kwon, 2002; Blatt, 2009). Social networking for economic purposes can, under certain circumstances, leave networkers feeling self-conscious, immoral, or "dirty" (Casciaro et al., 2014). Networking is a time-consuming

process; Fischer and Reuber (2011) show that entrepreneurs calculate their "perceived time affordability" to put limits on the costly practice of seeking new ties on social media channels. Recent research shows that networking involves significant efforts to discern social cues and incentivize connection (Engel, Kaandorp, & Elfring, 2017; Huang & Knight, 2017). Efforts to overcome network "churn" (Vissa & Bhagavatula, 2012) and satisfy reciprocal expectations (Fang, Chi, Chen, & Baron, 2015) are recognized as important factors in network management.

Most commonly, interaction costs are not directly addressed but implied throughout entrepreneurial literature. Perry-Smith and Mannucci (2017) explain how entrepreneurs must recalibrate their network to accommodate evolving creative needs. They posit that between each idea-development stage (e.g. ideation and championing), an entrepreneur must activate a different part of their network and put to rest their current connections in order to capitalize on the now salient advantages of one network group and avoid the pitfalls of the other. While acknowledging that this network overhaul will take significant effort, their framework falls short of explaining how exactly such practice will incur costs or what the effect will be. Research on gender and entrepreneurship points to the additional, socially-imposed burdens women face in investing and partnering negotiations, and we can reasonably expect similar costs to permeate much of their network experience (Ahl, 2006; Woehler, Cullen-Lester, Porter, & Frear, 2021). Entrepreneurship research often mentions requirements to networking, such as maintaining legitimacy (Fisher, 2020, 2020; Fisher et al., 2016), search (Baker & Nelson, 2005; Obstfeld, Ventresca, & Fisher, 2020; Renko, Shrader, & Simon, 2012; Simon, 1956), signalling (Fisher et al., 2020; Younger & Fisher, 2020), and negotiation (Huang & Knight, 2017; Zott & Huy, 2007) often without acknowledging how the known costs of such activities play a role in the overall experience.

In general, researchers are happy to acknowledge in passing that interaction costs exist without seriously considering their nature or import. In a recent review of entrepreneurial

networking, Hallen, Davis and Murray point out that there is a clear trend towards viewing networks as epiphenomena of entrepreneurial agency and action and casually suggest that "such actions… may often entail high costs and efforts" (P. 42, 2020).

2.3 Bringing the Social Back In

It is worth noting that in these examples and the literature more broadly, network involvement is often characterized as an entrepreneurial task among many as opposed to the context for most entrepreneurial tasks. These approaches, by default, frame the network environment as generic roads and resources, obfuscating the norms, costs, behaviors, and cognitions that typify the social exchanges therein (Adler & Kwon, 2002; Fang et al., 2015; Feldman, 2004). Work like that of Casciaro and colleagues reminds us that the entrepreneur is not a miniature firm navigating a network map but rather a person, with both social and economic values, navigating a primarily social world (Casciaro et al., 2015a, 2014; Casciaro & Lobo, 2015; Feldman, 2004; Tocher et al., 2015).

The encroaching myopia with which we consider the social context of early entrepreneurial efforts follows closely with an emphasis on social capital as opportunities as opposed to obligations. In 2002, Adler and Kwon reviewed a long list of definitions of social capital, reflecting conceptual ambiguity that is not fully resolved two decades later. The most common conceptualization and use of social capital in the entrepreneurship literature follows closely with Burt's original definition: "friends, colleagues, and more general contacts through whom you *receive opportunities* to use your financial and human capital" (Burt 1992, p. 9, emphasis added). Social capital, tightly coupled with search, is often just a reference to the structure of relationships that surround an entrepreneur from which they can (passively) receive opportunities. This structural focus has drifted somewhat from Bourdieu's original suggestion that social capital is "made up of social *obligations* ('connections'), which is *convertible*, in

certain conditions, into economic capital" (Bourdieu 1986, p. 243, emphasis added). Note the difference in the implied entrepreneurial action: Burt's entrepreneurs *receive* while Bourdieu's *convert*. A conception of convertible, reciprocal obligations implies the presence of costs, risks, and limits that a focus on structural considerations may easily ignore. Crucially, a return to social capital as obligations reintroduces the social-interactive dimension—both the accrual and use of social capital involve socially facilitated, involved (read: costly) interactions and exchanges with network participants (Engel et al., 2017; Feldman, 2004; Huang & Knight, 2017; Obstfeld et al., 2020; Vissa, 2012). Network nodes do not represent static opportunities; they are people (ambiguously related and reliable to varying degrees) who expect something in return from those they interact with.

Ultimately, while Adler and Kwon acknowledge the social content, context, and contingencies of network activity, their continued emphasis on structure (embeddedness, brokerage, etc.) and "effects" or resources (information, influence, etc.) perpetuates a persistent focus on opportunities and obscures the inherent costs of network activity (Kwon & Adler, 2014). Their conception of social capital risks revolves around information transfer and efficiency with only a passing admission that "building social capital requires considerable investment in establishing and maintaining relationships, and … social capital investment may not be cost efficient in certain situations" (pg. 31, 2002).

2.4 From Transaction to Interaction Costs

In directly acknowledging the interactive and costly elements of network participation, we enable the application of economic perspectives to the messy world of pre-firm entrepreneurship. Transaction cost economics (TCE) provides a powerful corollary (Coase, 1937; Poppo & Zenger, 2002; Williamson, 1981). In market contexts, transaction cost economics demonstrates that while exchange is unavoidable, the costs of exchange can be

mitigated by the strategic internalization of capacities and the careful application of contracts (Williamson, 1981). Instead of taking the organization and arrival of firms for granted, TCE reveals the strategic drivers and patterns at the nexus of firms and markets, initiating and empowering myriad lines of inquiry and analysis (Poppo & Zenger, 1998; Zenger et al., 2011). Fully articulating the costs of pre-firm network interaction is the first step in introducing an interaction cost economics to the early entrepreneurial environment.

Additionally, previous work on transaction costs grants a starting point in thinking about many of the costs associated with network interaction. Many of the costs of engaging market participants in financial transactions are held in common with socially facilitated network collaborations, but the disparate institutional contexts also provide a means of determining what is unique to socially facilitated interactions (Fang et al., 2015; Shea et al., 2015; Tocher et al., 2015; Williamson, 1993). In both cases, for example, entrepreneurs must engage in costly search and negotiation behaviors as well as manage the opportunity costs of collaboration (Engel et al., 2017; Ozmel, Yavuz, Reuer, & Zenger, 2017). Yet the means, and thus the associated costs, of gathering and prioritizing information as well as bounding, monitoring, and enforcing collaborations are likely to differ dramatically.

Transaction costs thus provide a useful comparison but not an appropriate substitute for our understanding of the nature and effects of network interaction costs in pre-firm entrepreneurial environments. Scholars have long acknowledged that transaction cost perspectives, which best describe dyadic, opportunistic financial exchange, often overlook social factors and processes (Uzzi, 1997; Williamson, 1993). Work that has considered transaction costs in terms of social factors like embeddedness largely maintains a focus on the firm as the focal entity, market exchange as the focal practice, and profitability or competition as the focal outcomes (Elfenbein & Zenger, 2017; Gnyawali & Madhavan, 2001; Uzzi, 1997)—circumstances that have yet to fully feature in pre-firm stages. To better understand pre-firm

strategy, we need a language of interaction costs relating a socially situated entrepreneur (identified relationally as opposed to institutionally by alters), the use of social capital, and nascent entrepreneurial outcomes.

2.5 Summary

The context of pre-firm entrepreneurial activity is often, by necessity, social networks. At this stage, the entrepreneur and firm are conflated (Alvarez & Sachs, 2021; Fisher et al., 2020), a situation precluding a formal, resourced organization's options to internalize or avoid costly exchanges. While extant entrepreneurship research both acknowledges some efforts and costs to networking and implies numerous others, it lacks a systematic consideration of the nature and effect of interaction costs. In conceiving of networking as just another entrepreneurial task (as opposed to a context of exchange) and in simplifying social capital into structural opportunities, the current literature has masked the inherent risks, costs, and uncertainties of network interaction. Articulating these costs can facilitate fruitful economic considerations of pre-firm activity. In the same way transaction costs drive the internalization of firm capabilities (Klein & Sykuta, 2010), the social costs of network exchange in incipient stages may shape strategic choices and drive a transition in entrepreneurial means. To date, the entrepreneurship and strategy literatures have borrowed the fundamental key insights from the original, sociological perspective on network dynamics (Burt, 2000; Granovetter, 1973) without integrating them with our most powerful economic lenses.

Research to date has yet to sufficiently 1) describe the microfoundations of interaction costs in entrepreneurial networking, 2) provide a systematic framework of costs related to network interactions, or 3) establish how interaction costs may shape pre-firm strategic choices. The following sections attempt to provide a theoretical foundation for a consideration of interaction cost economics by making first steps toward these goals.

3.0 INTERACTION COSTS: MICROFOUNDATIONS

This section presents the microfoundations for interaction costs in nascent entrepreneurship and the following section provides a framework of those costs to be used in future research. The nascent entrepreneurial network is shown to: 1) directly relate to the personal life of the entrepreneur (introducing personal and social risk), 2) be bound by scarce resources (necessitating exchange), and 3) be institutionally diverse (requiring an active facilitation of interaction or exchange). These three factors render the entrepreneurial instrumentalization of networks costly in ways that differ significantly from the transaction costs experienced in market contexts. By considering the costs associated with social risk and relationship maintenance (interaction facilitation) in nascent entrepreneurial networking, we can present an initial framework of the costs of initiating, maintaining, and resting network interactions.

3.1 The Pre-firm Entrepreneurial Network Environment

3.1.1 ***The blurry boundary between early entrepreneur and enterprise*** To begin to understand the nature and effect of interaction costs in pre-firm or nascent entrepreneurial contexts, it is important to first specify to whom and in which context such costs are incurred. As we shall see, a careful consideration of pre-firm activity demonstrates that the entrepreneur, often alone and under-resourced, must directly bear and manage the costs of early enterprising activity and that the context in which these costs are brought about is largely the same context as the entrepreneur's personal life.

Before a firm is organized by legal distinction, recruitment, and/or outside resourcing, the boundary between the entrepreneur's personal life and the enterprise is often weak or non-existent (Alvarez, Barney, & Anderson, 2013; Alvarez & Sachs, 2021). At an ontological level, the incipient firm exists first in the mind and efforts of the entrepreneur and stakeholders, and, as a result, the entrepreneur is the avatar by which the local environment engages with the firm

(Alvarez & Sachs, 2021; Fisher et al., 2020). Enterprising develops as a socially enacted phenomenon in a specific social context (Obstfeld et al., 2020; Tocher et al., 2015) and—while market institutions and legal distinctions will eventually partially de-personalize and de-socialize formal organizational activity—there is little refuge for entrepreneurs hoping to avoid any personal cost and risk that may come from engaging network participants (Engel et al., 2017; Ucbasaran et al., 2013).

Examples of the tenuous personal-business boundary in nascent stages are numerous and well-documented across the literature. Entrepreneurs often leverage their own personal assets, upending their financial situation, to keep the business afloat (Shepherd, Wiklund, & Haynie, 2009). The identity of the entrepreneur and the business are often inexorably enmeshed such that business failure is often experienced as personal failure and disgrace (Shepherd, 2022; Shepherd et al., 2009; Ucbasaran, Shepherd, Lockett, & Lyon, 2013). Importantly, the personal social context of the entrepreneur, including a lifetime's worth of family, friends, and acquaintances, not only becomes an important resource for, but the veritable center of, their enterprising activity (Davidsson & Honig, 2003; Hite, 2005; Smith, Smith, & Shaw, 2017; Stam, Arzlanian, & Elfring, 2014).

The biases and challenges experienced by the entrepreneur will thus directly affect the firm's trajectory, and the costs incurred by enterprising activity are experienced and dealt with directly by the entrepreneur (Butts, Becker, & Boswell, 2015; Casciaro et al., 2014; Goss & Sadler-Smith, 2018). Factors in the entrepreneur's personal life, otherwise unrelated to the budding business, can shape strategy, divert resources, and even arrest enterprising efforts indefinitely. For example, if a solo entrepreneur must assume full-time family caretaking responsibilities while in pre-firm stages, there is no infrastructure to keep entrepreneurial efforts alive in their absence. Likewise, factors related to the business (e.g., debt, identity, time,

mental health) directly spill over to the entrepreneur's personal experience (Byrne & Shepherd, 2015).

3.1.2 ***Ego and alter scarcity*** To understand the origins of interaction costs, it is useful to understand the focal scarcities that shape socially-facilitated network exchanges. Economics at its core is a study of human reactions to scarcity—any exchange, whether facilitated by social or financial capital, is in some ways a response to underlying scarcity (Cook, Cheshire, Rice, & Nakagawa, 2013). While the price mechanism succinctly summarizes many focal scarcities in a market transaction or collaboration (e.g., "my scarce time is available to you at $60/hr"), network interactions lack an indicator as sophisticated in initiating interaction and embodying participants' experiences with scarcity. While network participants generally have some degree of imperfect information about their potential collaborators' situations, the communication and coordination around scarcity incur costs above and beyond the costs of exchange or risks of engagement.

It is worth emphasizing again that, while network-level scarcity is implied in entrepreneurial networking literature, networks are often instrumentalized in ways that render interaction-level scarcity theoretically inert (Adler & Kwon, 2002; Hallen, Davis, & Murray, 2020). When networks are conceptualized as static structural phenomena, network resources described as givens, or the requisite effort and cognition that underpin entrepreneurial network action left unaccounted for, the determinative scarcities inherent in network interaction are divorced from the strategic purview of entrepreneurial activity (Clough et al., 2019). The messy, costly nature of network interaction is too often sterilized before it is used to undergird more abstracted behaviours like resource search or ideation (Aldrich & Kim, 2007; Perry-Smith & Mannucci, 2017). Thus, we directly consider the following scarce factors which must be accommodated in a network interaction without the benefit of a focal ambiguity-reducing indicator (like price):

First, the attention of social network participants is scarce, and shared meanings must be introduced and maintained to provide a foundation for network interaction. Far from static resources, network participants have dynamic and limited attention that interact with entrepreneurial needs variously (Feldman, 2004). Unlike market contexts, where the mutual economic attention and intentionality of buyers and sellers are largely a given, an entrepreneur's network context is shaped by shared social meanings and intentionality often separate and distinct from their enterprising efforts (Adler & Kwon, 2002; Casciaro et al., 2014; Engel et al., 2017; Kwon & Adler, 2014). Markets facilitate a complex orchestration of shared meanings such that by the time buyers and sellers interact, direct action is already primed. Entrepreneurs in network settings must wrangle, often on an individual basis, the disparate attentions of their network contacts and actively introduce network participants to their enterprise and specific needs (Mannucci & Perry-Smith, 2022; Nai et al., 2022; Shea et al., 2015). Even when the social context provides a useful foundational expectation (e.g. an entrepreneurship community group), the specific "ask" related to that network participant and their enterprise must be established.

Second, the time and resources of network participants are scarce. An entrepreneur cannot request unending and extensive participation in their fledgling venture from even their closest and most devoted family and friends (Casciaro et al., 2014). Each individual node on a network graph represents individuals dealing with personal scarcity and each edge includes the often unspoken but very real limits of how far their connection can impinge on their allocation of mental and emotional resources.

Third, the social capital an entrepreneur can use to engage network participants is scarce. The mutual understandings and obligations that allow an entrepreneur to request participation from network participants, while often somewhat ambiguous and negotiable, are not boundless (Blatt, 2009; Bourdieu, 1986, 1993; Casciaro et al., 2014). Even, and on some

levels especially, among our closest friends and family, there are no "blank check" relationships. Further, the entrepreneur only has a limited set of relationships at any given time in which some degree of social capital can meaningfully be ascribed (Burt, 1997, 2000). Both the development of additional social capital (either with existing or new network contacts) as well as its activation are costly processes requiring time and effort (Adler & Kwon, 2002; Hallen et al., 2020).

Fourth, the attention, time, emotional bandwidth, social clout or reputation, stamina, and other pertinent resources of the entrepreneur are scarce. Entrepreneurs do not have the skills and resources necessary to do everything on their own, and the resources they will need to cover the costs of getting compensatory help are limited (Obstfeld, Ventresca, & Fisher, 2020).

As we shall see, acknowledging the inherent scarcities that typify network interactions is critical because, from the perspective of the entrepreneur, the hypothetical value of a particular network connection to the enterprise is contingent on a costly process to be carried out by the resource-limited entrepreneur. This process involves multiple layers of subtle negotiation over scarce resources (Simmel, 2004). Network participants, fighting their own battles with scarcity, must receive something in exchange for their efforts on the entrepreneur's behalf (e.g., reciprocity, reinforced group identity, or the cognitive-emotional benefit of altruism (Bloch, Genicot, & Ray, 2007)). By conflating each network connection with the limited resources they could hypothetically provide the entrepreneur (e.g. family and friends are represented as the money, advice, or moral support they could provide), we fail to account for scarcity in social contexts and the effort necessary to initiate, maintain, and put to rest socially-facilitated interactions.

3.1.3 ***Networks are institutionally diverse and relationships ambiguous*** Since an entrepreneur's social network emerges and is maintained through a wide variety of both

purposeful and incidental interactions (Adler & Kwon, 2002; Burt, 2000; Shea et al., 2015), the nature and intention of a given interaction is often initially ambiguous. Many network relationships are multiplex along some dimension; relationships often hinge on multiple sources of meaning and many repeat interactions (Adler & Kwon, 2002). Church meetings, work collaborations, softball teams, and many other contexts provide the opportunity and setting for the social capital-rich relationships an entrepreneur may elect to engage. In this way, networks are institutionally diverse, and the source and nature of social capital in each relationship are often ambiguous. In other words, if an entrepreneur reaches out to a friend, it is likely initially unclear what her intentions might be, and work must be done to establish the purpose and content of an initiated interaction.

To illustrate how institutional diversity and relational ambiguity in network settings might contribute to increased risks and costs, we can compare institutional factors related to network interactions and market transactions. At their most fundamental level, markets exist as platforms in which buyers and sellers can efficiently engage in transactions (Simmel, 2004; Hayek, 2013). A client can "step up to the counter," negotiate, and purchase or withdraw without having to first establish a common vernacular or intent (Beckert, 2009). In contrast, entrepreneurs engaging their network contacts must actively invite, introduce, shape, motivate, and lead entrepreneurial collaboration, often introducing marketplace logics and phenomena to a relationship that previously existed in a completely different institutional setting (e.g., religious worship).

3.2 How Social Contexts Drive Costs

By understanding the nature of pre-firm entrepreneurial network interactions as shaped both by the relative scarcity and social context in which they are embedded, we reveal two areas in

which such interactions incur costs above and beyond the costs widely considered in market transactions.

3.2.1 Relationship establishment and maintenance First, without the facilitating qualities of market norms to engage network collaborators, entrepreneurs must initiate, negotiate, and maintain a meaningful relationship or shared understanding that connects the network participant to the interaction (Engel et al., 2017; Lounsbury & Glynn, 2001). Entrepreneurs must first recognize the potential contribution a network participant could make with their enterprise (functionally putting them on the 'network map'), and then successfully invite the potential participant to join in an emerging, collaborative relationship (Fang et al., 2015; Nai et al., 2022; Shea et al., 2015). Network participants must have a meaningful, motivating, and enduring reason to allocate their scarce attention, not just to the entrepreneur, but the entrepreneurial endeavours they are intended to be a part of.

Social capital is often nebulous until acted upon; social capital is a store of socially-sourced value that is substantiated in observable interaction (Bourdieu, 1986; Burt, 2000). Until such behaviors are manifest, the exact nature of the understandings and obligations between an entrepreneur and their network participant remain ambiguous. On a given day and in a particular circumstance, the extent of latent, potential behaviors tied to mutual understandings may vary from other days and contexts (Adler & Kwon, 2002; Bloch, Genicot, & Ray, 2007; Burt, 1997). Thus, the salient meanings and invitations that an entrepreneur uses to engage network interaction shape and substantiate social capital in the interactive environment. By presenting a particular invitation to network participants, entrepreneurs can directly influence the context of interactions and set the stage for how social capital will be negotiated.

As a simple example, we might consider an entrepreneur who recognizes a past roommate as someone who could help her wireframe her software product. Whether and how the interaction occurs will invariably depend on the shared relational meaning that facilitates

the interaction. The entrepreneur could simply beg a favor from her friend, hoping that residual goodwill will be enough to get the help she needs. She can suggest it as an enjoyable side-project that plays to her friend's interests. She can offer something in return, from baked goods to skill sharing to money. She could explain the interaction as a potential gateway to a future partnership. Far from just marketing or selling the collaboration—actions that are associated with one-off transactions (Engel et al., 2017)—these divergent meanings shape the expectations and experience of participants and determine the type of work that will need to be done by the entrepreneur to maintain and rest the interaction if it is successfully initiated. The choice in narrative determines how much social risk the entrepreneur exposes herself to, which social circles will be referenced in case arbitration (or venting) is needed, how much can be asked, how often, and why. Each choice accesses a different set of relevant social norms complete with their own mosaic of implications (Adler and Kwon, 2002; Bourdieu, 1986).

In this way, the invoked relationship or meaning that facilitates network interactions can influence the strategy and survival of the enterprise by dictating the cost of interaction.

3.2.2 Managing social risk Second, in contrast to the largely de-personalized contexts of market exchanges, entrepreneurs must face the full brunt of any social repercussions connected to engaging network participants with their enterprise. Network participants are embedded in a web of social circumstances that cast varying light on the nature of both the entrepreneur and their enterprise (Engel et al., 2017; Shepherd & Haynie, 2011). In engaging potential contributors, entrepreneurs must deal with the way this invitation will change how they are perceived (Casciaro et al., 2014; Milanov & Shepherd, 2013; Shepherd & Haynie, 2011) lacing every potential interaction with social risk. Studies have shown that networkers will choose to connect with ties based on how socially safe the interaction seems as opposed to how useful the tie could be for their purposes (Walter, Levin, & Murnighan, 2015).

The potential for social risk manifests in three ways. First, there is risk in misinterpreting the nature of the social capital in a given relationship. By asking too much or inviting interaction in an inappropriate way, entrepreneurs face social censure (Casciaro et al., 2014). Second, there is risk in revealing one's identity as an entrepreneur. Entrepreneurship tends to be risky, caricaturized, lionized, and poorly understood in such a way that even entrepreneurs with a generally supportive network will face significant social risk (Ucbasaran et al., 2013). Entrepreneurs must deal with their network's associations with entrepreneurship broadly as well as justify or reconcile specific identities seen as conflicting in society (Lounsbury & Glynn, 2001). Third, there is risk of business failure being seen as personal failure (Shepherd & Haynie, 2011). Network participants know that the statistical likelihood of success is low (Artinger & Powell, 2016; Fisher et al., 2020), so even the potential for failure can overshadow present progress.

An entrepreneur who, among other things, identifies as a woman and a mother, for example, must deal with the associations her social circles apply to each of those identities in relation to her identity as an entrepreneur (Dy, Marlow, & Martin, 2017; O'Neil & Ucbasaran, 2016). Her ability to get the support and traction her business needs hinges not only on her being able to find relevant network contacts but also on her ability to do the work necessary to justify her identity as an entrepreneur to a society that clings to masculine conceptions of an entrepreneur. Her success may depend on persevering despite rejection from peers who make value judgements about her capability or commitment to motherhood. The cost-benefit analysis of each potential interaction may differ dramatically when compared to the same network connections initiated by her male colleagues. Entire swaths of her network may become either inaccessible or not worth the effort for reasons utterly disconnected to descriptive network factors (structure, multiplexity, etc.) or the potential economic value she seeks to carry out.

Thus, managing social risk becomes a time-intensive, costly process. The currency for such work tends to be emotional energy, mental space, and time (Byrne & Shepherd, 2015; Casciaro, Gino, & Kouchaki, 2014; Casciaro & Lobo, 2015; Kuwabara, Hildebrand, & Zou, 2018). Each interaction must be carefully managed to decrease the potential for negative social externalities. Careful weighing of social risk is not just necessary because living in a world of social rejection is unpleasant but because the business is dependent on healthy social networks and future network collaborations (Hite & Hesterly, 2001; Obstfeld, Ventresca, & Fisher, 2020). The fate of the enterprise may well hang on a particular connection or future introduction.

Table 2 provides a basic framework summarizing the microfoundations of interactions costs. It shows how network scarcity, entrepreneur-enterprise conflation, and institutional diversity in the pre-firm entrepreneurial network environment necessitate costly activity around the mitigation of social risk and the establishment of operable relationships. It includes two examples for each microfoundation describing interactions with a relative and co-worker.

Microfoundations of Interaction Costs	**Costly Outcomes (Social Risk and Relationship Establishment)**	**Example**
Network Scarcity (Adler & Kwon, 2002; Bloch, Genicot, & Ray, 2007; Casciaro, Gino, & Kouchaki, 2014; Hayek, 1945; Simmel, 2004)	Since the attention, time and resources of both the entrepreneur and network participants are scarce, and since their relevant social capital is limited, entrepreneurs must engage in costly negotiations and reciprocal behaviors to activate social capital for their enterprise.	A relative with limited time must be coaxed over months into helping design an early prototype. Asking a co-worker for advice on venture precludes using that limited social capital for job promotion.
Entrepreneur-Enterprise Conflation (Alvarez & Sachs, 2021; Davidsson & Honig, 2003; Dimov, 2010)	Since the entrepreneur is the avatar of their enterprising efforts, they are exposed to personal and social risk in engaging their network in enterprising activity and must work to mitigate these risks.	Asking a relative to engage in prototype design affects the family dynamics negatively and invites censure from risk-averse relatives. Asking a co-worker for advice on venture results in them being perceived as not prioritizing their work for organization.
Institutional Diversity (Beckert, 2003, 2009;	Since the institutional context doesn't facilitate clear entrepreneurial asks and leaves	Asking relative for help with business design is perceived as abuse

Casciaro, Gino, & Kouchaki, 2014; DiMaggio & Powell, 1983)	room for relational ambiguity, entrepreneurs must work to establish and maintain an operable relationship, as well as mitigate the social risk of initiating unwanted relationships.	of family connection for economic gain. Entrepreneur intentionally engages in multiple conversations to feel out the reaction of a co-worker and prime them for help unrelated to their workplace.

Table 1: The Microfoundations of Interaction Costs in Pre-firm Entrepreneurial Environments

4.0 INTERACTION COSTS: INTERACTION INITIATION, MAINTANENCE, AND RESTING

4.1 Anatomy of an Entrepreneurial Interaction

Having established the costly nature of networks as an environment for nascent entrepreneurial activity, we can now systematically consider the individual behaviors in which these costs are substantiated or managed. Each of the behaviors discussed in this section helps explain how entrepreneurs deal with social risk and relationship maintenance in nascent entrepreneurial networks. To help fill a critical gap in extent literature on entrepreneurial networking, we present a more exhaustive concept of the nature or "anatomy" of a network interaction, along with the costly risk and relationship managing behaviors that accompany it. We accomplish this by reviewing key network activities both mentioned and implied across the literature through the lens of interaction costs.

Broadly, we find that a network engagement requires efforts to initiate, maintain, and rest the interaction. Since the entrepreneurship literature has leveraged network theory predominantly for a better understanding of resource accrual, most nascent networking research revolves around efforts to initiate network ties and more specifically search efforts (Aldrich & Kim, 2007; Burt, 2000; Clough, Fang, Vissa, & Wu, 2019; Simon, 1956; Vissa, 2012). Less, but significant work has gone into how the entrepreneur invites or fosters participation (Aldrich & Kim, 2007; Fisher, Stevenson, Neubert, Burnell, & Kuratko, 2020; Hallen & Eisenhardt, 2012; Zott & Huy, 2007). The literature also provides informative

perspectives on how network ties are maintained and resourceful relationships (particularly with investors) are managed (Huang & Knight, 2017; Nai, Lin, Kotha, & Vissa, 2022).

Largely absent, however, is a discussion of how network interactions must be actively put to rest or ended. Given the care often necessary to activate and maintain network relationships, it seems unlikely that network interactions can be abandoned without significant social consequence and reputational damage. Indeed, implicit in discussions of network recalibration (Perry-Smith & Mannucci, 2017) or churn (Vissa & Bhagavatula, 2012) is a need to gracefully curtail an active relationship and satisfy or adjust the meanings and obligations that invited the collaboration. While a particular collaboration may end, the network relationships are often intended to endure and the nature of future interactions must be actively established or, if left ambiguous, puzzled over (Lounsbury & Glynn, 2001).

The following section briefly introduces the various behaviors that undergird the initiation, maintenance, and resting of nascent entrepreneurial network interactions. The extent of the resource requirements and effort necessary to successfully complete these behaviors—the relative cost of each—will vary depending on numerous factors including the entrepreneur's identity, the social context (Lounsbury & Glynn, 2001), the extent and clarity of social capital (Adler & Kwon, 2002), and the skill of the entrepreneur (Fisher et al., 2020). This more granular approach to interaction allows us to predict what aspects and which type of network engagements are likely to be most costly and thus establish the strategic landscape for nascent entrepreneurial action.

4.2 Interaction Initiation

Cognitive network activation and searching The recognition or "cognitive activation" of networks is an important part of the work of initiating a network tie (Baron, 2007; Shea et al., 2015). Entrepreneurial networks, while abstracted in both academic and practitioner

approaches to entrepreneurship, exist primarily as a cognitive phenomenon at the intersection of an entrepreneur's intention and those persons she recognizes could play a role in that intention (Casciaro & Lobo, 2015; Kuwabara, Hildebrand, & Zou, 2018; Shea, Menon, Smith, & Emich, 2015). Only after an entrepreneur identifies relevant persons can structural network descriptors (tie strength, cluster formations, multiplexity, etc.) be applied to the relationships the entrepreneur has recognized; the network doesn't practically exist outside the participation of the entrepreneur (Hallen et al., 2020; Shea et al., 2015). Since an entrepreneur's broader social network (those she recognizes as relating to her in some meaningful way) is institutionally diverse, an exhaustive consideration of who might be helpful in her entrepreneurial context is not a straightforward or easy process. Unlike in market contexts, potential collaborators in the social network are not actively signalling their economic utility or usefulness to the entrepreneur's goals. Entrepreneurs often quickly exhaust obvious connections and are forced to put forth significant effort in identifying connections between their needs and known associates (Nebus, 2006; Vissa, 2012).

Closely related to network activation, entrepreneurs must engage in search behaviors to effectively engage network participants. Network search has been central to both entrepreneurship and transaction cost research and so will only be covered briefly here (Aldrich & Kim, 2007; Clough et al., 2019; Simon, 1956; Williamson, 1981). After identifying potential network contacts, entrepreneurs must determine which potential contacts to engage and find means to connect with them. Search efforts includes work to extend the activated network, information gathering on existing ties, and the facilitation of introductions and connections (Aldrich & Kim, 2007; Granovetter, 1973; Hallen & Eisenhardt, 2012).

Disambiguating relationship: social capital, power, and hierarchy Entrepreneurs work to accurately ascertain or structure the nature of their relationships before they can effectively request help from network participants. Since entrepreneurial networks are

institutionally diverse and their constitutive relationships dynamic (Fang et al., 2015; Lounsbury & Glynn, 2001), there can never be a complete measure of the implied obligations and sentiments that make up one's social capital with another person, even among close friends. Significant asymmetry in the perceived nature or degree of social capital between potential collaborators can result in inappropriate requests that frustrate, destroy, or render costly a once valuable relationship (Casciaro et al., 2014; Engel et al., 2017). Entrepreneurs must determine who they can appropriately engage and how to mitigate the social risks of ill-informed action.

In many cases, and particularly with distal or new connections, this process includes determining the relative social power and hierarchical standing between the entrepreneur and network participant to avoid breaking social norms or inviting social censure (Smith, Menon, & Thompson, 2012; Bourdieu, 1993; Fisher et al., 2020). For example, if an entrepreneur were to demand inordinate time or attention from a widely known and successful investor, they would risk being censured for not acknowledging the value of that investor's time and status. Instead, they must do the work beforehand (such as researching the investors brand/assocations) to know what they can acceptably ask from this potential interaction.

Establishing intent An entrepreneur must determine the direction and magnitude of a potential network tie's motivation to assist them in their nascent entrepreneurial journey. Unlike market interactions, where the foundational intention is generally profit, network interactions can arise from any number of motivations that relate variously to collaborative output (Adler & Kwon, 2002; Bloch et al., 2007; Burt, 2000). The risk of aborted collaboration, ill intent, and social capital deterioration can be partially mitigated by establishing not just that a network participant is willing to engage but also for what reasons (Walter et al., 2015). To gather this information an entrepreneur might strategically query these factors in socially acceptable ways (e.g., research, conversations intended to prime/test future interaction

potential, asking mutual contact) and sometimes restrict, delay, or discourage interactions when interactive motivations are unclear or do not properly align.

Assessing capability and capacity Work must be done to establish the capability of the participant before collaborative efforts can begin in earnest. Initiating an interaction only to realize that the participant is incapable of contributing or even represents a liability to ongoing efforts produces sunk costs and threatens the underlying relationship (Elfring & Hulsink, 2007; Engel, Kaandorp, & Elfring, 2017; Kuwabara, Hildebrand, & Zou, 2018; Milanov & Shepherd, 2013). Assessing the capability of a potential network tie collaborator can be time consuming and fraught since the information channels available often serve a social rather than economic purpose (Casciaro et al., 2015a; Casciaro & Lobo, 2015; Shea et al., 2015; Walter et al., 2015).. As a simple example, when a friend offers to help or suggests you work with someone they are close to, it can be difficult to ask probing questions about the value or validity of their credentials.

The entrepreneur must ensure that the participant is not only willing and capable but has the capacity or "bandwidth" to carry out the interaction fully. Network participants are unlikely to intentionally promise more than they can provide, but since socially-facilitated exchanges tend to be more fluid than formal contracting (Casciaro et al., 2015; Engel et al., 2017), the entrepreneur must be aware of how their collaborator's competing priorities may impinge on participation. In early entrepreneurial social interactions, the entrepreneurial interaction is just one other item in the participant's busy life, and social norms generally give them ample opportunity to terminate or delay the interaction (Alvarez & Sachs, 2021; Beckert, 2003; Casciaro et al., 2014). By getting a sense of the participant's other pursuits and by closely monitoring initial exchanges, an entrepreneur can avoid investing in an interaction that lacks the capacity to yield progress.

Engaging/Establishing terms Goals and terms (both implicit and explicit) must be established in order to initiate a fruitful interaction (Bloch et al., 2007; Engel et al., 2017). Network participants must be brought to speed with what they need to know and what the entrepreneur hopes to accomplish in the interaction. Entrepreneurs must attempt to establish a productive trajectory from a relationship that was not necessarily intended to have any economic logic or relevance. (Cook et al., 2013; Shea et al., 2015). In essence, managing the terms and trajectory of a network interaction often requires the navigation of negotiations, agreements, and assurances while eschewing a transactional or instrumental tone (Casciaro et al., 2014). The express, but necessary, avoidance of economic logics can prolong the term-setting period and lead to costly miscommunications. For example, an entrepreneur might choose to lay out the full request incrementally so as not to overwhelm their network participant and give them the sense that they are being "used" when, had this been in a market context, they otherwise would have been explicit from the beginning what they hoped to accomplish.

4.3 Interaction Maintenance

Reciprocating Social capital is partially composed of the reciprocal obligations acknowledged between two people, and the maintenance of an entrepreneurial network interaction requires the fulfilling of those obligations on the part of the entrepreneur (Adler & Kwon, 2002; Bourdieu, 1986). Societies are maintained by principles of pro-sociality and justice; every relationship requires some degree of reciprocal input (Bloch et al., 2007). Unlike formalized contracts or financial exchanges, the expected reciprocal behaviors that underly pre-firm interactions can remain unarticulated, take many forms, and often defy objective accounting (Beckert, 2003, 2009; Casciaro et al., 2014). Satisficing norms of reciprocity requires careful monitoring of relationship indicators and, given the ambiguous nature of such norms, often a deliberate over-compensation. An entrepreneur must weigh the benefit of an

ongoing interaction with the effort it takes to maintain the balance requested by their relative social capital or be willing to endure the social censure of engaging in seemingly exploitative behavior (Casciaro et al., 2015a, 2014).

Monitoring Entrepreneurs must track interaction outcomes in a way that is both productive and acceptable to the network participant (Bloch et al., 2007; Casciaro et al., 2014). Monitoring costs are integral to transaction cost paradigms (Klein & Sykuta, 2010; Williamson, 1981, 1993), but without market norms to guide the monitoring process (Beckert, 2009; Hayek, 1945) entrepreneurs must do extra work to establish means of tracking interactions in acceptable ways. For example, an entrepreneur who is using a friend to accomplish a venture-related task, might ordinarily text them at all hours of the day for various reasons. To regularly do so to ask about the venture task, however, might be received poorly. Thus, the entrepreneur can use neither the communication norms associated with their friendship, nor those of the market (it would come across as strange to send formal, business hours, email requests to their close friend) and must establish a new, and acceptable routine to observe ongoing efforts.

Motivating Without the help of contractual obligation or promised profits, entrepreneurs must actively foster the motivation of network participants (Bloch et al., 2007; Davidsson & Honig, 2003). Entrepreneurial network interactions can often require sustained participation over weeks and months and inevitably compete with the participants' other dynamic priorities (Huang & Knight, 2017; Mannucci & Perry-Smith, 2022). What was once an interesting pastime or welcome favour can quickly become a burden. The amount of work necessary to maintain motivation in an interaction will vary according to the disparate and shared understandings of the entrepreneur and participant; how they view interactive relationships, the relevant social capital, and the task at hand will all effect how much and what type of maintenance is necessary (Kuwabara et al., 2018). By enriching their social capital,

adjusting the nature of the interaction, introducing rewards, or by other means, an entrepreneur must work to keep participants involved and willing (Fisher et al., 2020; Vissa, 2012).

Opportunity costs When engaging a socially-facilitated interaction, entrepreneurs forego both opportunities to engage other participants (whether via social capital or markets) and other social experiences with that participant. Although absent in most instrumental networking frameworks, entrepreneurs must constantly weigh the economic opportunity of a network interaction against the social value that might be destroyed or delayed by such pursuit. The presence of a socially situated network tie necessarily implies a preceding social purpose that could be either enriched or hampered by the introduction of entrepreneurial purposes (Adler & Kwon, 2002; Casciaro et al., 2014). Entrepreneurs may rationally forego ideal interactions because they would rather spend their social capital with that person on something else (Engel et al., 2017). A network map of edges and alters rarely captures the complex social considerations at play in using social capital for entrepreneurial purposes (Hallen et al., 2020). As a simple example, an entrepreneur may choose to not ask an ideal advisor for help since that advisor is also a leader in their church who, after knowing the messy details of the entrepreneur's business, might treat them differently in their church circles. The value of a relationship or potential relationship can regularly trump the value of the entrepreneurial aim that interaction could satisfy.

4.4 Interaction Resting

Disengaging Entrepreneurial networking involves both the agentic activation of network ties *and* the intentional disengagement of such ties. While churn and network reorganization are widely acknowledged as inevitable in entrepreneurial networking (Mannucci & Perry-Smith, 2022; Perry-Smith & Mannucci, 2017; Vissa & Bhagavatula, 2012), any discussion of how entrepreneurs disengage network participants is largely absent.

After both parties have assumed and navigated the social risk of engagement and invested in a relationship that sustains that engagement, effort must be made to bring the evolving "story" to an acceptable close. Success or failure can be celebrated or rationalized, and a new path—or mutual parting of ways—can be proposed for the continuation of a social capital-sustaining relationship (Adler & Kwon, 2002). Unclear, avoided, or failed attempts to disengage unproductive interactions could result in wasted time and frustration. Passively disengaging from a contact (e.g. ending communication or letting things "fizzle"), while exacting less of an upfront cost to the entrepreneur, may come at a steep social risk and will likely limit future opportunities for collaboration.

Managing Outcomes From a social purview, interactions are often just a single moment in a longer relationship, and, from an economic perspective, a given interaction can exact costs or lead to future utility long after it has ended (Casciaro et al., 2015b). The introduction of entrepreneurial purposes will set a new trajectory in the relationship, and related reciprocal obligations may endure long after entrepreneurial effort has ceased (Bloch, Genicot, & Ray, 2007; Bourdieu, 1986). For example, an entrepreneur may choose to use their social capital to get a friend who is already pressed for time to dedicate their precious time and effort to their venture. After the work is done, the entrepreneur may need to work hard long after the venture no longer features in their relationship in order to make up for that significant request. In some cases, their relationship will never be the same despite that effort.

4.5 Summary

In summary, pre-firm entrepreneurial networking—the application of social capital towards nascent entrepreneurial ends—exacts unique interaction costs that extend beyond both entrepreneurial search and transaction cost paradigms. Entrepreneurial social networks are a context typified by scarcity, diverse institutional logics, and a thin boundary between the

entrepreneur's personal life and business efforts. For these reasons, entrepreneurs must engage in costly behaviors to actively manage social risks and maintain relationships that facilitate meaningful interaction. The efforts required to initiate, maintain, and rest network interactions have been considered respectively. Table 2 summarizes the anatomy of an entrepreneurial network interaction including each of the costs related to initiating, maintaining, and resting interactions by providing a definition, related questions from the perspective of the entrepreneur, an illustrative example, and related references from the entrepreneurial networking literature.

Type	Cost	Definition	Entrepreneur's Concern	Example
Initiation	**Cognitive Activation and Searching** (Aldrich & Kim, 2007; Shea, Menon, Smith, & Emich, 2015)	Efforts to identify potential participants.	Who can I work with at an acceptable risk?	Asking around softball team/searching social media for someone with web development skills.
	Disambiguating Relationship (social capital, hierarchy, etc.) (Bourdieu, 1986; Smith, Menon, & Thompson, 2012)	Efforts to understand how to engage potential participants according to social norms.	How am I/this request perceived? What is socially acceptable to ask? How do I need to ask it?	Reviewing a referral's LinkedIn to determine who is more senior or experienced.
	Establishing Intent (Vissa & Chacar, 2009; Walter, Levin, & Murnighan, 2015)	Efforts to understand motivation and intention of potential participants.	Does this person want to work with me, how much, and why?	Asking a mutual friend whether a potential collaborator is reliable or genuine in their excitement.
	Assessing Capability and Capacity (Casciaro & Lobo, 2008; Mannucci & Perry-Smith, 2022)	Efforts to understand a potential participant's ability to accomplish desired interaction outcomes.	Can this person accomplish what I need at an acceptable cost?	Teasing out an acquaintance's past work experience and estimating their utility to your venture.
	Engaging/ Establishing Terms (Fisher et al., 2020; Hite, 2003;2005)	Efforts to bring about a mutual understanding that enables interaction.	How do I invite this person in an appropriate way? How do I communicate mutual terms and expectations?	Taking a family member to dinner to explain your hopes for their involvement in the venture.
Maintenance	**Reciprocating** (Bloch, Genicot, & Ray, 2007; Casciaro, Gino, & Kouchaki, 2014)	Efforts to fulfil obligations that have materialized as a result from the interaction.	How do I provide enough value to this person without tipping my personal cost/benefit analysis unfavorably?	Saying yes to babysit for someone who has agreed to refer you to an important adviser.
	Monitoring (Huang & Knight, 2017; Kleinbaum, Jordan, & Audia, 2015)	Efforts to track interaction progress and participant intention.	How do I track interaction outcomes in an acceptable and productive way?	Suggesting regular weekly calls to avoid a collaborative interaction bleeding into the broader relationship.
	Motivating (Fisher et al., 2020; Vissa, 2012)	Efforts to maintain and incentivize effective participation in an interaction.	How do I keep them engaged and focused on the interaction?	Regularly expressing gratitude to collaborator as a reminder and motivator for their help.

	Opportunity Costs (Davidsson & Honig, 2003)	The opportunities to use your social capital foregone by participating in an interaction.	What opportunities am I missing out on by engaging this person in this way?	Not inviting someone to a social gathering with whom you have had an awkward, ongoing venture interaction.
Resting	**Disengaging** (Perry-Smith & Mannucci, 2017; Vissa & Bhagavatula, 2012)	Efforts to intentionally conclude interaction.	How can I bring this interaction to a mutually satisfying conclusion? How can I limit the costs of an unsuccessful interaction?	Telling a friend that has spent months helping with a venture task that you found someone else to carry it further.
	Managing Outcomes (Aldrich & Cliff, 2003; Casciaro et al., 2014)	Efforts to mitigate negative outcomes and capitalize on positive outcomes from the interaction.	How can I capitalize on positive outcomes while mitigating negative outcomes from interactions?	Trying to improve the relationship with a family member whose money you invested poorly (failed prototype) for years to come.

Table 2: Anatomy of a Network Interaction and Related Interaction Costs

In the following section, we discuss the implications of interaction costs for both nascent entrepreneurial strategy and entrepreneurship research.

5.0 DISCUSSION

Having established the presence and nature of interaction costs in nascent entrepreneurial environments, we can now begin to theorize how they shape nascent strategy and can provide exciting new insights into entrepreneurship theory. Since the purpose of this paper is primarily to build a theoretical base for entrepreneurial interaction costs, it is outside the scope of this paper to fully pursue all their applications to entrepreneurship and strategy theory. Instead, this discussion will serve to demonstrate their theoretical utility and suggest future directions and applications.

5.1 A Stronger Strategic Paradigm for Pre-Firm Entrepreneurship

An acknowledgement of the costs inherent in entrepreneurial network interactions introduces a powerful new perspective of the pre-firm strategic landscape. While conversations about opportunity discovery (Alvarez & Barney, 2007; Alvarez et al., 2013), creative ideation (Perry-Smith & Coff, 2011; Perry-Smith & Mannucci, 2017), and resource search (Aldrich & Kim, 2007; Clough et al., 2019) have been useful in highlighting some aspects of the early

entrepreneur's experience, interaction costs outline economic principles that better explain strategic interactive experiences throughout pre-firm entrepreneurial stages. From the moment an actor identifies themselves as an entrepreneur or engages a friend on an entrepreneurial topic, interaction costs will begin to factor into the strategic direction of enterprising activity. Given the highly social context of early entrepreneurship (Davidsson & Honig, 2003; Tocher et al., 2015), interaction costs change the cost-benefit calculus of most pre-firm activities; no enterprise was ever founded in isolation, so interaction costs are likely universal to the founding experience.

By better defining the cost-benefit calculus of nascent collaborations (Adler & Kwon, 2002; Engel et al., 2017), interaction cost economics helps explain how entrepreneurs strategize and choose between potential network contributors. A consideration of interaction costs explains why entrepreneurs might, counterintuitively, transition away from relying on "free" contributions from colleagues, friends, and family, in favour of paid market options with similar credentials. These costs also shed light on which network contacts an entrepreneur perceives as available for collaboration, which they choose to engage, and how they prepare to involve them (Mannucci & Perry-Smith, 2022; Walter et al., 2015). Interestingly, the costs of dealing with ambiguous social capital and participant capacity also suggest a key part of early strategizing is the intentional development of entrepreneurial tasks and "asks" to better accommodate pre-firm means and collaborators. Actively managing the costs and risks of an interaction through task preparation likely plays an undiscussed yet pivotal role in every entrepreneur's early journey.

Interaction costs may partially determine the time spent in pre-firm stages. Entrepreneurs with different interaction costs will likely have to spend different amounts of time and effort to facilitate productive interactions, changing the timeline and pacing of early progress. High interaction costs may lead an entrepreneur to collaborate less, stretching pre-

firm efforts as they seek the knowledge or skills necessary to proceed alone. Since pre-firm states are highly uncertain, a year delay in capitalizing on a given opportunity could decrease competitiveness (e.g., time for rival entry), have significant economic implications (e.g., delay revenue/profitability), or altogether foreclose the viability of the insipient firm (e.g., miss opportunity window). The entrepreneurial journey is highly path-dependent (Elfring & Hulsink, 2007; Hite, 2005), so the costs associated with relationship maintenance and social risk have the potential to be highly determinative of both the early and long-term trajectory of the incipient firm.

By emphasizing the previously overlooked yet critical social factors inherent in pre-firm strategizing, interaction costs help untangle the messy, early entrepreneurial journey. Differing interaction costs help explain why two entrepreneurs with structurally identical networks may experience highly divergent network outcomes. It suggests that the difference in early outcomes may have more to do with the relationship between the identity and values of the entrepreneur and his or her social environment (e.g., does their network embrace their identity and how do they weigh social risk with venture progress?) than a capacity to find the "right" connection or resource (Townsend et al., 2018). It qualifies how we should think both about entrepreneurial resources (dynamic means contingent on both social and economic factors and processes) as well as entrepreneurial strategy (how an entrepreneur reacts to both social and economic realities) (Clough et al., 2019; Huang & Knight, 2017). By applying interaction cost economics, the concept of networking and social networks invokes a socially layered context for all pre-firm entrepreneurial activity as opposed to either a static map of resources to be searched or an entrepreneurial task among many.

An interaction cost lens may also help explain differences in entrepreneurial output between and within organizations, cultures, and ecosystems. Organizations, for example, may have unique cultures, structures, or processes that increase the relative costs of certain

interactions with the firm compared to others (Casciaro & Lobo, 2015; Lounsbury & Glynn, 2001). These additional social risks or meaning maintenance costs may limit otherwise productive interactions from occurring.

5.2 The Pre-Firm Transition from Social to Market Productive Processes

An interaction costs lens suggests a few important questions for future research. One such question is why early-stage entrepreneurs transition from social contexts towards market contexts. Entrepreneurial network literature has generally considered the network a broadly munificent environment for entrepreneurs (Clough et al., 2019; Zott & Huy, 2007); acquaintances, friends and families are characterized as providing advice, labour, and resources without any economic cost. While scale may still eventually entice an entrepreneur into market collaborations, extent perspectives fail to account for why entrepreneurs might incorporate financial capital and market actors before comparable social capital and network utility have been exhausted. Figure 2 summarizes how the presence of interaction costs might suggest a pre-firm transition from the primary use of social capital (and socially situated logics) to financial capital (and market logics). It shows how entrepreneurs might begin working primarily with social capital but choose to transition to paid collaborators to lower interaction costs. Such a transition reflects the transition hypothesized by Coase and Williamson from market to firm production due to transaction costs (Williamson, 1993; Coase, 1937). Thus, interaction cost economics suggests a potential de-socializing process of nascent productive processes that precedes the organization and verticalization hypothesized by transaction cost economics. More empirical observation will be necessary to characterize the early entrepreneurial choice between social interaction and market transaction and determine the role, if any, of interaction costs.

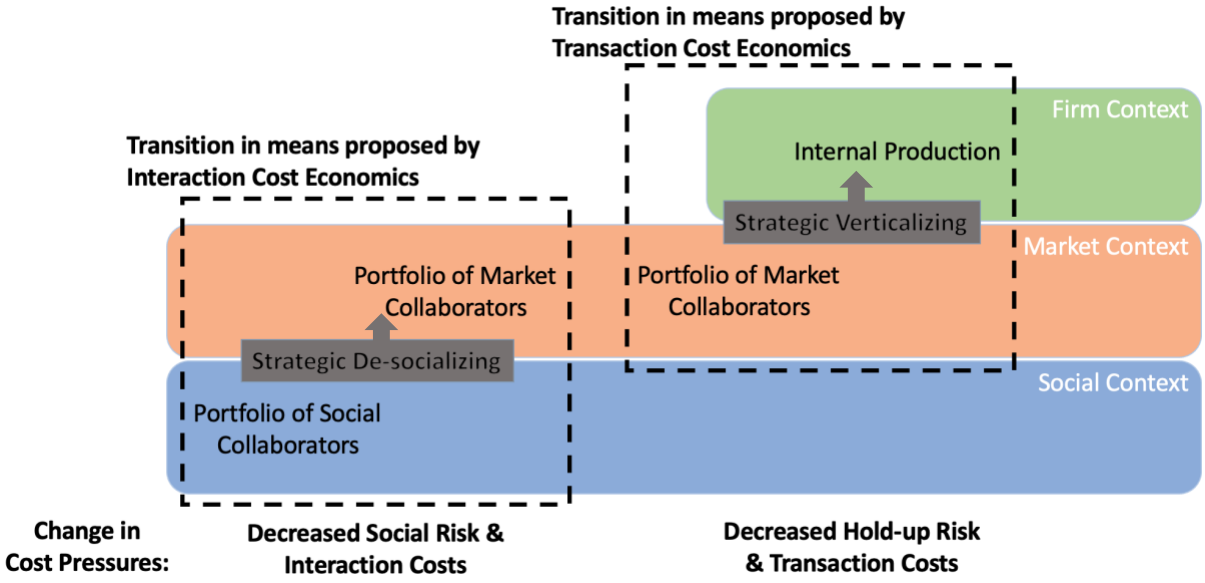


Figure 1: Potential Entrepreneurial Transitions in Collaborators as Response to Interaction and Transaction Costs

5.3 Addressing Early Entrepreneurial Filters and Survivor Bias in Entrepreneurship Research

In providing an additional theoretical lens with which to view the earliest entrepreneurial activities, interaction costs may help correct a potential survivor bias in extant entrepreneurship and strategy research. The vast majority of research in both streams deals with new or established firms such that pre-firm stages remain highly undertheorized (Bennett & Chatterji, 2019). By neglecting pre-firm activity, we know little about what types of entrepreneurs or businesses in what types of contexts or circumstances fail to exit the earliest stages and remain unconsidered by business scholarship (Clough et al., 2019; Townsend et al., 2018). At the same time, highly skewed social and demographic representation of profitable entrepreneurs across many categories of entrepreneurship suggests the presence of significant early, social-related filters (Brands, Ertug, Fonti, & Tasselli, 2022; Kanze, Huang, Conley, & Higgins, 2018). Interaction cost economics suggests one means by which social factors may affect entrepreneurial momentum from the earliest stages, promoting or cutting off potential

value and wealth creation long before investor bias or boardroom discrimination come into play. Empirical analysis of interaction costs will be necessary to determine their role in pre-firm venture survival.

5.4 Towards a More Socially Perceptive Analysis of Entrepreneurial Processes

Interaction cost economics invites us to take the interaction between social and economic factors seriously in strategy research. Since the majority of entrepreneurship and strategy research considers the firm or de-personalized agents as the focal actors, fundamental and highly influential social values and behaviors are often overlooked (Simon, 1956, 1989; Williamson, 1981). Strategic actors and entrepreneurs can be both rational and deeply social creatures; economic calculation can play out in tandem and enmeshed with social considerations and context (Casciaro, Gino, & Kouchaki, 2014; Casciaro & Lobo, 2008, 2015). An interaction cost lens shows that factors that are inherently social in nature still relate to the fundamentals of economic decision making (scarcity, revealed preference, etc.) and can thus often be seamlessly, though not without effort, integrated into strategic frameworks. Close consideration of pre-firm stages necessitates such perspectives since the entrepreneur experiences these moments at the intersection of personal, social, and market activities.

Our framework explains how the costs of early collaboration may differ according to social factors like gender, race, and socio-economic status leading to dramatically different venture outcomes (Brands, Ertug, Fonti, & Tasselli, 2022; Kanze, Huang, Conley, & Higgins, 2018). As a simple illustration, consider a twin sister and brother who both aspire to establish successful technology ventures. These two siblings may have identical resources, skills, networks, and business sensibilities but face divergent costs in initiating, maintaining, and resting collaborative interactions throughout pre-firm stages solely based on the effect of gendered expectations. These effects may not be obvious or prohibitive but rather marginally

increase the social risk of asking for help and the effort necessary for one sibling (likely the one identifying as female) to facilitate productive interactions. In certain swaths of their social network, the female founder may be forced to spend energy justifying dual identities seen as incompatible by local social values such as woman or caretaker and breadwinner or entrepreneur. The result of a few highly costly interactions (either socially or economically) may require increased effort in vetting future collaborators, increasing initiation costs. Assuming these challenges don't entirely discourage her from her entrepreneurial aims, these marginal costs can accumulate, changing the cost/benefit analysis such that she might rationally pursue less economically efficient means of production. She may choose to work with suboptimal collaborators or personally gather information and develop skills her sibling could simply request from shared yet more eager colleagues. If she perseveres, the delay necessary to compensate could cost her years of profit or miss the opportunity window entirely. Interaction cost economics helps us observe in greater detail the pre-firm events that are the root causes of these divergent trajectories—causes extant entrepreneurship and strategy perspectives largely overlook or cannot see (Clough et al., 2019).

5.5 Contributions to Entrepreneurial Network Literature

While this paper is primarily about pre-firm strategy, the interaction cost lens helps contextualize and refine our conceptions of pre-firm entrepreneurial networking. Network involvement and networking have often been characterized as an entrepreneurial task among many as opposed to the context for most entrepreneurial tasks (Cook et al., 2013; Kwon & Adler, 2014; Lounsbury & Glynn, 2001; Obstfeld et al., 2020). The well-documented emphasis on the perceived structure of an entrepreneur's network (Hallen et al., 2020) by default frames the network environment as generic roads and resources, obfuscating the norms, costs, behaviors, and cognitions that typify the social exchanges therein. Letting the structural aspects

of networks dominate our conception of networks is like mistaking the org-chart for the firm. Entrepreneurship has been repeatedly shown to be a social exercise, and the conflation of entrepreneur and enterprise in early stages means that the social circumstances that shape the entrepreneur's daily life will similarly shape their enterprise (Alvarez & Sachs, 2021; Shepherd et al., 2009). By acknowledging the context of pre-firm entrepreneurship as expressly social (in the same way we frame firms in a market context and employees in a firm context), we can better see phenomena, like costs, that typify a broad swath of interactions and shape patterns of behavior. Interaction cost economics invites us to consider the social context of pre-firm activity and reveals the salient social factors that direct nascent activity.

Interaction costs give us a powerful vocabulary to understand the nature and effect of concepts like network recalibration and churn that have been alluded to yet neglected in entrepreneurial networking conversations (Perry-Smith & Mannucci, 2017; Vissa & Bhagavatula, 2012). By better identifying the costs and frictions inherent in network environments, we enable more powerful predictive theory and empirical observation and correct potentially damaging assumptions about resource-network parity. When networks are summarized as the resources they could hypothetically offer (e.g., funding from friends, families and fools) as opposed to the context of rich and various interactions shaped and determined by social and economic considerations, both theory and applications to practice suffer.

5.6 Limitations and Where We Go from Here

While we find interaction cost economics to be an exciting contribution to our understanding of nascent strategy and entrepreneurship, this paper introduces only an initial, stylized conceptualization of a complex phenomenon. Much work remains to fully substantiate and empirically test the nature and effects of interaction costs as well as their role in pre-firm

strategy. The following section outlines some initial directions and early questions toward that purpose.

Further research is needed to observe interaction costs and their effects in empirical contexts. Digital technologies make it easier than ever to efficiently observe the bulk of initiated network interactions from entrepreneurs as texts, emails, and direct messaging increasingly become prioritized communication channels (Fischer & Reuber, 2011; Smith, Smith, & Shaw, 2017). Algorithmic and natural language processing methods make the analysis of such data more efficient. Both trends lower the barriers to powerful archival inquiry and analysis of the unformed, early venture where these costs take their initial effect.

Research is needed to understand the heterogeneous sensitivity and perceptions of entrepreneurs to interaction costs. Networking styles and relational value preferences have been shown to differ between entrepreneurs along gender and other identity lines (Ahl & Marlow, 2012; Brands, Ertug, Fonti, & Tasselli, 2022) implying that the values of entrepreneurs will influence the perception of both social and economic costs and benefits. More broadly, work must be done to establish other factors that moderate the presence and effect of interaction costs along the entrepreneurial process. Micro-level factors like identity (Fisher, Kotha, & Lahiri, 2016; Grimes, 2018) and entrepreneurial signalling (Fisher, Stevenson, Neubert, Burnell, & Kuratko, 2020) as well as macro-level factors like social norms (Hechavarría et al., 2017) and economic risk environment (Bennett & Chatterji, 2019)may shape the magnitude of cost-differences in nascent stages.

Additionally, work will be necessary to see how the presence or configuration of co-founders might change an entrepreneur's experience with transaction costs (Ruef et al., 2004; Blatt, 2009). Founding teams might provide a way to internalize important tasks that would otherwise require social capital expenditures (Jung et al., 2017). They may also increase the legitimacy of entrepreneurs, decreasing the risks of engaging social capital in their network

(Fisher, 2020). Empirical work can help establish the connection, if any, between founding teams and interaction costs.

As mentioned, interaction cost economics asks important questions about variation in collaborative and innovation outcomes across organizations, regions, and cultures. How firms can strategically lower (and perhaps increase) interaction costs within their organization could be a key factor in innovation and productivity advantages. Opaque discussions of water cooler opportunities and network structures may benefit from the more fine-tuned delineations and mechanisms interaction cost economics can provide.

The early transition between social and market contexts, as well as the intervening liminal period, marks a particularly interesting area of study. One of the reasons pre-firm entrepreneurship is an exciting and productive area of study is the presence of extensive collaborative activity (significant network requests) (Clough, Fang, Vissa, & Wu, 2019; Vissa, 2012; Vissa & Bhagavatula, 2012) and a rare impingement of economic considerations and logics in the social sphere (Casciaro, Gino, & Kouchaki, 2014; Ucbasaran, Shepherd, Lockett, & Lyon, 2013). Other socially situated but economically motivated activities, like clientele seeking or job search (Klyver, Steffens, & Lomberg, 2020; Ronald S. Burt, 2017), have relatively codified social significance as practices, but entrepreneurship includes a wide variety of requests that range from the trivial to the highly intensive. Interaction costs are likely just one of many ways to capture the effects of being situated at the collision between economic and social norms, and much more research is needed to fully explore the nature and value of these liminal spaces.

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Chapter 2

The Role of Social Capital in Mitigating Pre-Firm Transaction Costs

ABSTRACT

Pre-firm entrepreneurs often collaborate with market actors to build products and complete tasks. Constrained by low resources and high uncertainty, entrepreneurs are likely subject to high collaborative risks and transaction costs throughout these critical, early moments. The empirical challenges of studying pre-firm entrepreneurial efforts have limited our understanding of how entrepreneurs strategically engage initial collaborators and mitigate early risks and costs. Through an analysis of a novel data set including more than a thousand pre-firm collaborative communications initiated by 26 nascent entrepreneurs, we find that entrepreneurs are less likely to experience high transaction costs when they engage both socially and financially incentivized actors on a given task as opposed to relying wholly on paid collaborators. We show how entrepreneurs can leverage social collaborators to strategically disambiguate collaborative tasks, to widen their contextual understanding of the transaction, and to improve contracting efforts in ways that substantively mitigate transaction risks and uncertainties. The emergent theoretical framework emphasizes the role of social capital in shaping early entrepreneurial transactive relationships, and thus challenges extant models that consider early social and market contexts in isolation. The framework also expands our understanding of the relationship between pre-firm social and financial capital to include not only resource accumulation but resource application.

Keywords: Networks and social capital; new venture formation; strategy

"The one failure mode that I see a lot is. . .people who can raise a little bit of money, go down the outsourcing route, and believe they are progressing. They believe that the thing is moving forward, and what they don't realize is that for the most part they are going to need to iterate anything that is created by those outsourcers. Over and over and over and over again. And it gets pretty expensive pretty fast. . . . Outsourcing, iterating with that outsourcer until you run out of money and you haven't figured things out yet, so you have to go to an investor and you have to say, 'well I don't have anything, I need more money.' And that's death. What's so sad about that death is that you've been kind of walking that path the whole time, but often you don't realize it until the very end, and after you spent money. And like, sometimes it's people's own money, it's their savings."

—Y Combinator Group Partner Michael Seibel in conversation with Craig Cannon

1.0 INTRODUCTION

To substantiate a value proposition at scale, pre-firm entrepreneurs often deploy financial capital to engage market collaborators. While social circles can be a safe environment for the early creative process (Burt, 2000; Hite, 2005; Perry-Smith & Mannucci, 2017; Burt, 2017), market contexts provide the reliability, expertise, and scale necessary to establish productive signals that attract key stakeholders and reduce uncertainty (Brinckmann, Villanueva, Grichnik, & Singh, 2019; Clough, Fang, Vissa, & Wu, 2019). Extant research has largely considered these two areas of entrepreneurial engagement separately, often implying a frictionless shift from utilizing the benefits of social capital to the broader possibilities financial capital allows (Clough et al., 2019; Fisher, Stevenson, Neubert, Burnell, & Kuratko, 2020; Tocher, Oswald, & Hall, 2015).

Yet transaction cost economics (TCE) suggests a more problematic picture of pre-firm collaborations and a mystery at the heart of pre-firm strategy. TCE warns that entrepreneurs

will face costs, risks, and failures inherent to engaging market collaborators and entrepreneurship practitioners have recognized that entrepreneurs regularly struggle to effectively deploy financial capital in early stages (Cannon, 2018.; Williamson, 1981). The impact of these costs and failures is so high that entrepreneurs will rationally choose to organize the expensive inputs of a firm as opposed to continue entirely in market contexts (Coase, 1937; Williamson, 1981). In pre-firm stages, these market collaborations are occurring when uncertainty is at its highest, deployable resources are scarce, and entrepreneurs are most vulnerable to power imbalances with collaborators (Arikan, Arikan, & Koparan, 2020; Townsend, Hunt, McMullen, & Sarasvathy, 2018). Additionally, since the bulk of the earliest entrepreneurial interactions are unpaid social interactions (Hite, 2005; Hite & Hesterly, 2001; Perry-Smith & Mannucci, 2017; Tocher et al., 2015), entrepreneurs may be inexperienced in engaging paid collaborators. The introduction of market regularity and expertise may paradoxically yield a heightened risk of failure and frustration.

Simply put, often alone and under-resourced, pre-firm entrepreneurs must engage inherently problematic means to organize their escape from such means. Given the costly nature of pre-firm transactions, how do entrepreneurs successfully use market collaborators to establish early entrepreneurial inertia? How do pre-firm entrepreneurs mobilize limited resources to mitigate the dangers of uncertainty, asset specificity, and hold-up inherent in formal market collaborations (Klein & Sykuta, 2010)?

Answering these questions is key to supporting early entrepreneurial practice since pre-firm transaction costs have the potential to act as a major filter to early entrepreneurial efforts and value. Failed or costly market collaborations may exhaust an entrepreneur's limited energy, capital, and confidence. High uncertainty in pre-firm stages often tips a rational cost-benefit analysis towards abandoning early efforts especially as the cost ledger grows without yielding demonstrable progress (Alvarez & Barney, 2005; Engel, Kaandorp, & Elfring, 2017). How

entrepreneurs mitigate these risks and costs represents a key strategic issue for pre-firm entrepreneurs.

A clearer picture of pre-firm collaborations is also necessary to lay the theoretical groundwork of pre-firm activity and help address a lurking survivor bias in entrepreneurship research. While we know much about entrepreneurial networks and the creative process, relatively little is known about how entrepreneurs actively conceptualize and modulate their portfolio of means in pre-firm stages as well as the role of timing, uncertainty, and available resources in the process (Clough et al., 2019; Townsend et al., 2018). To complicate matters, the empirical challenges of studying the pre-firm stages remain a barrier to pulling the earliest entrepreneurial activities out of obscurity (Davidsson, 2005; Dimov, 2010). Most entrepreneurship research to date samples exclusively from young but fully established entrepreneurial firms (Bennett & Chatterji, 2019; Davidsson, 2005; Hallen & Eisenhardt, 2012; Ozcan & Eisenhardt, 2009). Unknowns in the pre-firm stages lay the foundation for significant yet unseen survivor biases throughout entrepreneurship and strategy literatures. We don't know what factors contribute to success and failure in pre-firm stages (nor how they interact), so we don't know which entrepreneurial efforts never feature in our scholarly conversations.

By analysing more than a thousand informal and formal pre-firm collaborative communications initiated by 26 nascent entrepreneurs, this article takes initial steps in understanding how entrepreneurs mobilize resources to mitigate transaction costs in pre-firm environments. We find that many initial collaborative expenditures do in fact fail, yielding sunk costs and emotional setback. In contrast to current models that consider social and market contexts separately (network-entrepreneur exchange or market-entrepreneur exchange), we find that entrepreneurs regularly employ social capital concurrently and in parallel to financial capital to better accomplish pre-firm tasks. We find that by engaging social capital alongside financial transactions, entrepreneurs can expand entrepreneurial rationality and power in pre-

firm transactions. Our emerging model shows that social capital can be used to to strategically disambiguate collaborative tasks, to widen their contextual understanding of the transaction, and to improve contracting efforts in ways that substantively mitigate transaction risks and uncertainties.

By uncovering the relationship between social and market collaborative processes in early stages, we advance our understanding of the nature of nascent strategy and the arrival of the firm. In so doing, we challenge the conventional wisdom of viewing early network behaviors and market interactions as distinct fields of study (Clough et al., 2019; Jones, Hesterly, & Borgatti, 1997). The framework also expands our understanding of the relationship between pre-firm social and financial capital to include not only resource accumulation but resource application.

The paper proceeds as follows: first, we define key terms and review extant literature on early entrepreneurial collaborators, risks, and costs. Second, we describe the sample, methods, and analysis employed in this study. Next, we present our findings inclusive of the observed relationship between entrepreneur, task, and collaborator, as well as a comparison of distinct collaborative process. Propositions related to our findings are presented. Finally, we discuss the implications of our study for entrepreneurship and strategy research, the limitations of the study, and directions for future research.

2.0 A REVIEW OF EXTANT LITERATURE

2.1 Definitions and Boundaries

This paper concerns pre-firm transaction costs and entrepreneurs' strategies to mitigate them. By pre-firm entrepreneurship we mean the efforts of entrepreneurs before the formal establishment of an entrepreneurial firm. While there is yet to be a clear consensus definition (McMullen & Dimov, 2013), the literature suggests that, ontologically, the establishment of

the firm occurs across dimensions of practice (e.g., dedicating money to the business entity or hiring personnel), perception (e.g., establishing an enterprise name and branding), and legal distinction (e.g., registering an LLC) (Townsend et al., 2018; McMullen & Dimov, 2013). To further simplify this definition we borrow the useful distinction made by Alvarez and Sachs that in pre-firm stages the entrepreneur(s) and enterprise are conflated in the eyes of stakeholders (2021; see also Dimov, 2010, 2011). Thus, in pre-firm stages, transactions happen directly and entirely between the entrepreneurs and collaborators.

The distinction between pre- and post-firm entrepreneurial activity is important for two critical reasons. First, since the enterprise and entrepreneur are conflated and mutually defined in pre-firm stages, the risks and costs of pursuing the entrepreneurial venture are shouldered directly by the entrepreneur. Second, before there is an entrepreneurial firm, entrepreneurs have less options or power in mitigating these risks or costs (Coase, 1937; Poppo & Zenger, 2002; Williamson, 1981). High uncertainty and low resources leave pre-firm entrepreneurs little leverage in controlling transactive costs (Alvarez & Barney 2005;) and verticalization to avoid problematic transaction is often out of reach (Williamson, 1981). Entrepreneurs that transact in pre-firm stages face higher and more personal risk, with less control or mitigative power.

In contrast, the presence of a firm can often shield an entrepreneur from legal liability, increase their legitimacy and perceived buying power (Alvarez & Sachs, 2021), and provide opportunities to internalize frequent, specific, or uncertain productive capacities (Coase, 1937; Poppo & Zenger, 2002; Williamson, 1981).

The expansion of a founding team does provide one interesting caveat to this process. Adding a founding member to increase a potential venture's productive capacity can be considered a verticalization or risk mitigating effort that may happen before the firm is established (Jung, Vissa, & Pich, 2017). We can reasonably assume that the degree that an addition of a founding member mitigates potential transaction costs depends on the overlap of

that founder's productive capabilities and capacity and those of potential external collaborators. Given the breadth and complexity of establishing an entrepreneurial venture (Townsend et al., 2018; Sarasvathy, 2001; Fisher, 2012), we can also assume that most founders will face production challenges in pre-firm stages that are outside the capacity of the founding team and will thus need to engage in transactive collaborations and face the risks and costs of doing so.

This paper focuses particularly on transaction costs related to services purchased by the entrepreneur and specifically early entrepreneurial product tasks (prototyping, building an MVP or product component, etc.). This focus is a result of the nature of our data set and the theoretical value of observing tasks with a high degree of uncertainty and risk (vs procuring goods). Determining collaborator intention and capacity, communicating the nature of collaborative tasks, monitoring progress, and enforcing acceptable delivery all render product task services highly susceptible to transaction costs and risks (Coase, 1937; Poppo & Zenger, 2002; Williamson, 1981).

Throughout the paper we reference market and social collaborators in the pre-firm process. We define market collaborators as service providers that entrepreneurs engage through financial remuneration and whose collaborations are shaped primarily according to market norms (Williamson, 1981). We define social collaborators, by contrast, as collaborators engaged using social capital and according to the entrepreneur's social context and norms (Adler & Kwon, 2002; Bloch, Genicot, & Ray, 2007). While social and market contexts can overlap and interact (e.g., a collaboration that is remunerated below market rates due to the presence of social capital), we can broadly identify collaborations according to the predominant form of capital in use. We choose to identify the actors assisting entrepreneurs as collaborators as opposed to service providers to highlight the involved role of entrepreneurs in these product tasks. For variety, we use capital activation, engagement, and mobilization, as well as contributors and collaborators synonymously.

2.2 The Pre-Firm Entrepreneurial Journey

The pre-firm entrepreneurial journey can be summarized as an entrepreneur's efforts to substantiate a value proposition under conditions of high uncertainty (Alvarez & Barney, 2005; Arikan et al., 2020). The resources and stakeholder support necessary to establish a firm capable of producing their envisioned value is often contingent on initial evidence that reduces the uncertainty of the project (Townshend, 2018). Early productive signals, such as a clearly articulated business model, expert input, customer feedback, prototypes, and initial launches, all serve to attract investment and interest from would-be participants and solidify the entrepreneur's confidence (Fisher, 2012; Fisher et al., 2020).

An entrepreneur must often engage early collaborators to produce these uncertainty-reducing signals (Obstfeld, Ventresca, & Fisher, 2020). Pre-firm activities are numerous and varied (Sarasvathy, 2001); even experienced entrepreneurs are unlikely to have all the time, energy, knowledge, and skills necessary to successfully exit pre-firm stages alone. While a pre-firm entrepreneur is generally under-resourced and/or unwilling to commit significant financial resources until the situation is made less uncertain, entrepreneurs must use the capital at hand to productively engage social and market contributors (Clough et al., 2019; Engel et al., 2017).

2.3 Transaction Costs and the Pre-firm Entrepreneur

Transaction cost economics, as introduced by Ronald Coase, explains that these pre-firm collaborations hold significant risk to the entrepreneur (Coase, 1937). Not only do the incentives of collaborators sometimes misalign with the entrepreneur's success, but the entrepreneur's ability to discern crucial collaborative factors is severely flawed (Simon, 1957; Williamson, 1981). Williamson identifies seven factors that contribute to a costly transactive environment: bounded rationality, atmosphere (e.g., suspicion, hostility), small numbers (market dominance), information asymmetries, exchange frequency, asset specificity and the

threat of opportunism (Williamson, 1981;1993). To mitigate these risk-enhancing factors, entrepreneurs must engage in costly behaviors known as transaction costs.

These transaction costs fall into three broad categories: search and information, bargaining, and policing and enforcement (Klein & Sykuta, 2010; Williamson, 1981). Search and information costs refer to the costs of finding collaborators as well as ascertaining their capability and intentions. Bargaining costs refer to costly efforts to communicate intentions, negotiate terms, and establish a collaborative relationship. Policing and enforcement costs refer to the efforts necessary to maintain productive collaboration, monitor collaborative efforts, protect against damage, and ensure terms are met (Klein & Sykuta, 2010).

A firm's response to these costs depends on the nature of the collaborative task and the resources of the firm. The frequency of exchange, the specificity of the asset in question, the uncertainty related to the task, and the threat of opportunism determine the costs of a transaction and the firm's response (Klein & Sykuta, 2010; Williamson, 1981). If it is more efficient, firms can internalize productive processes as opposed to incurring additional transaction costs with outside collaborators. The very existence of firms is hypothesized to stem from this verticalization process as a response to market inefficiencies and costs (Coase, 1937; Zenger, Felin, & Bigelow, 2011).

Pre-firm entrepreneurs, however, lack a firm or resources with which to internalize productive capacity. Before they can organize the resources to build a firm, they must collaborate on productive, uncertainty-reducing tasks (Engel et al., 2017; Obstfeld et al., 2020). At this critical juncture typified by low resources and high uncertainty, they are fully exposed to the costs and risks of market transactions and are most vulnerable to collaborative power imbalances and opportunism (Alvarez and Barney, 2005; Townsend et al., 2018).

2.4 Market Collaborators in Pre-firm Stages

So who are the collaborators exacting these transaction costs in pre-firm stages? A focus on social capital and networks in early entrepreneurship has left the role of market transactions somewhat neglected (Clough et al., 2019). The application of financial capital in the earliest stages is necessarily small (per resource constraints and high uncertainty), but we know the outputs of such collaborations are critical (Fisher et al., 2020). Social capital alone is unlikely to be enough to bring about the early proof of concept, prototypes, and traction necessary to exit pre-firm stages (Adler & Kwon, 2002; Bloch, Genicot, & Ray, 2007). Since friendly favors can only go so far, markets are likely key to accessing the expertise, regularity, and scale necessary to establish firm inputs for most entrepreneurs.

An overall paucity of empirical work related to pre-firm stages (Bennett & Chatterji, 2019), provides little opportunity to characterize pre-firm market transactions or collaborators. The pre-firm entrepreneurial environment is particular; as previously mentioned, the situation and choices of an early entrepreneur are different from those of a firm, and we cannot assume their collaborations follow similar patterns. More direct observation will be necessary to see how entrepreneurs select collaborators, initiate and maintain collaborations, as well as deal with resultant risks, costs, and failures (Clough et al., 2019; Townsend et al., 2018).

2.5 The Role of Social Capital in Pre-firm Stages

While rarely explicitly linked to transaction costs in the entrepreneurship literature, social capital and close network ties have an indirect link to these costs as an important means of resolving early entrepreneurial uncertainty. We know early social interactions are key to idea generation (Perry-Smith & Coff, 2011; Perry-Smith & Mannucci, 2017; Tocher, Oswald, & Hall, 2015), opportunity discovery and rationalization (Alvarez, Barney, & Anderson, 2013; Cornelissen & Clarke, 2010), emotional support (Hite, 2003; Hite & Hesterly, 2001),

mentorship and advice (Nebus, 2006; Vissa & Chacar, 2009), as well as accruing financial resources and investment (Ferrary & Granovetter, 2009; Hallen, 2007; Hallen & Eisenhardt, 2012; Huang & Knight, 2017) throughout the entrepreneurial process.

While there has been much discussion of how social capital facilitates the accrual of financial resources (Huang & Knight, 2017; Zott & Huy, 2007), we don't know exactly how social capital can affect the *successful application* of financial resources in pre-firm stages. Recent research acknowledges the need for a model that "allows for the examination of mobilization attempts across multiple types of resource simultaneously, including the reciprocal interactions between the entrepreneur's human, social, financial, and other forms of capital" (Clough et al., 2019). Such a model is necessary to help explain the role of social capital in determining the nature of and response to pre-firm transaction costs. The remainder of this article will serve to provide the initial foundations for such a model.

In summary, extant research on early entrepreneurial stages suggests that: 1) entrepreneurs must use market collaborators to establish pre-firm productive signals and organize a firm, 2) engaging market collaborators exact transaction costs, 3) pre-firm entrepreneurs have few means of mitigating those costs and must rely on primarily social resources, and 4) the relationship between social capital and financial capital utilization in pre-firm stages is unclear. The following section outlines the means of an exploratory study conducted to begin answering the question of how entrepreneurs successfully engage pre-firm collaborators under conditions of uncertainty and transaction costs.

3.0 METHODS

To begin to understand how entrepreneurs mobilize resources to overcome transaction costs in pre-firm stages we observed over a thousand pre-firm collaborative communications conducted

by 26 pre-firm entrepreneurs. These interactions all revolved around completing pre-firm tasks or products and included both paid, transactive collaborations (where transaction costs are necessarily present) and network interactions engaged through social capital. We employed iterative theory building (Eisenhardt, 1989) and a combination of semi-structured interviews and archival data to provide a rich perspective on the undertheorized pre-firm stages (Jick, 1979; see also Fang et al., 2015; Hite, 2005). Each entrepreneurial journey was treated as an individual case and served to confirm or challenge the inferences drawn from the others (Yin, 1984). Multiple rounds of interviews were used to contextualize entrepreneurial action while rich archival data confirmed accuracy and gave direct access to collaborative content. This combination was helpful in elucidating a process as well as enabling a replication logic (Eisenhardt and Graebner, 2007).

Data collection was carried out in two areas with significant start-up activity in two countries, one in the Midwest region of the United States and another in the south of England. Both contexts were in proximity to respected universities and are broadly recognised as innovation hot spots. To avoid the confounding effects of incubators or similar institutional interventions on pre-firm collaborations, we chose to use snowball sampling as opposed to sampling lists from such institutions. Data collection in the United States began in the summer of 2020 and lasted a year. The second round of data collection in the United Kingdom began in early 2022 and lasted six months at which point theoretical saturation had occurred. Table 1 describes our sample of entrepreneurs, including their age, education, gender, location, the industry of their venture, the presence of co-founders, the continuation of the venture after two years from data collection, and the number of pages that constituted their particular case.

Identifier	Sole Founder?	Age	Education	Gender	Location	Industry	Case Pages	Still at Venture 2 Yrs Later
1	No	20s	Graduate Degree	M	Western USA	Health and Wellness	130	No
2	Yes	20s	Bachelors	M	Western USA	SaaS	168	No
3	No	20s	Graduate Degree	M	Western USA	Data Security	67	Yes
4	No	30s	Graduate Degree	M	Western USA	Automotive	76	No
5	No	20s	Graduate Degree	M	Western USA	Education Technology	83	Yes
6	Yes	30s	Bachelors	M	Western USA	VR and Digital Technology	125	Yes
7	Yes	20s	Bachelors	M	Western USA	Consumer Goods	54	No
8	Yes	50s	Bachelors	F	Southern USA	Food and Beverage	96	Yes
9	No	30s	Graduate Degree	M	Western USA	Education Technology	59	Yes
10	No	20s	Graduate Degree	M	Western USA	Consumer Goods	256	Yes
11	Yes	20s	Graduate Degree	F	Western USA	Health and Wellness	112	Yes
12	Yes	20s	Bachelors	F	Western USA	Apparel	83	Yes
13	No	20s	Graduate Degree	M	Western USA	SaaS	39	Yes
14	No	20s	Graduate Degree	M	Western USA	SaaS	22	Yes
15	Yes	20s	Bachelors	F	Western USA	Consumer Goods	49	Yes
16	Yes	40s	Graduate Degree	F	Western USA	Professional Services	93	Yes
17	No	40s	Graduate Degree	F	Western USA	SaaS	35	Yes
18	No	40s	Graduate Degree	F	Western USA	SaaS	33	Yes
19	Yes	40s	Bachelors	F	Western USA	SaaS	61	Yes
20	No	20s	Graduate Degree	M	Southern England	Cloud and Data Services	35	No
21	No	20s	Graduate Degree	F	Southern England	Cloud and Data Services	15	No
22	No	20s	Graduate Degree	M	Southern England	SaaS	32	Yes
23	No	20s	Graduate Degree	F	Southern England	SaaS	26	Yes
24	No	20s	Bachelors	M	Southern England	Education Technology	20	Yes
25	No	20s	Bachelors	M	Southern England	Mobile	28	No
26	Yes	30s	Graduate Degree	M	Southern England	Mobile	41	Yes

Table 1: Description of Entrepreneurs/Cases

Our sample is comprised of first-time entrepreneurs who were actively engaged in validating and organizing around their value proposition but who had yet to establish an entrepreneurial firm or receive significant financial investment. Each entrepreneur sampled had committed significant time and financial resources to their efforts and had foregone alternative work opportunities. To be selected, founders had engaged in the early validation/organizing process for at least 6 months to ensure there was sufficient data on early collaborations. Since women are significantly and systematically underrepresented in the entrepreneurial literature (Ahl, 2006; Churchill & Craig, 2019), care was taken to achieve a relatively gender-balanced sample (40% of participants were female). Sampling across industries was necessary to establish a sufficiently large data set and is consistent with the nature of the theory being tested. By limiting our sample to those who plan to solicit outside funding (i.e. excluding self-funded

or bootstrapped entrepreneurs), we selected entrepreneurs who must by necessity engage a wide portfolio of collaborators. The funding event provides a consistent checkpoint motivating their early efforts and limits the sample to founders building high growth, scalable enterprises, excluding variation that may stem from smaller-scale endeavours.

Of the 28 viable candidates we approached, 26 were willing to participate. We found entrepreneurs were eager to share their story and reflect on the path they had been on.

Unlike other mixed methods research of entrepreneurship which tends to sample from well-established ventures (generally 2-5 years after formal organization), this project seeks to observe pre-firm behaviors which would be affected by real-time, longitudinal observation and obfuscated by distant memory. Thus, our study directly samples entrepreneurs in the middle of pre-firm stages and takes a retro-active look at recent collaborations (from initiation of entrepreneurial behaviors to the time of sampling). By engaging with entrepreneurs before they have successfully established their businesses and produced narratives reflecting that success, we are better positioned to access unbiased and undimmed accounts of early collaborations, risks, and processes.

3.1 Data Sources

We traced the early collaborative interactions and experiences of entrepreneurs by means of several data sources: (1) multiple rounds of semi-structured interviews with pre-firm entrepreneurs, (2) exhaustive digital records and communications from early collaborations (texts, emails, chats, calendar invites, journal entries, etc.), (3) archived support materials used in collaborative interactions, and (4) informal follow-ups by email, phone calls, and observation. To see the unseeable in early stages, we leveraged the digital traces left by nearly every early entrepreneurial interaction undergone by our sample of entrepreneurs, and, together with their recollected experiences, pieced together the larger narrative of a seemingly

unstructured journey. This combination of data sources allowed us to triangulate more accurate and robust findings (Jick, 1979) and enabled a more confident appraisal of past events. Each phase of the research helped hone the data collection instruments of the phases that followed.

Semi-structured interviews. Interviews were conducted with entrepreneurs and founder pairs who were actively engaged in the nascent validation and establishment of their developing value proposition. Entrepreneurs experienced two types of interviews that were at least a week apart and were sometimes divided into multiple sessions. In some instances, the two interviews were performed back-to-back due to the limited accessibility of the entrepreneur. The first round of interviews used an open-ended format to establish the background and characteristics of the entrepreneur as well as the background and nature of their endeavour. It then established a timeline of key events beginning with the early, initiating beliefs (Alvarez & Barney, 2007; Felin & Zenger, 2009) through to their current collaborative efforts. Particular attention was paid to key pivots, successes, and failures as experienced by the entrepreneur. The first interview generally lasted between one to two hours.

The purpose of the second round of interviews was to establish a highly detailed picture of the broad timeline established by the former. Before or at the offset of the second round of interviews, entrepreneurs were prompted to generate a list of all the people who had played a collaborative role, whether in a social or formal market context, in their entrepreneurial journey to date as well as the means by which they communicated with them (email, phone calls, etc.). As early interactions and collaborations surfaced, their significance and results were discussed and recorded. This list served to establish the previous timeline with greater detail and was amended throughout as more interactions were recollected.

The latter part of the second interview consisted of a digital audit of their early collaborations. First, the entrepreneur used relevant keywords and events to search the digital

platforms they had used to contact and communicate with collaborators. This 'audit' of an entrepreneur's digital history was guided by the researcher but accomplished entirely by the entrepreneur on their personal devices (no direct access to personal platforms was needed or requested). As these communiques came up, details were recorded of each, and the significance was discussed. Next, we cross-referenced the resultant list of interactions with the previous event history and collaborator list to make sure the digital audit had been exhaustive. Names or events that had not been captured in the first search prompted deeper exploration. Seeing the actual communications prompted rich and more accurate recollections from the entrepreneur of the nature of these collaborations. The entrepreneurs were questioned about the initial purpose of the collaboration, the nature of working with this collaborator, and the results of the collaboration. These second interviews generally lasted between one and a half to two hours. Interviews were audio recorded and automatically transcribed using on-device software.

Due to the vulnerable nature of reviewing past interactions with researchers, their ability to censor or avoid sensitive information was stressed repeatedly. Only one participant chose not to complete the second interview over concerns about the security of what they perceived to be an important trade secret. All other participants were open and willing to share the digital content of their interactions so long as sensitive information was redacted. In general, entrepreneurs were excited to take a careful look at where they had been and engage in sensemaking as to how they had gotten to their present situation.

Multiple methods were used to decrease informant bias. The relative recency of events likely improved accuracy, but by observing and referencing the digital "source material" of each interaction discussed, initial biases or inaccuracies were amended to great effect. By attaching each collaboration to their digital traces, we could both confirm the accuracy of the entrepreneur's recollection as well as spark deeper insight into the substance and nature of

these events. Additionally, the careful and explicit provision of anonymity and control of data was assured to participants to encourage honest reflection. Retrospective accounts were compared with recent and ongoing behaviors to establish continuity (Leonard-Barton, 1990). Interview techniques such as "courtroom" and non-directive questioning also further improved account accuracy (Eisenhardt, 1989).

Digital Records of Collaborative Communications. Personal devices in today's technological landscape make it virtually impossible to collaborate with individuals without leaving a digital trace of the interaction. At its barest, coordination by phone call told when and with whom the meeting was arranged. Calendar entries or invites additionally provide location and meeting times. The most common means, email or text conversations, also capture the context and discussion. All but call histories were easily searchable in the platforms on which they were undergone (searching both for participants or keywords) allowing us to do a relatively thorough check for interactions or events they may have forgotten.

In most cases, entrepreneurs felt comfortable sharing the content of these interactions (by screenshot or forward) such that by the end of the study, we were able to compare over a thousand email, text, chat (platforms, LinkedIn, etc.), social media, and journal entry communications. To help piece together the various promises and challenges of both social and market collaborations, we were able to see the initiation, maintenance, and conclusion of each contributing interaction as they happened. These digital artifacts render the messy, unstructured, early moments of the incipient entrepreneurial journey both observable and subject to analysis.

Supplementary Archival Materials and Other Data. Other data sources considered included materials used in the collaborations studied (such as slide decks, prototypes designs and mock-

ups, landing pages, websites, and business plans) as well as materials used by the entrepreneur to structure their personal and collaborative efforts (such as notes and activity logs). All supporting material was used to further validate, contextualize, and elaborate on the entrepreneurial experiences being observed.

3.2 Data Analysis

Our data collection yielded 45.5 hours of recorded interviews (1,448 pages when transcribed), 304 pages of digital communications between entrepreneurs and collaborators, and 65 pages of supplementary material. We used the interview and digital record data to form timelines of early entrepreneurial activity and collaborations (Yin, 1984; Eisenhardt, 1989). Each entrepreneur's journey was considered a separate case, summarized by timeline, collaborator lists and event histories, quotes, and supplementary material. Follow-up calls and emails were used to fill in missing data. Triangulation between the separate forms of data helped provide validity to case facts and uncover emerging themes (Jick, 1984).

After organizing our data into case histories, we were able to see a relatively exhaustive timeline of all entrepreneurial collaborations in the observable period inclusive of the participants, their relationship, the task, the purpose, and outcome as described by the entrepreneur, and the communications that took place during the collaboration. About a third of our cases granted extensive data yielding dozens of collaborators and hundreds of communications. These became the focal cases which the other cases, with significant but slightly less exhaustive or extensive data, served to compare and confirm.

We then began an analysis comparing the various collaborative experiences across entrepreneurial journeys. Data and developing theories were iteratively revisited throughout the analysis process; pattern matching and replication logics were used to compare within and across the numerous cases. Analysis of qualitative data primarily came in the form of textual

analysis, categorization, and model building. Charts, tables, timelines, and counts were used to compare multiple categories in tandem (Eisenhardt and Graebner, 2007; Miles and Huberman, 1994). Consistent with inductive methods, the definitions of crucial constructs and processes stemmed from interactions with informants (Eisenhardt & Graebner, 2007). As emergent theoretical frameworks took shape, they were regularly compared with extant theory to help refine and sharpen definitions, as well as to highlight similarities and differences (Eisenhardt, 1989).

3.3 Observing Transaction Cost Context and Mitigating Behaviors

Our research question was how entrepreneurs mobilize resources to mitigate pre-firm transaction costs under conditions of high uncertainty. For simplicity and due to the constraints of our data, we primarily focus on the mobilization of social and financial capital as opposed to human or intellectual capital. While we couldn't directly measure transaction costs and risks, we could look for behaviors and patterns that affected known factors that underly transaction costs and risks as represented in the literature (Klein & Sykuta, 2010; Poppo & Zenger, 1998; Williamson, 1981, 1993). These factors include the bounded rationality, small numbers, atmosphere (e.g., suspicion, hostility), information asymmetries, exchange frequency, asset specificity, and the threat of opportunism (Williamson, 1993). To track these behaviors, we had to observe and categorize early collaborative behaviors (both market transactions and social interactions), characterize the contexts of such behaviors, and identify the effect of these behaviors on transaction cost factors. Table 2 summarizes the observed contextual factors and social capital activation behaviors across the 26 cases. For each case it describes the network extent, whether the entrepreneur engaged social capital concurrently with the financial transaction, what they used social capital for if they did, and whether they considered the transaction to be successful.

3.3.1 Characterizing Network Extent To characterize the context of transaction cost mitigating behaviors, we measured the extent of their activated network over the six-month period in which they were most engaged with product development. Entrepreneurs who engaged less than 10 collaborators in this period were considered to have a low network extent, while those who had between 10 and 25 were considered to have a moderate network extent. Entrepreneurs who engaged more than 25 collaborators were put in the high category. We took a broad definition of collaborators, inviting entrepreneurs to consider every person they felt had played a direct role in their product journey. This included social interactions and paid transactions that ranged from advice to creative development to technical assistance to production. Collaborations ranged from one-off conversations to experiences spanning months.

			Social Capital Activation Categories			
Identifier	Network Extent (<10, 10-25, or >25 alters)	Concurrent Social/Financial Capital Activation?	Contextual Awareness	Product/Task Specification	Contracting Advice	Transaction Success?
1	High	No				No
2	High	No				No
3	High	Yes	+	+		Yes
4	High	Yes		+		Yes
5	Moderate	Yes	+			Yes
6	High	Yes	+			No
7	Moderate	No				Yes
8	High	Yes		+	+	Yes
9	Moderate	No				Yes
10	High	Yes	+	+	+	Yes
11	High	Yes			+	Yes
12	Low	No				No
13	High	Yes	+	+	+	Yes
14	High	Yes	+	+	+	Yes
15	High	No				No
16	Moderate	Yes	+			Yes
17	High	Yes		+		Yes
18	High	Yes		+		Yes
19	Moderate	No				No
20	Low	No				No
21	Low	No				No
22	Moderate	Yes	+		+	Yes
23	High	Yes		+	+	No
24	High	Yes		+	+	No
25	Moderate	Yes	+		+	Yes
26	High	No				No

Table 2: Network Extent and Social Capital Activation

3.3.2 Distinguishing Social and Market Actors Since the initiators of the collaborations were always an individual or pair of entrepreneurs without organization or significant financial resources, the complexity of formal market contracts was minimal, and the categorization of collaborations was a relatively straightforward process. Collaborations that involved financial expenditures at market rates were considered a market collaboration, whereas those without any remuneration were considered socially motivated. These initial categories were compared to the experience of entrepreneurs, including their description of the collaborative relationship, and were found to be consistent. In some rare cases, close friends or network associates participated in collaborative efforts while asking for partial remuneration. The significance of this hybrid group is addressed briefly in the findings and discussion sections.

3.3.3 Conceptualizing Social Capital Engagements To characterize how entrepreneurs mobilized social capital to mitigate transaction costs, we iteratively coded collaborative anecdotes and communique to find patterns across cases. Our initial analysis produced 10 collaborative behaviors between entrepreneurs and their socially-facilitated collaborators. Each of these behaviors were present in at least three cases and after further analysis fell into six emerging themes. After comparing these themes to extent literature and the patterns across the data, we found three critical uses of social capital that could affect the way an entrepreneur experiences transaction costs. Figure 1 shows which observed social capital engagements (and the number of cases they were observed in) developed into six emerging themes and eventually our three core collaborative strategies.

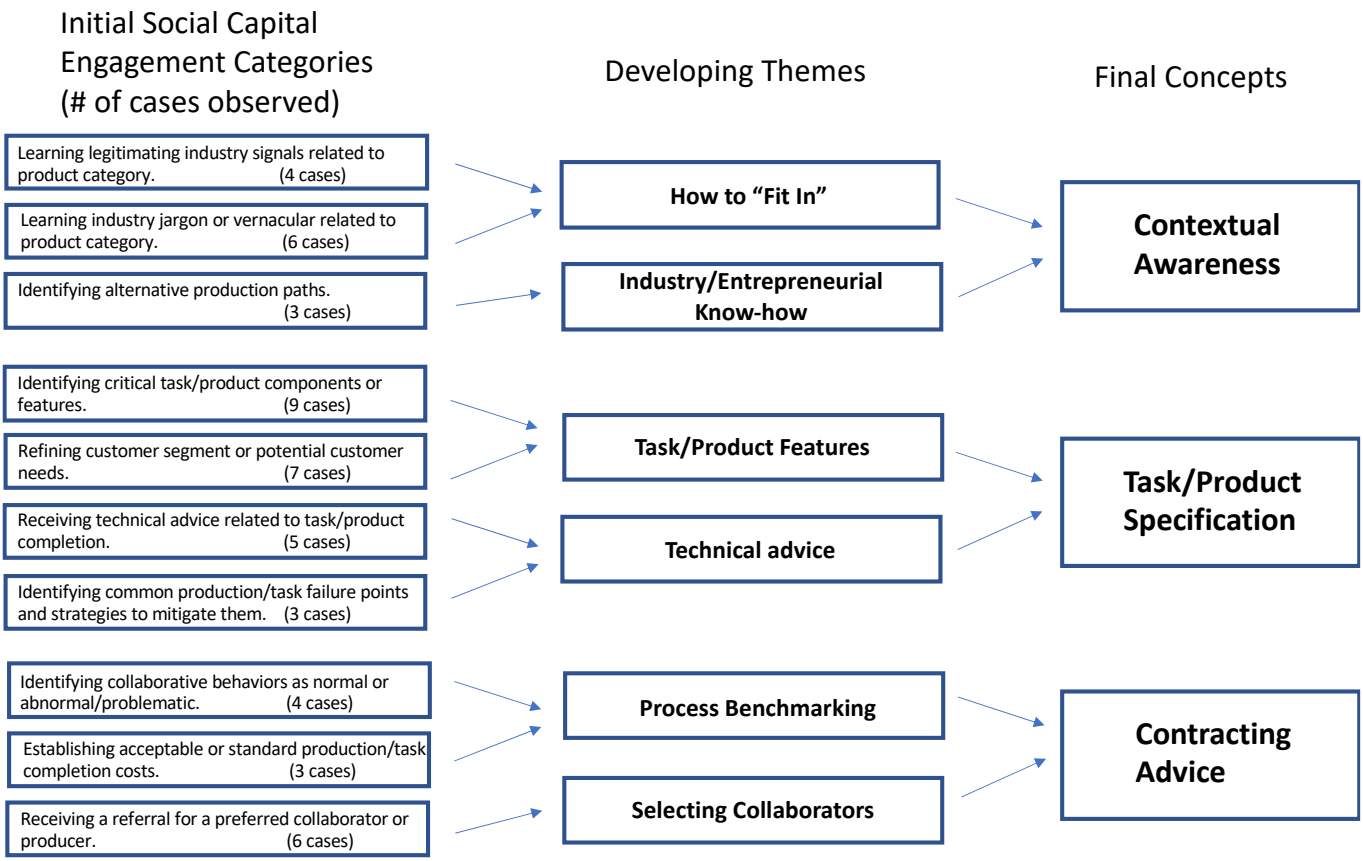


Figure 1: Emergence of Strategic Social Capital Utilization Categories

Social capital was broadly activated to achieve three strategic aims related to their experience with transactions: to increase the contextual awareness of the entrepreneur related to a given entrepreneurial task or product, to more fully specify the nature of a product or task, or to learn how to engage contracted market actors more effectively. Contextual awareness was observed across nine cases and relates to the bounded rationality of the entrepreneur as well as their awareness of critical uncertainties. Product or task specification was observed across 10 cases and relates to the likelihood of opportunism or hold-up in the transaction. Contracting advice was observed across 9 cases and directly decreased the search costs of finding appropriate market collaborators as well as decreasing the likelihood of opportunism. Table 3 summarizes the strategic uses of social capital along with a definitional description, the number of cases in which each was observed, the theorized transaction cost outcomes, and representative quotes from the cases.

Strategic Use of Social Capital	Description	# Cases Observed	Theorized Transaction Cost Outcomes (per Coase, 1937; Klein & Sykuta, 2010; Williamson, 1981, 1993)	Representative Quotes
Contextual Awareness	Using social capital to learn about contextual factors relevant to product/task completion.	9	Increase **bounds of entrepreneur's perception/rationality** related to critical collaborative factors (prerequisites, expectations, norms, etc.). Entrepreneurs are also more likely to be aware of and adapt to **uncertainties** in the environment.	"It was nice because I was able to kind of bounce ideas off of [acquaintance] and it was a safe place. I didn't feel dumb for not knowing stuff, but then I could also figure out what I didn't know." "This guy really knows what's next in VR… so I have an edge… I can play a few steps ahead in this space."
Product/Task Specification	Using social capital to disambiguate product/task direction or features.	10	A clearly articulated direction decreases the likelihood of a development pathway specific to a given collaborator. Less-path dependence decreases the likelihood of **opportunism** and **hold-up**.	"After working with our mentors… we knew exactly what to build." "It was talking with her that I realized the thing we really needed was an ability to monitor chemical levels real-time."
Contracting Advice	Using social capital to better characterize potential collaborators and ways to engage them.	9	Directly decrease **search costs** through referrals. Decrease likelihood of **opportunism** by improving entrepreneur's collaborative capability.	"They were able to recommend the manufacturers we eventually went with." "[He] encouraged me to kind of shop around and get bids from a bunch of different dev shops." "He knew a lot about working with off-shore programmers, which ended up being really helpful."

Table 3: Strategic use of Social Capital Categories

3.3.4 Characterizing Contracting Success and Failure Although this paper is concerned with transaction costs, not transaction success or failure, it was useful to track whether the entrepreneur ultimately got what they wanted from the transaction. While we can reasonably assume high transaction costs increase the likelihood of failure, an entrepreneur can experience high transaction costs and risks and yet still succeed or experience low transaction costs and still fail. Success versus failure, in these collaborations, was primarily defined by the entrepreneur. Success and failure determinations were limited to the individual collaboration at hand, so even when a failed collaboration inspired efforts that yielded progress, the collaboration itself was still recorded as failed. Qualified successes or failures were recorded

as such and express the reality of entrepreneurial tasks. These collaborations were infrequent enough to not materially change the data but provided an opportunity to look deeper at the individual factors within collaborations that render it successful or failed.

3.3.5 Characterizing Task Ambiguity As the data analysis progressed, we realized that the nature of the task, particularly the degree to which it remained ambiguous, was a key factor in collaborative outcomes. Borrowing from a wide body of psychology literature (Marlatt, 1971), we defined task ambiguity as a condition when two or more a priori response alternatives are equally likely and possible in the same task. This condition is known to evoke response uncertainty in the task performer (Marlatt, 1971). A relatively simple thought experiment helped to characterize tasks into unambiguous or ambiguous categories: if the same task were given to multiple collaborators, how much variation would there be in the outcome? The greater the variation, the more ambiguity the task contained. More generic, unambiguous tasks would invite uniform results.

There was always some difference between the task desired by the entrepreneur and the task as they communicated it to collaborators: sometimes unambiguous tasks seemed more ambiguous simply because of poor communication. Since we often had both the entrepreneur's description of events and the actual communications within collaborations, we were able to account for this in our analysis.

Our cases were iteratively analysed and compared until we felt the emerging framework sufficiently fit the data, and we were unable to find any more "surprises". The data suggested that early financial collaborations, often carried both high hopes and deep disappointments for most entrepreneurs. Social capital tended to play a key role in entrepreneurs strategic response to collaborative risks.

The following section outlines an emerging framework of how entrepreneurs experience pre-firm transaction costs as well as how entrepreneurs can mobilize social resources to successfully mitigate them.

4.0 FINDINGS

4.1 The Choice between Social and Financial Capital

Before directly describing the nature and response to transaction costs in pre-firm stages, this study first contributes to our understanding of these costs by clarifying the broader context of pre-firm market collaborations. More than 75% of all pre-firm collaborations observed were social rather than market situated. Even under high uncertainty, social capital opened the door to regular conversations, consultations, favors, contributions, and collaborations that were key to early entrepreneurial progress.

Contrary to the siloed discussions of social and market collaborations in extant literature, *network and market collaborators were regularly considered as substitutes*; entrepreneurs generally consider social and market means in tandem throughout most pre-firm stages. While the literature positions early entrepreneurial activity either in the context of networks or in the context of markets (and markets generally after pre-firm stages) (Clough et al., 2019), entrepreneurs seeking to accomplish some intermediate goal would directly compare collaborative opportunities from both contexts simultaneously. The deployment of social capital was not limited to accumulating knowledge, contacts, and financial resources, as often implied by entrepreneurship research (Engel et al., 2017; Kwon & Adler, 2014), but rather as a direct substitute for financial capital in motivating productive labor on the venture's behalf. Thus, the first way that social capital mobilization can mitigate the costs and risks associated with a transaction, is by *replacing the financial transaction altogether*.

Yet these social collaborations were not devoid of risks or costs altogether. We found that entrepreneurs dealt with significant social risk by engaging friends, colleagues, families, and acquaintances in their efforts and that they had to spend large amounts of time and energy in initiating, maintaining, and ending such collaborations in a socially acceptable way. For example, instead of sending a formal request for services over email (like was commonly done for a potential market collaborator), entrepreneurs often drew out the asking process over days and weeks to recruit their social contacts for tasks. Entrepreneurs regularly felt they needed to prime their friends for the request and would organize face to face get togethers to carefully introduce the topic. Once recruited, entrepreneurs often reached the limit of what they could ask network collaborators by the mutual obligations and understandings implied in their relationship and had to abandon the collaboration before the task was completed; the early entrepreneurial path was frequently lined with half-baked remains of aborted social collaborations. When network collaborators chose to cease the exchange suddenly, social norms provided very little recourse for the entrepreneur. Exciting progress became a largely unsalvageable mess with a single text from an overwhelmed associate.

One entrepreneur's experience trying to get a prototype of his platform wireframed is demonstrative of the frustrations experienced by many entrepreneurs in socially-facilitated collaborations. After six months of working on the project, one colleague-turned-collaborator responded to a texted meeting invite with "*I can, but I'd like to pull out of this. It's just not something I can prioritize my time for."* The most the entrepreneur got by way of explanation was: "*I'm too busy with activities. And have my own things I'm working on.*" The entrepreneur was left with a jumbled mess of partially written code. Three months later a close friend (unaware the entrepreneur was already without any technical help) reached out: "*You should fire your tech guy and let me build it for you. Lol. Except not 'lol' because I'm serious.*" The entrepreneur further confirmed their willingness, but by the time he was properly organized to

accept that help, the response had changed: *"I wouldn't feel comfortable committing to it. Mostly because I know it wouldn't be that much of a priority for me right now and that's not fair to you."* Over a year was spent chasing progress on the prototype including two more partial contributions from social collaborations that left the entrepreneur with little to show potential investors.

These and similar collaborations were not transactions in the economic sense (no formal promises of cash or equity were involved), yet applying social capital to entrepreneurial tasks incurred "interaction" costs that, while differing in kind to transaction costs, necessitated a transition in entrepreneurial means. After wading through numerous unspoken and tenuous social agreements, entrepreneurs often found the market promises of regularity and professionalism highly attractive. Despite the financial risk, the idea that they could simply find and hire the services they need with little threat of sudden abandonment or social complexities was a welcome change.

4.2 The Nature of Pre-Firm Entrepreneurial Transaction Costs

Upon incorporating market transaction into their collaborative portfolio, however, entrepreneurs did open themselves up to transaction risks and costs. While transaction costs have been widely discussed and established in the literature (Coase, 1937; Klein & Sykuta, 2010; Williamson, 1993), by directly observing them in the pre-firm context, we were able to determine the particular ways they manifest and the strategic scope for entrepreneurial action.

Entrepreneurs had a low ability to ascertain the collaborative intention or competency of collaborators. Collaborators had low incentives to provide extensive proof of their reliability and fit. Entrepreneurs could take or leave the limited samples of past work presented, but the value of their project to the collaborators wasn't worth additional hours of vetting or relationship building. An excerpt from the experience of one entrepreneur hiring a contractor

to build his minimum viable product shows how inexperience, incentives, and limited communication channels (messaging on an aggregative platform) can frustrate early collaborative matching:

Entrepreneur: That's pretty much it really.

Contractor: Okay so far I got the gist.

Contractor: Do you have any design plan/mockup for this?

Entrepreneur: No, I don't. . .I can probably get one, but it'd take some time.

Entrepreneur: Everything I mentioned so far is what I'd like clients to see. That's the most important. But if possible, I'd like them to be able to do things too. Those are mentioned in the doc.

Contractor: Okay I'm up for this.

Entrepreneur: Awesome. How much will this cost?

By the time they had agreed to collaborate, the entrepreneur had only an opaque perspective of the specific capacities of the contractor (an example of a site they had worked on and reviews from the platform they connected through), and the contractor had only been told the vague direction of the project. Despite the fact that both participants seemed sincerely committed and the contractor predicted a "smooth" process, the client portal in question never saw the light of day.

The entrepreneurs' ability to police and enforce collaborative terms was very low. The entrepreneur could sometimes do a minimal amount of reputational damage to collaborators through after-project reviews, but these acts did little to ensure the success of their particular collaboration and often amounted to a shout in the wind. One entrepreneur related the feeling of powerlessness after having been taken advantage of by a design company:

Looking back, I think both of them told me things like, it's great that you're small, because we can help you, and we're here for you, you know . . . things that I don't think they actually believed, unfortunately . . . I wonder just how many people have had this happen to them but they aren't allowed to talk about it because you sign, in order to get your money back, . . . an agreement that you won't badmouth the company.

The ability to monitor the transaction and control communication channels was generally low. Throughout most of the transactions observed, it was nearly impossible to discern whether unsatisfactory results were the result of miscommunication, entrepreneurial error, collaborator incompetence, or ill intent. In instances of opportunism, it was only after a long series of frustrating iterations and communications that an entrepreneur would finally surmise that they were being held-up or strung along. One entrepreneur, after receiving a great first set of samples for their project from a contracted manufacturer, was disappointed to find their project repeatedly delayed despite rising costs. The manufacturer had promised long-term collaboration and opportunities to grow together, but once the collaboration began, it was clear the incentives were not in the entrepreneur's favour: "*they kept saying, like, yeah, well you got pushed further down the cue since other people are paying me more money . . . when they finally supposedly got samples done, they were just so terrible. It was so bad.*" An employee at the company eventually admitted to her that they made their money on high-margin samples and purposefully avoided transitioning to the manufacturing partnerships they promised at the offset. She also would learn that a similar entrepreneur had recently taken one of the companies to court to no avail.

Entrepreneurial power was greatest in their ability to determine task specificity (relating to asset specificity). We witnessed a wide range of collaborative tasks which, while similar in purpose (prototypes, designs, product elements, etc.), differed significantly by the amount of ambiguity inherent in the request. The more ambiguous the request, the more specific to a particular contractor the product became. As expected, product specificity exposed the entrepreneur to hold-up risk since collaborators could exploit the non-transferable investment (Williamson, 1993). We'll cover the means by which entrepreneurs affected asset specificity in a later section.

4.3 Engaging Social Capital Concurrently with Financial Transactions

Entrepreneurs demonstrated two broad strategies in approaching financial transactions. The first strategy, employed by ten of the twenty-six entrepreneurs, was to complete all aspects of the collaboration between the entrepreneur and the paid collaborator. Figure 2 is representative of how these entrepreneurs matched with a contractor, negotiated terms, structured and communicated the task at hand, completed the task, assessed the progress, iterated on the task and concluded the collaboration all without engaging external actors in the process. This dyadic approach is consistent with the way it often characterized in the literature (e.g., (Geissdoerfer, Savaget, Bocken, & Hultink, 2022; Huang & Knight, 2017).

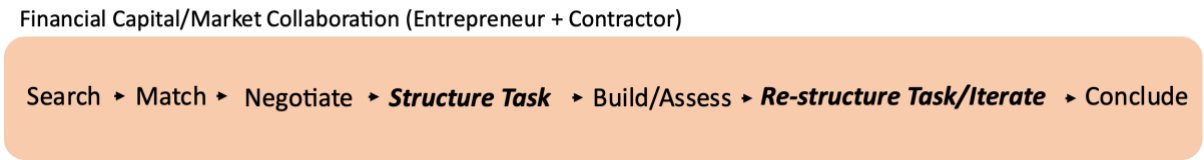


Figure 2: Illustrative Example of Transaction Between Entrepreneur and Paid Contractor Only

The other sixteen entrepreneurs, however, engaged social capital concurrently with their financial capital to bring in other network actors to contribute to the task or product's

success. In general, the paid collaborator was unaware of these additional contributors, their efforts reflected only in the more sophisticated approach of the entrepreneur. Figure 3 provides an example of how one such entrepreneur engaged a mentor in structuring their prototype before engaging with a manufacturer and maintained that mentor's involvement throughout to help iterate the product as it was being developed. In this way, the ultimate product of these transactions was a result of the efforts of at least three actors, only one of which was financially motivated to participate.

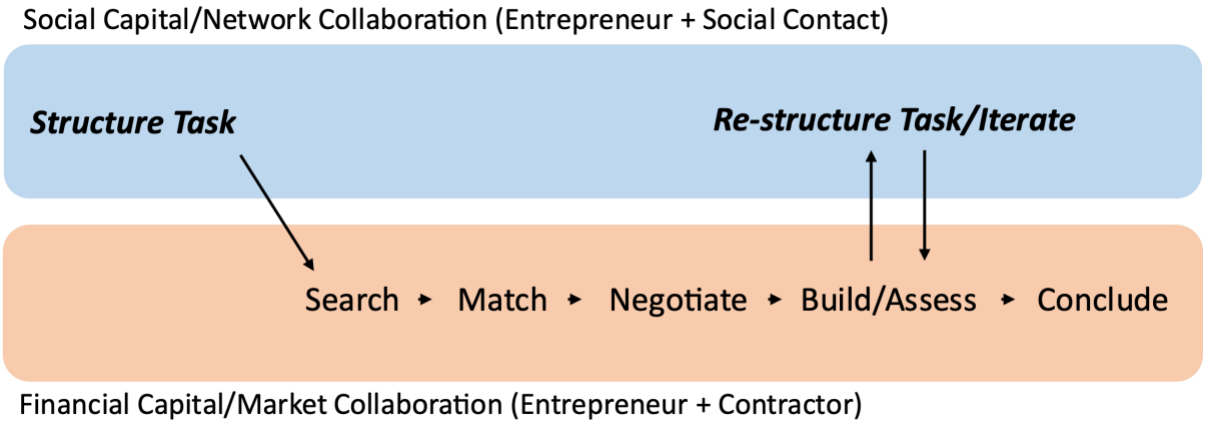


Figure 3: Illustrative Example of Transaction with Concurrent Social Capital Mobilization

The sixteen entrepreneurs who employed social capital alongside their financial capital used their social contributors for various purposes and functions, but all had the effect of either replacing work that the contractor would otherwise have to participate in or changing the terms or character of the transaction to reduce collaborative risk.

Proposition 1: Entrepreneurs who mobilize social capital alongside financial transactions have increased power to mitigate transaction costs and risks.

The following sections cover three main ways these entrepreneurs strategically deployed financial capital to transform an entrepreneurial transaction.

4.4 Using Social Capital to Specify Product or Tasks

Across all the cases, we found task ambiguity to be a liability in market collaborative contexts. Ambiguity was problematic for two main reasons. First, as mentioned, engaging collaborators in ambiguous tasks increased the specificity of a particular collaborative relationship. Such tasks made entrepreneurs reliant on a particular collaborator to finish the unique path that they initiated while generic or highly specified tasks gave entrepreneurs switching power. One entrepreneur who was anxious to find someone she could work with better, was instead forced to wait over a year for her contractor to complete her prototype designs. Since she had left critical aspects of the design up to the contractor, the contractor had added proprietary elements to the design and she could either wait to see if what they produced was sufficient or start from scratch.

Second, high ambiguity was antithetical to the communication, incentives, and competencies of low-cost market collaborations. The generic credentials and signalling of low-cost collaborators provided only an opaque view of their potential to deal with ambiguity which made choosing competent partners difficult. Given that a willingness to engage with complexity comes at a market premium, the odds were stacked against these financially constrained entrepreneurs. Ambiguous work was harder to benchmark allowing ample opportunity for perverse incentives to remain undetected.

Ten of our pre-firm entrepreneurs spent social capital to iteratively reduce the ambiguity of pending entrepreneurial tasks so they could approach market collaborators with more specified requests. Table 4 provides examples from some these cases and describes for each case the nature of the transaction in question, the specific task-specifying behaviors achieved with social capital, the collaborative outcomes of these behaviors, and representative quotes from the cases. It also provides an example of a similar case where social capital was not used to specify tasks.

Leveraging the patient social capital of inner network ties and/or the broader expertise of outer networks, these entrepreneurs shaped the direction of entrepreneurial efforts from broad directions to specific sub-tasks (see also Mannucci & Perry-Smith, 2017; 2022). General ideas needing more structuring were put through the refining filters of numerous network discussions until the next steps were clear and unambiguous. At this point entrepreneurs could intentionally limit the remit of market collaborators who would carry out the task, widening their selection of collaborators and providing less opportunities for opportunism. Figure 4 is an illustrative example indicative of how many of these entrepreneurs enlisted multiple alters with social capital to reduce ambiguity and provide clear, unambiguous directions in the transactive environment.

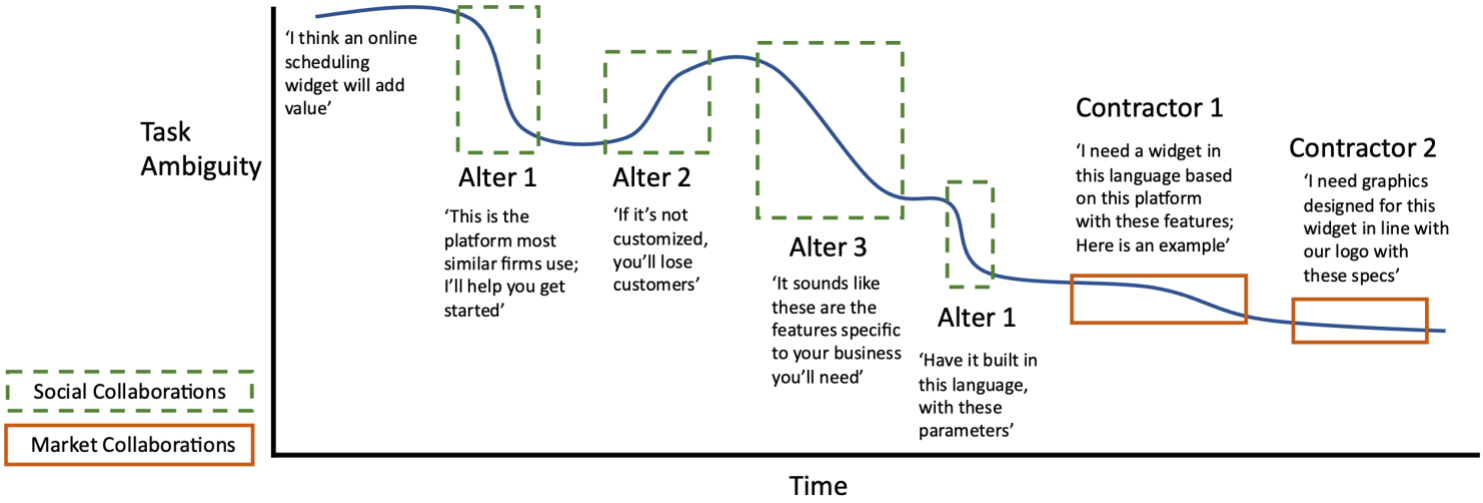


Figure 4: Illustration of how Task/Product Specification with Social Capital Decreases Collaborative Ambiguity

One entrepreneur explained the process of using social capital to better specify tasks:

The very first step, I think . . . has been to kind of just put our heads together first and say, you know, what do we think this is going to take and . . . kind of run that by, you know, some of our mentors and see what they think. And then, take it

even one step further than that, of actually reaching out to [outside] people and asking for help, perhaps important introductions, or something.

Starting with their own perspective of the task at hand, they engaged mentors who might have a fuller perspective and then queried them for introductions of those with yet another value-adding perspective. They explained how mentors, friends, and referrals would help them specify, refine, and "dial in" their current efforts. They cited network collaborators who helped explain unfamiliar concepts, give direction, and review prototypes. These participants were often willing to engage repeatedly over the same task sometimes meeting weekly to check in or provide feedback.

Representative Case (Industry)	Collaboration	Social Capital Activation	Collaborative Outcome	Demonstrative Quotes
14 (SaaS)	Early product design	Engaged multiple mentors in iterating product features and layout before engaging developer contract. Checked in periodically with mentors to gut check progress.	Positive production process. Successful product completion on time and on budget.	"It ended up actually being a … really good experience on both sides, … We, fortunately, had a pretty clear picture of exactly what to build. ... So we were handing them off exactly what we wanted them to build. And we didn't deviate from that… we ended up finishing on the right date and basically within the budget that we said, and it looked and functioned like we thought it would."
3 (Data Security)	Early product design	Engaged expert acquaintance to understand industry standards for data compliance and specific needs of potential clients.	Chose particular partner who better represented the specific needs they were trying to fill. Decided on data consent strategy different from other industry leaders.	"You probably heard of [leading competitor] so about two thirds of customers consent to research which means [leading competitor] can freely monetize their data. So people don't really, you know, understand the impact of what that means by giving their consent… so, consent management is a big part of what we want to do… because, frankly [leading competitor] is kind of abusing their trust."

6 (VR & Digital Technology)	Early product development	Joined network of innovators in the VR space to get a sense of the culture of early adopters, keep track of industry trends, and technological developments.	Produced media and branding in line with ethos and aspirations of potential customers without needing to iterate.	"His art is just what I was hoping for … It represents this space and… the lifestyle of it so well."
10 (Consumer Goods)	Prototyping	Leveraged outer network to talk to a long list of experts in the industry to determine critical, differentiating features.	Successfully built prototype with a high-cost manufacturer well suited to their feature list.	"A few competitors launched in the last two or three years that beat us to market, but, in fact, they didn't have the most important [feature] at all. And so you'd see them launch and… they should have been based on our feedback, like, people really wanted [our] solution and they would have just destroyed the market. Got everything… and they didn't. They just launched and they just kind of fizzled out. I knew that [customers] wanted three [features] and my research confirmed they didn't have the third one."
12 (Apparel)	Prototyping	N/A	Entrepreneur left a lot of strategic choices up to the company she partnered with. Prototyping company opportunistically stretched timeline to increase fees and then provided highly unsatisfactory product.	"When he finally 'supposedly' got samples done, they were just so terrible."

Table 4: Concurrent Task/Product Specification with Social Capital

Product or task specification was a highly involved, iterative task that often relied on numerous collaborative participants and varied skill sets. The process for one pair of entrepreneurs designing their initial protype took over nine months:

We talked to enough people that we thought, you know, that the data we got was meaningful and was accurate. And so, by the end of the summer, we had a pretty

decent representation of what we thought the product would look and feel like. We knew what to build.

By reducing ambiguity, entrepreneurs engaged in product specifications behaviors avoided the need for large levels of trust or intensive communication. The full capacity and intentions of the collaborator no longer needed to concern the entrepreneur so long as they were honest about their ability to achieve highly specified tasks. These tasks could be presented to any number of competent collaborators, and the substantiated product would be largely the same. A few entrepreneurs had sufficiently specified the entrepreneurial task to where they could easily convey their product to multiple market collaborators simultaneously and engage in a competitive bidding process. Market collaborators could clearly see what it would take to finish the project and thus suggest a competitive but profitable rate.

One entrepreneur explained the result his social capital had played in the development of his early product (emphasis added):

They stayed pretty true to their timeline and the budget. I think it ended up actually being a pretty good, like, really good experience on both sides, for us and them. . . . ***I think, in fairness, a lot of that actually is due to all the work we had done ahead of time. We, fortunately, had a pretty clear picture of exactly what to build****. We had done a Wix site, and a bunch of Google slides, that kind of, you know, walked through each screen, step by step of exactly what we wanted it to look like and do.* ***So we were handing them off exactly what we wanted them to build.*** *And* ***we didn't deviate from that****—we were able to stick to that the whole five months of the development process. And, lo and behold, we ended up finishing on the right date and basically within the budget that we said, and* ***it looked and functioned like we thought it would****.*

Critically, while all entrepreneurs had to specify tasks to some degree, engaging social capital provided clarity entrepreneurs could not accomplish alone. Not unlike academics who are the solo author of a manuscript, entrepreneurs may think they have nailed the task at hand. In reality, outside perspectives and external reviewers are needed to expand the rationality and reveal critical blind spots.

Clear, unambiguous tasks saved time and communication hassle. Highly specified tasks reduced collaborative risk, lowered search costs, and generally made the choice of collaborators less important. Even perverse incentives often yield to a need to display basic competence in the face of clearly benchmarked instructions.

Proposition 2a: The less ambiguous the transacted tasks, the less collaborator-specific the outcomes and the lower the potential for transaction risk.

Proposition 2b: Engaging social capital to disambiguate/specify products or tasks, is negatively related to transaction risk in pre-firm entrepreneurial environments.

4.5 Using Social Capital to Increase Contextual Awareness

The second way entrepreneurs engaged social capital to reduce transaction risks was by using their networks to increase their understanding of the context of the transaction. Entrepreneurs used their networks to learn critical factors related to their product or tasks such as industry standards and vernacular, signals they would need to be perceived as legitimate by collaborators, common misconceptions or mistakes made in this area, and relevant antecedents to their planned efforts. These had the effect of expanding their rationality and increasing their awareness of relevant uncertainties. Table 5 provides examples from some these cases and

describes for each case the nature of the transaction in question, the specific awareness-expanding behaviors achieved with social capital, the collaborative outcomes of these behaviors, and representative quotes from the cases. It also provides an example of a similar case where social capital was not used to increase contextual awareness.

One entrepreneur was able to use his brother's past affiliation with an institution central to their industry to situate their product and strategic direction. This insider knowledge helped craft their approach in ways that an outsider (which the entrepreneur) would have never known to consider, but that were critical in eventually landing that institution as an alpha customer. He explained, "he's in this space… and he knows from a[n insider professional's] point of view what an institution like [major org] is like… and [major org] is actually our alpha customer and they're gonna be developing it with us."

Entrepreneurs didn't always know how to look legitimate in the eyes of key collaborators, and their networks often provided key opportunities to learn the vernacular and signals they would need to be taken seriously. After being perceived as "a bunch of young kids" by potential partners they had gained access to, one entrepreneur reached out to a mentor with experience in this industry for advice. The mentor suggested getting letters of intent from potential customers to demonstrate inertia and appear more legitimate in the eyes of other potential partners. The results were game changing. The entrepreneur explained, "so I'm getting letters of intent and by December we had letters of intent from technicians in nine different states that were wanting it… and by February we were working with the former vice president of one of the largest [complementary product] manufacturing company." The added legitimacy widened their manufacturing and partnership options to include higher skilled and higher output companies, dramatically decreasing the risks and costs of early product development.

Representative Case (Industry)	Collaboration	Social Capital Activation	Collaborative Outcome	Demonstrative Quotes
3 (Data Security)	Onboarding Alpha Customer	Used brother's professional expertise, network, and past experience with an ideal alpha customer to identify critical considerations and specific people to work with.	Successfully onboarded institution as their alpha customer, despite only early progress and a relatively high risk bet from institution's point of view.	"… so he's actually an advisor in our company now… he's in this space… and he knows from a[n] [insider's] point of view what an institution like [major org] is like… and [major org] is actually our alpha customer and they're gonna be developing it with us... they're interested.
22 (SaaS)	Early product design	Interviewed acquaintances that were representative of future strategic partners to determine how best to onboard that subset of professionals. Absorbed relevant vernacular used by these professionals.	Potential strategic partners assumed entrepreneur had similar background to them, felt at ease.	"I've spent a lot of time talking to people like [family member and partner] to see what they are really needing… [and] I could tell when I was talking with [potential strategic partners] that they knew that I knew what I was talking about."
10 (Consumer Goods)	Strategic Partner Onboarding	Mentor suggested getting letters of intent from legitimating clients in order to garner credentials and momentum.	Was able to get major partner interested in collaborating.	"So I'm getting letters of intent and by December we had letters of intent from technicians in nine different states that were wanting it… and by February we were working with the former vice president of one of the largest [complementary product] manufacturing company."
2 (SaaS)	Early product development	N/A	The cost to build an early version of the product increased by 30% because the entrepreneur had mistakenly assumed it would be necessary to establish certain legal fixtures before engaging collaborators.	"I ended up spending a lot on legal fees for basically nothing… it was way too early to be worrying about that stuff, but I didn't know."

Table 5: Concurrent Contextual Awareness Expansion with Social Capital

Conversely, entrepreneurs who didn't engage social capital to contextualize their efforts were regularly exposed to risks and costs they could not necessarily have foreseen without outside help. Entrepreneurs would get the sequence of efforts wrong, pay for unnecessary services (like inappropriate legal services), or work with underqualified collaborators because they didn't know about or couldn't get the attention of more suitable companies.

Proposition 3: Engaging social capital to increase contextual awareness, is negatively related to transaction risk in pre-firm entrepreneurial environments.

4.6 Using Social Capital for Contracting Advice

The final way entrepreneurs activated their social capital alongside transactions was to get specific insights into how to work with the people they were transacting with. Such insights included best practices to minimize risk, referrals for preferred or trusted collaborators, and ways to structure agreements that would produce safe, productive relationships. These contracting insights were useful in decreasing opportunism and negotiation costs, as well as occasionally reducing search costs. Table 6 provides examples from some these cases and describes for each case the nature of the transaction in question, the specific contract advising behaviors achieved with social capital, the collaborative outcomes of these behaviors, and representative quotes from the cases. It also provides an example of a similar case where social capital was not used to improve contracting efforts.

One stark example came from an entrepreneur who wisely ran a contract by a trusted mentor before sending it to a collaborator she wanted to work with:

She [the mentor] was really honest with me. She said 'you know you sent over this document, that was just a word document that was a contract and she said, I know you don't know this but … you need to send it over in a PDF next time and always send to PDF' and I was like, 'oh, okay, whatever you need' and she said 'no, I'll share a little secret with you,' she said, 'everybody's not as honest as us and the terms that are on here and the prices are on here… if you don't send it in a PDF they'll feel free to change it for you'… It's like serious and she's like, 'yeah, welcome to the big boy world.'

This entrepreneur went on to realize that "there's a lot of slime out there" when it comes to manufacturing partners in her industry and something as simple as sending contracts in PDF form dramatically reduced the risk of opportunism from potential partners.

Referrals from social contacts also played a key role in changing transaction costs for entrepreneurs. In six of our cases entrepreneurs decided to transact with collaborators that had been recommended to them by their network. Trust was easier to establish when there was a known connection between referral and referee, and entrepreneurs were also able to find options more quickly than systematically vetting dozens of collaborators on aggregative sites.

Entrepreneurs also learned critical lessons from social contacts on how to approach collaborators and structure their transactive contracts and agreements. For most of the entrepreneurs in our study, they had never had to craft contracts or agreement terms from scratch, so a guiding hand was invaluable to know not only how to do it well but how to start. One entrepreneur explained that of all the numerous contributions a mentor had made for his business "the biggest guidance from him was how to structure an operating agreement… Now we're working with three [partners] and we have an awesome relationship with all of them."

Representative Case (Industry)	Collaboration	Social Capital Activation	Collaborative Outcome	Demonstrative Quotes
8 (Food and Beverage)	Early product manufacturing	Mentor warned entrepreneur how to avoid being cheated on contract terms. Mentor also recommended a manufacturer they trusted.	Found collaborator she trusted and felt like she could have a long supplier relationship with. Changed the way she sent contracts to potential collaborators so that they couldn't make changes she wasn't aware of.	"She said, 'I know you don't know this but …you need to send it over in a PDF next time… I'll share a little secret with you,' she said, 'everybody's not honest… and if you don't send it in a PDF they'll feel free to change it for you… welcome to the big boy world.'" "They sent me to somebody that they work with to do the individual [product component]."
1 (Health and Wellness)	Early partnership onboarding	Enlisted acquaintance to design an operating agreement before onboarding collaborators.	Successfully developed partnerships where all parties felt their participation was mutually beneficial and fair.	"I'll continue to meet with Tom… The biggest guidance from him was how to structure an operating agreement and, going forward, how to structure, like, my equity and financing." "Now we're working with three [partners] and we have an awesome relationship with all of them."
11 (Health and Wellness)	Early product development	Worked with mentor to deal with sexist responses she was getting from potential collaborators.	Was able to confidently approach a wider set of collaborators and find partners who respected her and her business.	"We were both just cringing and enraged with… how much stuff he was saying… But [mentor], being the supportive persons that he was, was like 'thank you for sending this.' …And it kind of shows how [mentor] was willing to support me despite being someone who is different from me."
8 (Food and Beverage)	Early product manufacturing	Found acquaintance that could help her understand the sequence and strategy of approaching manufacturers.	Felt confident in her decision to proceed with a manufacturing deal that would require significant minimum quantities.	"And then it really is a whole hurricane of issues, right? … Do we manufacture before we have sales? Do we go full scale?... I needed somebody that has that breadth and depth of experience to tell me how to go forward without just putting the cart before the horse, and saying 'I hope it all works out,' you know?"
1 (Health and Wellness)	Early product development	N/A	Without seeking recommendations for or from developers in his network, chose an	"My website is not professional enough right now… like I'm a little sheepish about it if that makes sense."

			unqualified contractor from an aggregative platform and was unsatisfied with the result.	

Table 6: Concurrent Contracting Advice with Social Capital

When entrepreneurs went ahead without engaging social capital in the contracting process, many realized their ability to discern collaborator capacity and intention was beyond their ability to accomplish satisfactorily. In a purely dyadic relationship, entrepreneurs felt like they were taking a shot in the dark and had little power to influence outcomes once they had initiated working with someone. One entrepreneur who, without anyone she knew in the industry, relied on google and "prayers" to find a collaborator related the experience like this:

> *I just Googled everything that I could, and I wanted something in the US and I was like 'I want it to be local' cause it was such an original concept that I wanted them to hear it in person… And so, he was like, 'we'll get right on it and we're a little busy now, but, you know, we're on it.' Well about nine months later… nine months went by. And he was like 'we are swamped, I haven't even touched your [product] in months.' And I was like, 'well, I guess I'll just find somebody else.' But he charged me a deposit of 1100 dollars and he never got them back to me.*

Ultimately, contracting advice played a key role in avoiding collaborative risk and providing entrepreneurs with the understanding they needed to negotiate appropriate terms.

Proposition 4: Engaging social capital for contracting advice or referrals, is negatively related to transaction risk in pre-firm entrepreneurial environments.

4.6 The Role of Social Capital

Our study suggests that social capital is critical not just for the acquisition of financial resources (see also Clough et al., 2019) but can also play a role in the use of those resources in market collaborations. The cost of early market collaborations depends on having sufficient social capital to activate productive network participation.

Many entrepreneurs who lacked the social capital to sufficiently engage network collaborators employed market contractors prematurely (when high task ambiguity remained) and to unfortunate results. Other entrepreneurs with low social resources were able to eventually structure market collaborations well but only by painstakingly developing the contextual awareness, knowledge, and skills necessary to disambiguate next steps on their own. This process granted over costly months and years what other entrepreneurs were able to achieve from a series of relatively short engagements among network contacts. Other social capital-poor entrepreneurs made unproductive equity promises to achieve progress that could have otherwise been made through simple market engagement. Struggling to structure their product or task direction alone, and thus inhibited in discerning the difference between a generic skillset and a value-creative contribution, they surrendered equity for what could have ultimately been purchased for trivial sums.

Proposition 5: Low levels of social capital in the pre-firm entrepreneurial environment is positively related to transaction costs and risks.

5.0 DISCUSSION

In this study we set out to understand how pre-firm entrepreneurs manage and mitigate transaction costs under conditions of high uncertainty and low resources (Alvarez & Barney, 2007; Arikan et al., 2020; Williamson, 1981). We found that entrepreneurs experienced

significant costs: entrepreneurs faced opportunistic behaviors from market collaborators, considerably limited rationality in ascertaining collaborator competency or intent, and very little control or recourse in collaborative relationships. Yet despite these circumstances, some entrepreneurs decreased the risks and costs of market collaborators by activating social capital to strategically disambiguate products or collaborative tasks, widen their understanding of the context of their product/task and collaboration, and/or solicit advice related to who to work with and how to set terms. Entrepreneurs that involved socially-motivated collaborators in transactions increased their power to mitigate transaction costs and risks and thereby increased their odds of product or task success.

5.1 Re-considering Pre-firm Strategy

By directly considering the relationship and interaction of both socially and financially facilitated collaborations, we answer the call for a model that "allows for the examination of mobilization attempts across multiple types of resource simultaneously, including the reciprocal interactions between the entrepreneur's human, social, financial, and other forms of capital" (Clough et al., 2019). Our theorizing builds on and extends the recent focus on early-stage collaboration in entrepreneurship research (Bennett & Chatterji, 2019; Bledow, Rosing, & Frese, 2013; Perry-Smith & Coff, 2011; Perry-Smith & Mannucci, 2017) by considering an expanded portfolio of collaborators, along with their associated promise and perils.

In problematizing the transition to market collaboration, our empirical findings qualify extent models that paint a linear relationship between financial resource acquisition and productive potential in nascent entrepreneurial stages (Burt, 2000; Clough et al., 2019; Kwon & Adler, 2014). We find that these models fail to account for the role and interaction of collaborative uncertainty and task ambiguity inherent to nascent activities. We provide an alternative perspective to the strong emphasis on search and resource acquisition as the primary

strategic focus of early entrepreneurs (Baker & Nelson, 2005; Brinckmann et al., 2019; Clough et al., 2019) instead bringing attention to the strategic use and concatenation of collaborators and resources.

Additionally, our findings provide a cautionary tale for blanket or unqualified ideologies pervasive in both popular and academic perspectives on entrepreneurial strategy. In the list of factors key to entrepreneurial success, the virtues of precision, preparation, and exactness rarely surface in churning discussions of speed, pivoting, creativity, and grit (Grimes, 2018; McDonald & Gao, 2019; Reis, 2011); yet our study shows it is exactly these that will be frequently necessary to engage critical market collaborators. The message that entrepreneurs need to be flexible and iterative may have the negative consequence of teaching entrepreneurs that they don't need to have a specific vision when engaging collaborators since it is likely to change. The virtues of flexibility, openness, and iteration must be coupled with crucial qualifications of what, when, and with whom.

5.2 Social Capital: An Expanding Perspective

Relatedly, this study underscores the role of networks and social capital as *not only key to gaining financial resources* but *also to using them effectively*. Finding and having resources are indeed part of the equation (Baker & Nelson, 2005; Clough et al., 2019; Huang & Knight, 2017), but a successful entrepreneur must know how to employ social and relational capital to strategically transition to market production and towards the establishment of a viable firm. *Social capital and networks do not become less important once financial capital is secured*; networks can augment the rationality and decision making of the entrepreneur throughout pre-firm stages (Adler & Kwon, 2002; Aldrich & Kim, 2007; Hite & Hesterly, 2001; Simon, 1956). Social collaborators help entrepreneurs see farther, process decisions quicker, be more creative, and execute more precisely—effectively unlocking the potential of the financial capital at hand.

The reality of entrepreneurship is that it involves too much uncertainty and ambiguity for cofounders to manage alone (Obstfeld et al., 2020). The complexity and risk of managing market transactions and collaborations is no exception.

5.3 Pre-firm Obstacles and Survivor Bias

This study contributes to our understanding of obstacles and factors that may contribute to early entrepreneurial failure (Arikan et al., 2020; Artinger & Powell, 2016; Mcgrath, 1999). Pre-firm entrepreneurship is hard and transaction costs complicate even promising projects. The strategic management of task ambiguity and the careful application of coordinated social and financial resources seem to be powerful variables relating to early wins or setback. A strategic mismatch of means and tasks may be mission-critical even when entrepreneurs are well-financed, well-connected, and pursuing a valuable idea (see also, Amezcua et al., 2013). Entrepreneurship practitioners and researchers agree that entrepreneurial learning and success depend on substantiating, testing, and iterating on the value proposition (Baker & Nelson, 2005; Sarasvathy, 2001; Townsend et al., 2018). A delay or failure to create early products, prototypes and customer experiences in the pre-firm stages may be enough to tip the cost-benefit analysis of continuing on the entrepreneurial journey. Entrepreneurial confidence and energy, critical to overcoming early odds, will find it harder to survive extended delays and consistent collaborative failure.

5.4 Limitations and Future Directions

Our study represents only initial steps in understanding how pre-firm entrepreneurs mitigate transaction costs in conditions of high uncertainty and limited resources. Our sample, while appropriate for our initial theorizing efforts, is limited to scalable ventures pursuing a readily recognizable entrepreneurial path in western contexts. The nature of transaction and market

collaboration costs/risks are likely to vary depending on cultural circumstances (Brouthers & Brouthers, 2000; Hechavarría et al., 2017). More work is needed to replicate these findings in various cultures and less formal entrepreneurial environments. While significant efforts were put forth to achieve a gender-balanced sample, our sample is also relatively limited in terms of racial diversity. Since social capital is guided by social norms, there is reason to believe social issues like race and gender matter in an entrepreneur's ability to activate social capital in processes like those studied here (Adler & Kwon, 2002; Bourdieu, 1986; Kwon & Adler, 2014).

Since our sample was limited to first-time entrepreneurs, follow up work is needed to see whether repeat entrepreneurs develop different strategies to mitigate transaction costs. Time and experience may reveal other methods of side-stepping or reducing collaborative risk. The importance of social capital in the process may change as the entrepreneur becomes more familiar with the industry or entrepreneurial process more broadly.

A significant limitation of our study is that, due to the limits of the sample, it fails to reflect a variety of founding teams (Delmar & Shane, 2006; Jung, Vissa, & Pich, 2017; Ruef, Aldrihc, & Carter, 2004). Recent progress has been made to show how tasks are distributed between founders internally (Jung et al., 2017), but more research is needed to determine how the makeup of founding teams might change how they involve outsiders in tasks. Further empirical enquiry will be necessary to see how factors like team dynamics, size, and capacities may change the broad patterns of who entrepreneurs choose to collaborate with and how."

More work is necessary to better understand the limits and opportunities of both social and financial capital in pre-firm stages. We know very little, across the numerous efforts and requirements necessary to introduce a value proposition to the market, about when social and financial capital act as substitutes, complements, or perhaps even antagonistic resources (Andrew C. Inkpen & Erick W. K. Tsang, 2005; Bloch et al., 2007; Clough et al., 2019). In

situations of unbalance, entrepreneurs may resort to compensations that damage the long-term viability of the firm. Entrepreneurs with too much of any resource might fail to learn key lessons or deploy resources prematurely. Future research is necessary to establish a typology of pre-firm outcomes based on various quantities of social and financial resources.

We are still at the beginning of a long journey towards understanding pre-firm entrepreneurship; longitudinal and process perspectives, in particular, are needed to demystify and provide theoretical groundwork for pre-firm stages (Bennett & Chatterji, 2019; Townsend et al., 2018). While questions remain about how to best characterize early entrepreneurial processes (McMullen & Dimov, 2013), our study shows how certain pre-firm processes and patterns (like employing financial capital for task completion) can be gainfully described and analysed. Identifying pre-firm patterns is crucial to identifying lurking survivor bias across entrepreneurship and strategy literatures. Until we have more data (and the theories necessary to activate that data), we risk perpetuating false narrative about who does and doesn't exit early stages.

While pre-firm activity continues to be difficult to organize into large data sets (Bennett & Chatterji, 2019), institutionalized entrepreneurial interventions and digitalization offer exciting opportunities to see the previously unseeable. Digitalization continues to render pre-firm collaboration and network activity increasingly accessible, and the number of early-stage entrepreneurial cohorts involved in various support groups, accelerators, incubators, and university programs continues to climb each year (Acs, Åstebro, Audretsch, & Robinson, 2016; Gianiodis & Meek, 2022). Both trends put pre-firm strategy closer at hand and unlock opportunities to connect the dots between early entrepreneurial choices and firm outcomes.

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Chapter 3

"Ready, Set, Start-up": Towards a Model of Pre-firm Entrepreneurial Tasks Under Conditions of Uncertainty

ABSTRACT

While all successful entrepreneurial ventures must first exit the incipient, pre-firm stages, the nature of these first efforts remains undertheorized. Specifically, we have yet to fully specify the strategic context in which pre-firm entrepreneurs must match tasks, resources, and collaborators across their social and market contexts to achieve their goals under conditions of high uncertainty (Clough et al., 2019). In this article we take preliminary steps in addressing this gap by reviewing the entrepreneurship literature and outlining four pre-firm entrepreneurial tasks along with their optimal collaborators: conceptualization, contextualization, substantiation, and capitalization. Each task helps answer the question: how does an entrepreneur turn an idea into uncertainty-reducing signals and the inputs of a firm (support, business plan, prototypes, etc.)? The model we develop suggests that the realization of entrepreneurial intentions often relies not only on having sufficient capital to engage collaborators, but also the strategic choice of when to engage social versus market collaborators and resources. Our model also includes factors such as platform characteristics and the timing of financial investment that further moderate task success.

Keywords: Conceptual; new venture formation; strategy

1.0 INTRODUCTION

The model of pre-firm entrepreneurship that focuses on an inspired, lone entrepreneur, sequestered in laboratory, dorm room, or garage, is increasingly being replaced by an entrepreneur-orchestrator actively navigating a portfolio of collaborators that are critical to the value-creative process (Arikan, Arikan, & Koparan, 2020; Obstfeld, Ventresca, & Fisher, 2020; O'Neil & Ucbasaran, 2016). While the earliest stages of the entrepreneurial process remain neglected by empirical inquiry (Bennett & Chatterji, 2019), theorists suggest social resources and networks are key to opportunity discovery (Almirall & Casadesus-Masanell, 2010; Klein, 2008), refining and exploring a value proposition (Perry-Smith & Mannucci, 2017), applying expertise (Kacperczyk & Younkin, 2017; Vissa & Chacar, 2009), as well as accumulating the resources necessary to establish a firm (Clough, Fang, Vissa, & Wu, 2019; Huang & Knight, 2017). Uncertainty usefully describes the context of early-stage activity, and entrepreneurs are thought to navigate it by using the resources and contacts at hand to bring together the necessary components of a productive organization (Arikan et al., 2020; Townsend, Hunt, McMullen, & Sarasvathy, 2018).

Important questions remain, however, in our understanding of pre-firm stages. Extent models often rely on a single resource (e.g., social capital) or group of collaborators (e.g., investors) and thus fail to account for the interaction of multiple forms of capital or the full spectrum of necessary contributors (Clough et al., 2019; Mannucci & Perry-Smith, 2022). We don't know precisely what entrepreneurs are doing in these earliest moments, how they relate to each other, nor with whom they are doing them (Bennett & Chatterji, 2019). A somewhat singular focus on social networks has positioned them as something of a one-stop-shop for entrepreneurial needs despite the known limitations of social capital (Adler & Kwon, 2002; Casciaro, Gino, & Kouchaki, 2014). Consequently, the role and relationship of any market actors other than investors (e.g., free-lancers, designers, and contractors) remains under-

theorized. Additionally, while many valuable discussions of the idea validation (ideation, championing, etc.) and venture formation processes (pitching to investors, selecting co-founders, etc.) provide useful bookends to the entrepreneurial journey, crucial intermediate steps of the process remain under-addressed or uncontextualized (Clough et al., 2019; McMullen & Dimov, 2013; Townsend et al., 2018).

Answering these questions about the pre-firm entrepreneurial process is key to better empowering entrepreneurial practice and policy (Bennett & Chatterji, 2019; Cohen, Bingham, & Hallen, 2019). Recent empirical enquiry suggests that early momentum might stall not because an entrepreneur's idea is deficient, nor because they lack resources, but because they fail to employ the appropriate means to a given task (Perry-Smith & Mannucci, 2017; Mannucci & Perry-Smith, 2022; Clough et al., 2019). Without a model to consider these early choices, systemic gaps in necessary funding or affordable services between ideation and fundraising stages may affect broad swaths of entrepreneurs simultaneously (Artinger & Powell, 2016; Clough et al., 2019).

Relatedly, a more complete model of pre-firm entrepreneurial stages is critical to addressing a lurking survivor bias in entrepreneurship and strategy research. Most empirical research in both entrepreneurship and strategy fields samples exclusively from established firms (Bennett & Chatterji, 2019). Without a clearer picture of the pre-firm stage, factors, and strategy, we are unable to see the pre-firm filters that bias our current models. Even research regarding what is called "nascent" entrepreneurship generally observes firms that have been established for at least a couple years (Davidsson, 2005; Dimov, 2010; McDonald & Eisenhardt, 2020). Until we consider the entrepreneurial journey in its entirety, including the pre-firm stage, we fail to fully account for what drives either entrepreneurial success or failure.

In this article we help address these gaps by examining the strategic factors pre-firm entrepreneurs face in strategically matching tasks, resources, and collaborators across their

social and market contexts to reduce uncertainty and produce the inputs of an entrepreneurial firm. By outlining the role and nature of uncertainty-decreasing tasks (the what), the role and nature of collaborators available to complete these tasks (the who), and the role and nature of means by which collaborators are engaged (the how) as represented across entrepreneurship research, we present a more complete model of the pre-firm entrepreneurial process. The model outlines how entrepreneurs can optimally match pre-firm tasks to early collaborators and shows that the realization of entrepreneurial intentions relies not only on having sufficient capital to engage collaborators, but also the strategic matching of collaborators with uncertainty-reducing tasks. It suggests the presence of interacting social and financial cost pressures that may prove a major pre-firm obstacle to resource-poor entrepreneurs.

The paper proceeds as follows. First, we review extant approaches to pre-firm entrepreneurial activity. We focus particularly on how extant research characterizes the relationship between uncertainty and resources in the early process as well as which means pre-firm entrepreneurs use to manage uncertainty. Next, we lay the foundation for a model of pre-firm tasks by outlining four foundational activities necessary to manage uncertainty as well as the collaborators available to accomplish them. We discuss the varying attributes of early social collaborators (both the inner and outer network) and market collaborators (both low-cost and premium services). We then present a normative model of pre-firm tasks and their optimal collaborators. We conclude by discussing the contributions our model makes to the entrepreneurship literature as well as its limitations and directions for future research.

2.0 A REVIEW OF EXTANT RESEARCH

2.1 Definitions and Boundaries

Before exploring our current understanding of early entrepreneurial tasks, it is useful to establish the scope of this paper and a few key definitions. This paper is concerned with

uncertainty-reducing entrepreneurial tasks that occur in the pre-firm stages. The organization and presentation of these tasks are a key contribution of this paper and are covered in subsequent sections, but broadly refer to tasks undergone by entrepreneurs to reduce uncertainty related to their venture and to establish an entrepreneurial firm (Sarasvathy, 2001; Alvarez & Barney, 2005; Fisher, Stevenson, Neubert, Burnell, & Kuratko, 2020; Townsend, Hunt, McMullen, & Sarasvathy, 2018). A focus on tasks is consistent with the sequential, yet non-linear, and effectual nature of early entrepreneurship (Sarasvathy, 2001) and provides a connective tissue between extant theories of early entrepreneurial activity (Baker & Nelson, 2005; Fisher, 2012; Sarasvathy, 2001; Townsend, Hunt, McMullen, & Sarasvathy, 2018).

By pre-firm entrepreneurship we mean the time between when an entrepreneur initiates entrepreneurial activity but has yet to establish an entrepreneurial organization. Borrowing from the work of Alvarez & Sachs we define the pre-firm stages as when the entrepreneur and their fledgling enterprise are largely conflated and mutually defined by stakeholders (2021; see also Dimov, 2010). In other words, when stakeholders can relate and interact with the entrepreneurial firm in a way that is distinct from relating and interacting with the entrepreneur, we consider a firm to be established. Ontologically, the establishment of the firm occurs across dimensions of practice (e.g., dedicating money to the business entity or hiring personnel), perception (e.g., establishing an enterprise name and branding), and legal distinction (e.g., registering an LLC) (Townsend et al., 2018; McMullen & Dimov, 2013). For variety, this paper will sometimes refer to the pre-firm stages simply as the early or earliest entrepreneurial stages.

Distinguishing between pre- and post-firm collaborative experiences are critical because the production options available to entrepreneurs, the risks and costs of collaborations, as well as the power to mitigate those risk vary depending on the presence of a firm. In pre-firm stages, entrepreneurs face higher uncertainty (Sarasvathy, 2001; Alvarez & Barney 2005), lower resources (Baker & Nelson, 2005), and lower legitimacy in the eyes of stakeholders

(Fisher et al, 2020; Alvarez & Shah, 2021) and thus have little leverage in controlling transactive costs (Williamson, 1981). Without an entrepreneurial firm, entrepreneurs will have less options or power in mitigating these risks or costs since they cannot internalize frequent, specific, or uncertain productive capacities (Coase, 1937; Poppo & Zenger, 2002; Williamson, 1981). Until entrepreneurs can hire employees, they are forced to use either social or financial capital to engage external collaborators to do what they cannot (Fisher, 2012; Baker & Nelson, 2005). Further, enterprise-entrepreneur conflation means that the risks and costs of collaborating are experienced directly and personally by the entrepreneur (Casciaro et al., 2014; Alvarez & Shah, 2021).

This paper is concerned with the collaborators that entrepreneurs use to make progress in pre-firm stages. These collaborators can be usefully distinguished by the primary means of capital used to motivate their collaboration. Entrepreneurial collaborations will often engage multiple forms of capital simultaneously (e.g., paying a friend below the market price for their services), but we can usefully categorize them by whether collaborators are primarily motivated by profit or social factors. We also assume in this paper that if social capital is the primary means, then social norms will be the salient norms that guide the collaboration (and vice versa in market contexts) (Beckert, 2010; Bourdieu, 1993; DiMaggio & Powell, 1983). Collaborators who are financially remunerated will be referred to as market collaborators while collaborators responding to social capital will be referred to as social or network collaborators. While network collaborators might normally be an inexact term in this context (since market collaborators are often found via network processes), distinguishing between inner and outer network social contexts (Burt, 2000, 2004; Granovetter, 1973) is a key element of both this paper and work that it builds on (Kacperczyk & Younkin, 2017; Perry-Smith & Mannucci, 2017) and thus remains internally consistent.

For simplicity, this paper will refer to a single entrepreneur or founder. Founding teams can be a key way to increase the productive capacity of a pre-firm enterprise (Jung et al., 2017; Delmar & Shane, 2006), but, given the breadth and complexity of establishing an entrepreneurial venture (Townsend et al., 2018; Sarasvathy, 2001; Fisher, 2012), we can reasonably assume that most founders will face production challenges in pre-firm stages that are outside the capacity of the founding team. Solo entrepreneurs and founding teams alike will likely rely on a portfolio of socially and financially motivated collaborators to achieve pre-firm aims (Clough et al., 2018).

2.2 Uncertainty and Resources in Pre-firm Stages

Extant research suggests that entrepreneurs in the pre-firm stage are concerned with establishing and refining a valuable idea, accruing resources, and organizing a firm (Clough et al., 2019; Townsend et al., 2018). Entrepreneurs, motivated by passion, profit, curiosity, or a desire to change something in the world, employ the resources at hand to effectuate change and progress toward a productive organization that can more fully enact their goals (Fisher, 2012; Sarasvathy, 2001). Idea-related processes are known to involve such activities such as opportunity discovery (Alvarez & Barney, 2007; Klein, 2008), design (Berglund, Bousfiha, & Mansoori, 2020; Rindova & Petkova, 2007), validation (Felin & Zenger, 2009, 2017), prototyping (Geissdoerfer, Savaget, Bocken, & Hultink, 2022), and pivoting (Grimes, 2018; McDonald & Gao, 2019) among others. Resource accrual involves the dedication of personal resources or the convincing of other stakeholders to commit resources such as time, labor, grants, knowledge, debt issuance, or investment (Clough et al., 2019; Huang & Knight, 2017; Zott & Huy, 2007). The organization of the firm involves the legal process of establishing a business entity, the consignment of assets to that entity, the organizing and hiring of teams, and

the establishment of key partnerships (Jung, Vissa, & Pich, 2017; Lazar et al., 2022; Ozcan & Eisenhardt, 2009; Pahnke, Katila, & Eisenhardt, 2015).

The nature of these pre-firm activities can be broadly characterized as a concerted response to the high levels of uncertainty inherent in pre-firm entrepreneurship (Alvarez & Barney, 2005; Arikan et al., 2020). Entrepreneurs seek to accomplish something that has yet to be accomplished (even copy-cat businesses must discover whether demand will accommodate another supplier of goods or services) and have no guarantee that their broad aims or any given steps in the process will be successful (Townsend et al., 2018). Since entrepreneurs experience the highest uncertainty at the offset of their journey, early entrepreneurs are generally characterized as resource-poor (Baker & Nelson, 2005). Even if entrepreneurs can self-finance their efforts, as rational actors they will be unlikely to commit significant resources until uncertainty has been reduced (Townsend et al., 2018). By refining and validating their core ideas and value propositions, entrepreneurs systematically reduce uncertainties related to their enterprise's viability (Alvarez & Barney, 2005; Reis, 2011). By presenting more refined value propositions, entrepreneurs are more likely to gather resources (Clough et al., 2019; Zott & Huy, 2007). Sufficient resources make the likelihood of a successfully established firm more certain. At its core, entrepreneurship involves producing productive signals (demonstrating progress) that countervail the uncertainty of success and attract key stakeholders to the entrepreneurial effort.

2.3 Producing Pre-Firm Progress: Sequence, Substance, and Collaborators

There is still much to understand about how entrepreneurs produce and concatenate these signals. While signalling helps clarify the mystery of how a resource-poor entrepreneur can establish an expensive firm (Fisher et al., 2020), it simultaneously begs the question of how these intermediate tasks are orchestrated and accomplished. Concepts like bricolage and

effectuation broadly describe the circumstances and approaches of entrepreneurs (Baker & Nelson, 2005; Fisher, 2012; Sarasvathy, 2001) but fall short of specifying how resources, collaborators, and tasks relate to each other or of presenting the process of firm development (Bennett & Chatterji, 2019; Clough, Fang, Vissa, & Wu, 2018; McMullen & Dimov, 2013). Extant literature does little to help an entrepreneur know what comes next at any point in their journey, instead presenting a long list of individual enterprising activities that, while important, are not fully integrated into an explanatory whole (Clough et al., 2018). Research suggests that entrepreneurs must engage a broad portfolio of contributors (friends, family, mentors, investors, gatekeepers, experts)—each with different skills, expectations, and motivations—across a broad array of tasks (ideation, designing, validation, testing, prototyping) (Perry-Smith & Mannucci, 2017; Tocher, Oswald, & Hall, 2015). So, how do pre-firm entrepreneurs strategically select tasks to pursue and with whom?

A useful starting point is a detailed consideration of the innovation journey. Perry-Smith and Mannucci suggest that the implementation of a valuable idea comes after that idea has been iteratively generated, elaborated, and championed (2017). They consider innovation as a series of incremental steps that give body to an idea and prepare it for future gatekeepers. Each subsequent step reduces the uncertainty of some aspect of the project for some key stakeholders. Innovators must generate a promising idea (generating), clarify and develop it (elaboration), gather resources and promote it (championing), and then implement it (implementation).

Crucially, even the most talented entrepreneurs or innovators will not have all the necessary perspective, expertise, or skills for each intermediate step in this process and must therefore engage collaborators. Each step in the innovation process prepares the evolving project for the next set of contributors who are best positioned to further improve it. This useful perspective successfully integrates not only the "what" but the "with whom" of each step in

the innovation journey. A variety of tasks, collaborators, and stakeholders are all prominent features of their uncertainty-reducing process (Perry-Smith & Mannucci, 2017).

Their framework, however, is insufficient to explain three important aspects of the pre-firm entrepreneurial journey: unstructured support systems or institutions, the role of tangible iteration along with idea evolution, and the necessity of financial as well as social capital. This perspective best describes contexts where the creators are soliciting support within their institution (some examples they give are in academic publishing, Broadway musicals, patent seeking) and can count on institutional or client resources to develop and implement it. Their central question is how an innovator accesses social resources (e.g., cognitive flexibility, support, influence and legitimacy, and shared vision) to move innovative content along a well-trod path. While entrepreneurship is becoming increasingly institutionalized with the rise of incubators, accelerators, and community and university programs, most entrepreneurs still operate outside of a clearly defined support system (Cohen et al., 2019; Goswami, Mitchell, & Bhagavatula, 2018). Entrepreneurs must pave a path before pursuing it; entrepreneurs must define objectives, order tasks, organize and orient collaborators, and provide the right capital to incentive them (Fisher, 2012, 2020; Fisher, Kotha, & Lahiri, 2016).

Further, work remains to factor in the iterative, tangible elements of the entrepreneurial process. Entrepreneurs need to convince people to help them build things (prototypes, storefronts, platforms, etc.), and entrepreneurship research has spent more time answering how entrepreneurs improve and foster support for their idea (Gavetti, Levinthal, & Rivkin, 2005; Obstfeld et al., 2020) and less on how they produce the tangible results necessary to do so. To change the status quo, entrepreneurs must test their theories with experiments that yield real-world results (Marti & Gond, 2018; Reis, 2011). Investors are rarely willing to invest in a good idea alone, and entrepreneurs must increasingly demonstrate real traction with customers, functioning prototypes, strategic alliances, and other highly involved and costly productive

signals (Arikan et al., 2020; Huang & Knight, 2017). To demonstrate progress to stakeholders, entrepreneurs must first deploy resources to organize various collaborations or means of production for such tasks. Some of these tasks are socially or cognitively constituted (like a clear business model or designs for a prototype), but others require tangible productive processes (like a minimum viable product or prototype). Each step in the process may mean a significant reorganization of productive means and thus a shift in what type of capital and collaborator is necessary.

Finally, while the emphasis of Perry-Smith and Mannucci's framework and much of entrepreneurship research remains on social networks, entrepreneurs are unlikely to be able to complete complex pre-firm tasks using only social collaborators (2017). Since there is a limit to what friends, families, and other socially motivated collaborators can or are willing to offer (Adler & Kwon, 2002; Casciaro et al., 2014), entrepreneurs will likely need financial capital and market participation at various points between the generation and implementation stages (Clough et al., 2018). This perspective positions the entrepreneur as firmly embedded in both social and market contexts and necessitates strategic decisions as to what form of capital to deploy and with whom to complete pre-firm tasks.

With the exception of investors, work on market-situated collaborators in the pre-firm process is sparse (Bennett & Chatterji, 2019; Clough et al., 2018). Transaction costs economics presumes pre-firm collaboration with market actors, but we lack sufficient empirical work on how entrepreneurs select and work with contractors, free-lancers, or other market institutions (Coase, 1937; Williamson, 1981). The assumption that friends, family, and fools will be around to finance these interactions is obviously untrue for many entrepreneurs, so the question as to how resource-poor entrepreneurs manage to eventually engage expensive pre-firm contributors remains underexplained.

2.4 Comparing Collaborative Opportunities and Risks

An under-developed facet of both social and market pre-firm entrepreneurial collaborations is the inherent costs and risks of such collaborations. Any collaboration faces opportunity costs, and the time and energy spent on failed collaborations can exact a heavy toll on entrepreneurs grappling with uncertainty (Hallen, Davis, & Murray, 2020; Mcgrath, 1999). A growing body of work demonstrates significant social risks in engaging networks instrumentally (Casciaro et al., 2014; Tocher et al., 2015). Entrepreneurs must be prepared to deal with the social implications of broadcasting their entrepreneurial intentions and, relatedly, the statistically likely prospect of business failure (Artinger & Powell, 2016; Byrne & Shepherd, 2015; Shepherd & Haynie, 2011). Market collaborations come with a long list of well-articulated risks in the transaction costs literature (Coase, 1937; Williamson, 1981). Pre-firm entrepreneurship necessarily involves the weighing of the opportunities and risks of both social and financial capital to complete early entrepreneurial tasks—a cost/benefit analysis we have yet to address directly.

2.5 Summary

The relevant literature to pre-firm stages suggests that 1) pre-firm stages are typified by significant uncertainty, 2) the resources necessary to establish an enterprise are contingent on reducing uncertainty (for both the entrepreneur and stakeholders), 3) pre-firm entrepreneurs work to progress the idea and provide increasingly powerful signals, both social and tangible, to attract further resources and stakeholder involvement, and 4) current frameworks fail to fully specify the conditions in which entrepreneurs match tasks, means, and collaborators to drive pre-firm progress.

While we know that entrepreneurs must provide positive signals in response to uncertainty, we don't know how they strategically organize both social (clarity, consensus,

legitimacy) and tangible (customers, prototypes, mvp's) signals, how they optimally select and engage collaborative partners for such tasks, or how they source the resources necessary to do so. To further our understanding of pre-firm failure and success, we must produce a model that conceptualizes the pre-firm entrepreneurs as simultaneously embedded in social and market contexts and that "allows for the examination of mobilization attempts across multiple types of resource simultaneously, including the reciprocal interactions between the entrepreneur's human, social, financial, and other forms of capital" (Pg 241, Clough et al., 2019).

3.0 FOUNDATIONS: PRE-FIRM TASKS AND COLLABORATORS

A more complete model of pre-firm entrepreneurship will: explain the role and nature of necessary uncertainty-decreasing tasks (what), the role and nature of collaborators available to complete these tasks (who), and the role and nature of means by which collaborators are engaged (how) (Clough et al., 2019). These elements form the basis of pre-firm strategic decision making and provide the entrepreneur with the means to counteract the inherent uncertainties of their endeavour (why). We begin by outlining four categories of entrepreneurial tasks as they relate to each other and the overall entrepreneurial process. We then discuss the collaborators available to them for the completion of such tasks. We sort these by the type of capital necessary to engage them and consider the various opportunities and risks related to such collaborations.

3.1 Pre-firm, Uncertainty-Reducing Tasks

Pre-firm entrepreneurs face the well-recognized problem of getting from "zero to one." The pre-firm value-creative process is an interactive one: an articulation and validation of a valuable proposition by means of orchestrated collaborations (Mannucci & Perry-Smith, 2022; Tocher et al., 2015; Vissa & Chacar, 2009). We find four primary pursuits that reveal the

intermediary process: 1) efforts to disambiguate and articulate a value proposition (conceptualize), 2) efforts to contextualize and validate this proposition (contextualize), 3) efforts to build the substantive means for bringing the proposition to bare in the marketplace (substantiate), and 4) efforts to organize the financial and human capital to establish a productive venture (capitalize). Pre-firm value creation and capture are built on conceptualizing, contextualizing, substantiating, and capitalizing behaviors. Table 1 summarizes these pre-firm tasks with a definition, relevant sub-tasks as identified throughout the entrepreneurship literature, and what the literature implies the entrepreneur will need to accomplish these tasks.

Note that these tasks are presented in a way that reflects a natural, incremental process, but they do not necessarily need to be performed in sequence. For example, an entrepreneur might seek to understand the context of a broad endeavour or tinkering with a prototype before taking the time to clearly conceptualize the value proposition. Tasks can also be pursued synchronously across different aspects of the overall endeavour. Certain outcomes, however may benefit subsequent tasks, so tasks are thus presented in what may be a useful sequence for many entrepreneurs.

3.1.1 Conceptualization: Disambiguating and Articulating Value In the earliest stages, the entrepreneurial experience is marked by significant ambiguity related to fundamental questions including the nature of the value proposition, the optimal means of production, and the likelihood of adoption (Arikan et al., 2020; Shepherd, McMullen, & Jennings, 2007). An incipient entrepreneur is generally under-resourced and/or unwilling to commit significant resources until the situation is made less ambiguous.

Thus, the path of our hypothetical early entrepreneur is to successfully complete subtasks that reduce ambiguity (refine idea, garner support, etc.) and reveal appropriate next

steps; she must facilitate a transition from the question "will x, y, or z produce v?" (ambiguity) to "will y successfully produce v?" (uncertainty). The resolution of early entrepreneurial ambiguity is both a cognitive and social creative process (Alchian, 1950; Alvarez & Barney, 2005; Arikan et al., 2020; Spinosa, Flores, & Dreyfus, 1995), a creative narrowing and partial articulation of a previously unseen value relationship.

Conceptualization includes idea discovery (Alvarez & Barney, 2007; Alvarez, Barney, & Anderson, 2013; Klein, 2008; Zahra, 2008), idea generation (Almirall & Casadesus-Masanell, 2010), visualizing (Barberá-Tomás, Castelló, de Bakker, & Zietsma, 2019; Csaszar & Levinthal, 2016), brainstorming (Perry-Smith & Mannucci, 2017), value disambiguation (Felin & Hesterly, 2007; Felin & Knudsen, 2012), articulation (Kimberly D. Elsbach & Roderick M. Kramer, 2003; Perry-Smith & Mannucci, 2017), analogizing (Gavetti et al., 2005), social validation (Felin & Knudsen, 2012; Harvey & Kou, 2013), and planning (Dimov, 2010; Greene & Hopp, 2017).

Throughout this stage, an entrepreneur needs a certain threshold of legitimacy, a degree of patient acceptance, that allows for engagement from collaborators (Coleman, 1986; Fisher et al., 2016; Harvey & Kou, 2013; O'Neil & Ucbasaran, 2016) despite having little of substance to indicate future success. The creative disambiguation of relationships and goals demands significant emotional and social vulnerability on the part of the entrepreneur and requires high bandwidth, high engagement collaboration with trusted parties (Blatt, 2009; Felin & Knudsen, 2012).

Entrepreneurs will have successfully completed this task when they can clearly articulate their value proposition, and the related theories that undergird that proposition (Felin & Zenger, 2009, 2017), in a way proximate stakeholders will be able to appreciate and comment on. This articulated value proposition serves to eliminate early ambiguities about the

direction of enterprising effort and reduce uncertainty as to the presence of value in the entrepreneur's unfolding vision.

Pre-firm Task	Definition	Sub-tasks (and relevant literature)	Needs
Conceptualization	A creative narrowing and partial articulation of a previously unseen value relationship.	Idea discovery (Alvarez & Barney, 2007; Alvarez et al., 2013; Klein, 2008; Zahra, 2008), Idea generation (Almirall & Casadesus-Masanell, 2010), Visualizing (Barberá-Tomás et al., 2019; Csaszar & Levinthal, 2016), Brainstorming (Perry-Smith & Mannucci, 2017) Value theorizing (Felin & Hesterly, 2007; Felin & Knudsen, 2012) Articulation (Kimberly D. Elsbach & Roderick M. Kramer, 2003; Perry-Smith & Mannucci, 2017) Analogizing (Gavetti et al., 2005) Social validation (Felin & Knudsen, 2012; Harvey & Kou, 2013) Planning (Dimov, 2010; Greene & Hopp, 2017)	Non-linear thinking (Mannucci & Perry-Smith, 2022) Emotional and social support (Perry-Smith & Coff, 2011) High-bandwidth communication (Burt, 2000; Krackhardt, 2003) Trust (Blatt, 2009; Rousseau, Sitkin, Burt, & Camerer, 1998) Buy-in (Mannucci & Perry-Smith, 2022)
Contextualization	Seeking outside perspectives to establish the context and validity of a value relationship. Clarifying direction of product, process, and market.	Advice seeking (Nebus, 2006) Hypothesis testing (Felin & Zenger, 2017) Iterating/pivoting (Grimes, 2018; McDonald & Gao, 2019; Toivonen, Idoko, & Jha, 2019) Elaborating (Perry-Smith & Mannucci, 2017) Pitching and presenting (Kimberly D. Elsbach & Roderick M. Kramer, 2003) Market research Forecasting (Dimov, 2010; Greene & Hopp, 2017).	Expertise (Burt, 2000, 2004) Vernacular Legitimacy 15/09/2023 22:53:00
Substantiation	The materialization and embodiment of a value proposition (either to launch initial offering or for the purpose of providing signals/proof of concept to stakeholders).	Designing (Berglund et al., 2020; McDonald & Eisenhardt, 2020) Building Prototyping (Geissdoerfer et al., 2022) Creative iteration (Harrison & Rouse, 2015) Product testing (Reis, 2011) Launching	Aligned incentives (Williamson, 1981, 1993) Technical competency Effective communication (Lahiri, Pahnke, Howard, & Boeker, 2019)
Capitalization	The organization of human and financial capital towards the establishment of the firm.	Fundraising (Hallen & Eisenhardt, 2012; Huang & Knight, 2017) Team building (Aldrich & Kim, 2007; Lazar et al., 2022) Equity-sharing Organizing Intellectual property work Process design (McDonald & Eisenhardt, 2020) Prototype/product completion Alpha and beta launches Institutional work/platforming (Gurses & Ozcan, 2015; Ozcan & Eisenhardt, 2009)	Funds Inertia (Alvarez & Sachs, 2021; Fisher, Stevenson, Neubert, Burnell, & Kuratko, 2020) Proof of concept/signals (Fisher, Kotha, & Lahiri, 2016; Geissdoerfer, Savaget, Bocken, & Hultink, 2022) Narrative (Obstfeld, Ventresca, & Fisher,

			2020)15/09/2023 22:53:00

Table 1: Pre-firm tasks

3.1.2 Contextualization: Elaborating and Validating Value Once the core value of the potential firm has been established and the entrepreneur has the means to effectively convey their value hypothesis to external stakeholders (Felin & Zenger, 2009, 2017), the entrepreneur must begin resolving the uncertainties of their potential venture. Potential founders must seek out validation and contextual considerations from those with domain expertise (Perry-Smith & Mannucci, 2017). At this point entrepreneurs must get a handle on the things 'they don't know that they don't know' about their envisioned value process. They must gather the information necessary to understand the wider context of their value proposition and use such information to structure their efforts going forward (Kacperczyk & Younkin, 2017; Vissa & Chacar, 2009). They must explore the many sub-domains related to their value proposition. For example, it is not enough to know they need a product with particular features; they must know how to produce each feature, who is best capable of doing so, and what factors will determine its success.

Through contextualization, high level cognitive and creative tasks begin to be embodied in more specific enquiries and exercises such as advice seeking (Nebus, 2006), designing (Berglund et al., 2020; McDonald & Eisenhardt, 2020), concept testing (Felin & Zenger, 2017), iterating/pivoting (Grimes, 2018; McDonald & Gao, 2019; Toivonen et al., 2019), elaborating (Perry-Smith & Mannucci, 2017), pitching and presenting (Kimberly D. Elsbach & Roderick M. Kramer, 2003), and forecasting (Dimov, 2010; Greene & Hopp, 2017).

To contextualize, entrepreneurs need repeat access to a variety of relevant expert input (Burt, 2000, 2004). Entrepreneurs need a sufficient mastery of relevant vernacular and enough legitimacy to confidently solicit such help and to know enough about the questions that they

are asking so that they do not test the patience of collaborators or waste the limited opportunities to engage them (Bourdieu, 1986; Kacperczyk & Younkin, 2017). Legitimacy may come from a social referral, evidence of careful preparation, or relevant credentials (Fisher, 2020).

Thus, through contextualization, entrepreneurs can convert their semi-articulated idea for a product or service into an actionable plan for its production. This plan, and the contextual knowledge that supports it, reduces uncertainty as to the viability of the evolving value proposition (Fisher, Stevenson, Neubert, Burnell, & Kuratko, 2020). Successfully engaging expert contributors also serves as a positive signal about the competency of the entrepreneur (Alvarez & Sachs, 2021; Gruber, Kim, & Brinckmann, 2015).

3.1.3 Substantiation: Embodying Progress Beyond the cognitive work of conceptualizing and contextualizing, entrepreneurs must complete tasks that give body to the developing idea (Obstfeld et al., 2020; Fisher et al., 2020). The arrival of clear, unambiguous substantiation tasks often marks the successful realization of conceptualization and contextualizing; the result of successfully creating and validating a detailed vision of their venture and value is, in part, a list of discreet productive tasks that are necessary to see the vision realized (Greene & Hopp, 2017; Perry-Smith & Mannucci, 2017). For example, an entrepreneur with a vision of a useful app might engage experts in contextualizing tasks that determine the proper platform for its production and the critical features to its success. If successful, the entrepreneur can now engage collaborators in producing an alpha version of the app with sufficiently clear specifications such that any number of collaborators could provide similar results.

These subtasks include early prototyping and production (Geissdoerfer et al., 2022), interviewing and conducting trials with customers (Harrison & Rouse, 2015; Reis, 2011), lean product iteration (McDonald & Gao, 2019; Reis, 2011), designing marketing materials or a

pitch deck (Fisher et al., 2020), facilitating bureaucratic or legal compliance, designing (Berglund, Bousfiha, & Mansoori, 2020; McDonald & Eisenhardt, 2020), and product testing (Felin & Zenger, 2009, 2017).

These substantiating tasks are key to giving substance to the incipient firm (Fisher, 2012; Sarasvathy, 2001). As the entrepreneur sees their ideas embodied in these tasks, their personal and shared sense of legitimacy, inertia and traction begin to fall into place (McMullen & Dimov, 2013; Perry-Smith & Mannucci, 2017).

Previous tasks should ideally render substantiation tasks straightforward; the presence of significant ambiguity on how to proceed on a given task implies the need to return to further contextualizing efforts. Resultantly, collaborations in the substantiation stage do not necessitate large levels of trust, high-bandwidth communication, or broad expertise (Obstfeld et al., 2020; Rousseau et al., 1998). Competence, affordability, and aligned incentives are sufficient to determine collaborators, and relationships need only last as long as individual tasks require (Williamson, 1981, 1993).

An entrepreneur has successfully substantiated their value proposition when they have produced initial, uncertainty-reducing signals (prototypes, initial customers, viable designs, etc.). Their idea is no longer just an idea but an artefact interacting with stakeholders, potential customers, and investors (Berglund et al., 2020; Fisher, 2012; Reis, 2011). This early progress begins to reduce uncertainty related both to their ability as an entrepreneur to bring valuable things into the world and to the value of the product or service (Arikan et al., 2020; Fisher, et al., 2020; Townsend et al., 2018).

3.1.4 Capitalization: Accumulating Resources and Building Capacity The fourth task necessary to turn a would-be entrepreneur into a founder is the organization of financial and human capital and the establishment of productive capacities. The early signals provided

through substantiation can now be leveraged to invite early investment which can in turn be used to organize the components of an early firm (Huang & Knight, 2017; Kimberly D. Elsbach & Roderick M. Kramer, 2003; Nai, Lin, Kotha, & Vissa, 2022). The precise order of events like funding (seed investment, debt financing, bootstrapping, etc.), product realization (completing prototypes, alpha or beta launch, etc.), and firm organization (process design, building a team/hiring, establishing brand/legal entities, etc.) vary depending on the strategy of the entrepreneur and the expectations of key stakeholders but are generally closely related(Fisher, 2020; Fisher et al., 2016; Fishere t al., 2020). Entrepreneurs will need a clear plan of how funding will be used to solicit funders, and funders (and other gatekeepers) often need to see the first steps of that plan in action (Cohen et al., 2019; Goswami et al., 2018; Hallen & Eisenhardt, 2012; Huang & Knight, 2017). Stakeholders and investors are now asked to participate directly in the journey and accept the risks of doing so.

Early entrepreneurs in this stage must engage with tasks such as product completion (McMullen & Dimov, 2013; Rindova & Petkova, 2007), intellectual property work, creative iteration (Harrison & Rouse, 2015; Perry-Smith & Mannucci, 2017), process design (McDonald & Eisenhardt, 2020), fundraising (Hallen & Eisenhardt, 2012; Nai et al., 2022), team building (Aldrich & Kim, 2007; Blatt, 2009; Lazar et al., 2022), and institutional work/platforming (Gurses & Ozcan, 2015; Ozcan & Eisenhardt, 2009). Efforts into building the product and the team necessary to support that product are no longer restricted to testing general hypotheses but expanded to bringing about its marketable capacity. It is in this stage that entrepreneurs experience the full complexity of the enterprise at hand.

This additional level of uncertainty management requires many of the inputs necessary for conceptualization and contextualization. Potential collaborators must be prepared to engage in interpretative, evolving tasks that require substantial buy-in and high bandwidth communication (Harvey & Kou, 2013; Perry-Smith & Coff, 2011). Entrepreneurs must find

expert contributors with creative experience and contextual awareness (Nebus, 2006; Perry-Smith & Mannucci, 2017; Vissa & Chacar, 2009). The phenomenological understanding of the nascent entrepreneur (Spinosa et al., 1995)—the cumulation of previous refinement and validation efforts—must be accurately communicated with co-creators who have the technical skills to productize the vision.

An entrepreneur has successfully capitalized when they have the necessary capital and progress to establish a firm (Arikan et al., 2020; McMullen & Dimov, 2013). There are enough resources and confidence at this point in the process to begin hiring personnel, organizing formal productive capacity, and engaging broadly with the market.

While many of these behaviors will occur either sporadically or synchronously, these pre-firm activities follow a logical sequence. The less ambiguous and more clearly conceived the proposition, the simpler it will be to garner context and expertise which, in turn, will aid in efforts to test and substantiate the emergent value. The more substantive the progress the easier it is to organize capital.

Each of these tasks relates variously to the diverse collaborators available to pre-firm entrepreneurs. Different activities require different preparatory inputs and contributions from potential collaborators. All creative needs cannot be satisfied in a single network area or group of collaborators, and the strength of a particular collaborator in achieving one creative effort is often a weakness for another (Perry-Smith & Mannucci, 2017; Hite & Hesterly, 2001).

3.2 Pre-firm Collaborators: The Strategic Choice of Entrepreneurial Means

In the following framework, we discuss the available means by which pre-firm entrepreneurial tasks are accomplished (see also Obstfeld et al., 2020; Perry-Smith & Mannucci, 2017). Availability of collaborators is both structurally and cognitively determined (Hallen, Davis, &

Murray, 2020; Perry-Smith & Mannucci, 2017; Shea, Menon, Smith, & Emich, 2015; Smith, Menon, & Thompson, 2012), and the perception of availability can vary even between entrepreneurs in very similar situations. However, network and firm-boundary literatures give us a solid foundation for understanding where entrepreneurs can look to complete the myriad tasks necessary for firm formation (Adler & Kwon, 2002; Hallen et al., 2020; Williamson, 1981). No entrepreneur can complete all the tasks leading to firm formation entirely on their own nor can any singular means possibly provide every opportunity for progress at an acceptable cost (Aldrich & Kim, 2007; Clough et al., 2019; Hite & Hesterly, 2001; Obstfeld et al., 2020; Perry-Smith & Coff, 2011)

In reviewing the literature and considering market segmentation factors, we find that as entrepreneurs seek the means to conceptualize, contextualize, substantiate, and capitalize their fledgling value proposition, they are presented with four broad areas in which to find collaborators: inner network connections, outer network connections, low-cost market contractors, and high-cost market contractors. While hybrid arrangements can occur (e.g. when social capital brings the price of collaboration below market rates), two of these categories rely primarily on social capital while the other two rely on financial capital. Network (socially-situated) collaborations are divided into inner and outer groups due to the distinct opportunities and costs of each as outlined by a vast body of network literature (Burt, 2000; Hallen et al., 2020; Hite, 2003). Similarly, contracting options found in the marketplace are divided by low-cost and high-cost options to reflect the real and variable limits of early entrepreneurial financial resources and the natural grouping into premium and entry level segments that occurs in many industries (Anand & Peterson, 2000; Curtis Eaton & Lipsey, 1989). As far as we know, this is the first time that the market segmentation of collaborators has been considered in tandem with early entrepreneurial collaboration. As we will demonstrate, low- and high- cost

collaborators are likely to differ in critical ways that change the strategic choices of pre-firm entrepreneurs.

Each collaborative category is typified by varying levels of trust, buy-in, expertise, and risk as summarized by Table 2 as informed by the literature relevant to inner network, outer network, low-cost, and high-cost collaborators. Green boxes identify collaborator traits conducive to entrepreneurial aims while white and red boxes identify neutral or problematic traits respectively. Common examples of each collaborator category are also included. Pre-firm entrepreneurs are strategic and discriminating in their choice of means but are limited in their ability to accurately determine the various characteristics of potential collaborators or the nature of the collaboration (Carnabuci & Diószegi, 2015; Shea, Menon, Smith, & Emich, 2015; Smith, Menon, & Thompson, 2012). By considering the relative strengths and risks of each collaborative category, we can see more precisely what differs about collaborations facilitated by either social capital or market exchange as well as what is necessary to successfully transition from one to another. We find that differences in communication and incentives across collaborative contexts can promote and constrain the pre-firm process depending on the task at hand.

3.2.1 Social Collaborators: Inner Network The inner network is comprised of those strong, often multiplex ties in which the entrepreneur is highly embedded. Inner network collaborators include friends, family, close co-workers, and classmates (Burt, 2000; Granovetter, 1973.; Hite, 2003). The inner network is formed by frequent interaction and strong social norms providing high-bandwidth communication, trust, and reciprocity (Burt, 2000; Granovetter, 1973.; Hite, 2003).

Communication with inner network ties tends to be low pressure and high frequency; entrepreneurs can engage the inner network without being constrained by work hours or formal

communication (Burt, 2000; Burt, Kilduff, & Tasselli, 2013; Granovetter, 1985). The multiplexity and closeness of these relationships mean that search costs are negligible, and the inherent high trust and goodwill mean that participants can be quickly engaged (Burt, 2000; Hite & Hesterly, 2001). Inner ties can readily provide important cognitive and emotional validation (Blatt, 2009; Krackhardt, 2003). However, an entrepreneur's inner network will be typified by homophily and information redundancy such that the range of relevant expertise found in the inner network will be limited (Granovetter, 1973).

Social proximity can also make it difficult to sustain inner contacts' effort for long periods of time. Since friends would never force a friend to continue something they have lost interest in, promising or productive collaborations can end suddenly and without any means of recourse. Network favors 'bought' with social capital are subservient to other life factors outside the control of the entrepreneur (Casciaro et al., 2014). Engaging friends and family with endless, uncompensated iteration or with numerous generic tasks will provide negative signals about the worth of their time; the line between the social sphere and marketplace is not so thick as to prevent a sense of market-driven injustice to inane requests. Once relational capital is exhausted, forcing productive behaviors on relational "credit" comes at steep social costs (Casciaro et al., 2014; Bloch et al.., 2007).

Social risk is often highest between inner network collaborators (Burt, 2000). Social norms about entrepreneurship vary, but the risks of entrepreneurship often expose the entrepreneur to public failure and embarrassment (Shepherd, 2022; Shepherd & Haynie, 2011). Instrumentalizing networks can have serious social consequences, and the opportunity costs of social capital use are unavoidable (Casciaro et al., 2014). Even revealing one's identity as an entrepreneur to family and friends can carry high social risk (Aldrich & Cliff, 2003; Creed, Scully, & Austin, 2002; Shepherd & Haynie, 2011).

Collaborative Qualities/Costs	Inner Network (Perry-Smith & Mannucci, 2017; Granovetter, 1985)	Outer Network (Burt, 2004; 2017; Granovetter 1973)	Low-cost Market Coll. (Eaton & Lipsey, 1989; Obstfeld et al., 2020)	High-cost Market Coll. (Eaton & Lipsey, 1989; Huang & Knight, 2017)
Trust (Adler and Kwon, 2002; Rousseau et al., 1998)	High	Moderate	Low	High
Comm. Bandwidth (Huang & Knight, 2017; Casciaro & Lobo, 2015)	High	Low	Low	Moderate
Buy-in/Incentive (Blatt, 2009; Shea et al., 2015)	Moderate	Low	Moderate	High
Expertise/Context (Burt, 2004; Burt et al., 2013)	Moderate	High	Low	High
Hold-up/Abort Risk (Klein & Sykuta, 2010)	High	High	Moderate	Low
Search/Integration Cost (Vissa, 2012; Vissa & Chacar, 2009)	Low	Moderate	Moderate	High
Financial Cost (Clough et al., 2019; Williamson, 1993)	Low	Low	Moderate	High
Social Risk (Casciaro et al., 2014; Casciaro & Lobo, 2008))	High	Moderate	Low	Low
	Family, friends, classmates	Referrals, acquaintances, cold calls	Local businesses, freelancers, contractors	Professional services, design firms, consultants

Table 2: Characteristics of Pre-Firm Collaborator Categories

3.2.2 Social Collaborators: Outer Network The outer network is composed of weaker, more diverse ties representing acquaintances, referrals, colleagues, and "cold calls". These "weaker" outer network ties are often characterized by the bridging of network clusters (Burt, 2004). In contrast to the informational redundancy of highly engaged inner ties (Granovetter, 1973), outer network ties tend to hold a greater diversity of knowledge, more relevant information, as well as a wider spectrum of expertise (Burt, 2004; Perry-Smith & Mannucci, 2017). Outer network ties are typified with less trust and lower levels of multiplexity (Davidsson & Honig, 2003; Hite, 2003).

Finding the appropriate connection within an entrepreneur's outer network requires more search (and associated costs) than in inner network ties and often requires a series of

mediating interactions (each expending some degree of social capital) (Granovetter, 2005; Phelps, Heidl, & Wadhwa, 2012). Crucially, search costs in this stage include the social querying, signalling and negotiation necessary to establish the precise nature of outer network relationships (Shea et al., 2015). Although more prominent in cultures with clear socio-linguistic indicators, no culture is devoid of socially determined power imbalances that inform rules (both explicit and unspoken) for social engagement and requests for help (Bourdieu, 1986; Hallen et al., 2020; Mannucci & Perry-Smith, 2022; Smith et al., 2012). Entrepreneurs must establish how they are perceived and in what spirit they are received by outer network contacts before requests for engagement can be made (Casciaro et al., 2014; Casciaro & Lobo, 2008; Nebus, 2006; Shea et al., 2015).

Once established, social capital, communication bandwidth, and buy-in tend to be significantly lower relative to inner ties (Burt, 2000) such that entrepreneurs can ask much less of these ties compared to the strong, inner network ties. Early termination and hold-up risks remain high; entrepreneurs cannot rely on uninterrupted or continued participation (Adler & Kwon, 2002; Casciaro et al., 2014). The social costs to an aborted relationship, from either entrepreneur or contact, are far lower than in inner network stages providing a context for lower social risk but higher termination risk (Blatt, 2009). Although the boundary of outer contacts are functionally endless—the entrepreneur can choose to expand their outer network connections—the search and emotional/cognitive costs of engaging new collaborators will likely eventually drive the entrepreneur towards other means (Adler & Kwon, 2002; Casciaro et al., 2014).

3.2.3 ***Low-cost Market Collaborators*** While overshadowed by discussions of social capital in the literature on pre-firm entrepreneurial activity (Clough, Fang, Vissa, & Wu, 2019; Perry-Smith & Mannucci, 2017), it is not uncommon for entrepreneurs to engage with contracted or

remunerated service providers at strategically significant moments in the journey (Huang & Knight, 2017; Obstfeld et al., 2020). Market collaborators in the low-cost market segment provide limited services at accessible fees. Expertise comes at a market premium, so low-cost collaborators are likely to contribute generic services as opposed to specialized or expert input (Eaton & Lipsey, 1989; Liggett, Lippman, & Rumelt, 2009). These collaborators include participants like local small businesses, freelancers, contractors, and inexpensive professional services.

As the primary currency of transaction shifts from relational to financial capital, entrepreneurs can rely on legally and reputationally driven insurances, providing a more regular and measurable means of production (Klein & Sykuta, 2010). However, since the total financial value of a low-cost relationship is not enough to entirely discourage suspension of services, entrepreneurs still face some risk of abandonment (Williamson, 1993). Available locally or on aggregative platforms, the search costs tend to be lower for low-cost collaborators, but communication may be limited by a combination of market norms and platform characteristics. For example, If an entrepreneur is used to communicating frequently by text to someone in their social network, they will have to adjust to something like formal emails during business hours when working with low-cost market providers.

Trust can also be sometimes facilitated by platforms; review systems and comments make transactions possible in the absence of socially facilitated means of trust (Dinulescu & Prybutok, 2021). Entrepreneurs can thus enjoy the relief of a near absence of social risk but are likely to accept far lower levels of trust and must assume the fear of failure or exploitation until the arrival of deliverables (Klein & Sykuta, 2010; Williamson, 1993).

3.2.4 Premium Market Collaborators High-cost market collaborators are highly resourced or skilled collaborators that provide creative and technical services at a premium. High-cost

collaborators include premium professional services, design firms, consultants, and corporate partners.

Though often unavailable to entrepreneurs in their earliest stages, premium market collaborators may provide many of the advantages of network interactions without the need to spend social capital or assume social risk. Incentivized by high profit margins, premium collaborators are more likely to patiently collaborate on complex creative or design issues and engage in long, stable relationships (Huang & Knight, 2017). Premium, paid collaborators are generally more trustworthy, engaged, and qualified than their low-priced counterparts. At higher price points, experience and expertise are easier to find, and a higher level of communication and creative collaboration is expected (Eaton & Lipsey, 1989; Saxon, Porac, & Runser-Spanjol, 1999). Reputational and profit incentives are more likely to protect entrepreneurs from significant hold-up and termination risks (Klein & Sykuta, 2010; Williamson, 1981).

Search costs can be higher for the less common, high-cost contactors. Occasionally network facilitated introductions are necessary to secure meetings. Identifying potential collaborators, establishing fit, and setting engagement terms often take more time and resources (Vissa & Chacar, 2009) but provide the foundation for a more stable, creative-productive endeavour.

Ultimately, the differentiation between low and high-cost market collaborators is relative to the entrepreneur, industry, and ecosystem. These two categories represent broad, but useful differences as opposed to specific delineations.

3.2.5 Alternatives to Social and Financial Capital: Equity and Personal Development It is useful to note two other common means of task completion in early stages: personal development and equity sharing (with non-cofounders). Instead of engaging collaborators by

spending social or financial capital, entrepreneurs can choose to spend time acquiring the skills of would-be collaborators or trade equity for their participation. Both means can be value-adding under specific circumstances, but, in the highly uncertain pre-firm stages, entrepreneurs can also destroy value by diverting significant time or future profits on low-impact tasks (Townsend et al., 2018). Equity can indeed inspire collaboration, but in the pre-firm stage, there are few individual tasks consequential enough to merit even a small slice of the future value of the company. From an economic and strategic perspective, equity promises should generally be reserved for investors, co-founders, and mission-critical stakeholders (Lazar et al., 2022).

Similarly, spending the time, as well as cognitive and emotional resources, to acquire intensive skills that could instead be easily outsourced can be prohibitively costly in pre-firm stages. The sheer volume and variety of skills necessary to establish a venture render a "going it alone" strategy highly inefficient. Even when skill development and task completion are successful, the choice to delay and distract from the visionary, creative, and strategic work of entrepreneurship can be uneconomical (Felin & Zenger, 2017; Ott & Eisenhardt, 2020).

4.0 A PRELIMINARY MODEL OF PRE-FIRM ENTREPRENEURIAL TASKS AND OPTIMAL COLLABORATORS

Having established the pre-firm entrepreneurial environment in the context of critical tasks and collaborative opportunities, we can now begin to better understand the process and predictors of early task success. Entrepreneurial resources and needs interact with the available means and costs to determine the trajectory of pre-firm activity (Clough et al., 2019). Thus, the task of an entrepreneur is, given their finite social and financial resources, to maximize economic and personal value creation (Arikan et al., 2020; Rindova, Ferrier, & Wiltbank, 2010) by strategically selecting the right means for the appropriate tasks of the pre-firm journey. To fully

complete a given task in the pre-firm journey an entrepreneur must have the proper resources to cover costs as well as have successfully prepared necessary inputs (to build a prototype you'll need to have designed or conceptualized one). Key collaborators often require qualifying signals, direction, and traction to engage in a given task (Perry-Smith & Mannucci, 2017).

Table 3 summarizes sections 4.1 through 4.4 and presents the emerging model of optimal collaborators for pre-firm tasks according to their collaborative characteristics and costs. It identifies key collaborators, the risks and costs they present, the collaborative opportunities they facilitate, the collaborative constraints the exhibit, and the pre-firm task they are optimally positioned to assist in. Note that for parsimony it does not include references as these are found in previous tables.

4.1 Conceptualizing with Inner Network Collaborators

The inner network is often the ideal means for the messy, creative, collaborative efforts of early value disambiguation (Perry-Smith & Mannucci, 2017). Inner networks are not only the necessary starting point because of a lack of financial capital but because the creative flexibility necessary to iterate on ideas is generally found in social contexts (Bledow, Rosing, & Frese, 2013; Perry-Smith & Mannucci, 2017). The high levels of trust and open communication channels inherent to inner networks help foster successful ideation (Burt, 2000; Perry-Smith & Coff, 2011; Ronald S. Burt, 2017). Creative work within the generative context of their inner network is crucial to bringing an entrepreneur's budding ideas about consumer value from the realm of unarticulated hunches to testable hypothesis (Felin & Zenger, 2009).

This articulation is key if they are to successfully engage outer network resources and market collaborators (Burt, 2004; Kimberly D. Elsbach & Roderick M. Kramer, 2003). To engage expert contributors in the work of uncertainty management, the basic premises of the value creative effort must be largely unambiguous. The imagination, excitement, and play

necessary to ideate are often antithetical to the clarity and signalling necessary to engage in distant social ties and market transactions (Fisher et al., 2016). Outer network and market contacts will provide less relational capital, buy-in, and bandwidth compared to inner network relationships (Granovetter, 1973) and are less likely to engage in remedial disambiguation tasks. Therefore, if they have failed to fully articulate their preliminary value proposition and remain in a highly ambiguous creative space at the point they have exhausted inner network resources, successfully engaging more demanding collaborators will be difficult.

The degree to which inner network means represent expertise relevant to entrepreneurial needs is variable (Hallen, 2007; Hallen et al., 2020), but it is highly unlikely that the limited boundaries of an entrepreneur's close contacts will contain sufficient proficiency for all stages. Despite the inherent goodwill of inner network ties, the embedded nature of inner social capital will often not include the outside perspective necessary to go beyond early articulative efforts (Burt, 2000; Hite & Hesterly, 2001; Perry-Smith & Mannucci, 2017). The need for greater context and more precise expertise, coupled with the exhaustion of inner network relational capital, may push early entrepreneurs towards the outer reaches of their network or market collaborators.

Proposition 1A: Inner network ties are better suited for early conceptualization efforts than outer network or market collaborators.

Proposition 1B: Low levels of social capital in an entrepreneur's inner network increases the likelihood of a failure to adequately complete conceptualization tasks.

Proposition 1C: A failure to complete conceptualization tasks will increase the difficulty and likelihood of failure of other pre-firm tasks.

It should be noted that serial entrepreneurs with extensive domain expertise may stay in conceptualization and contextualization stages for only a brief time, but most entrepreneurial endeavours likely benefit from the input, articulation, and validation available in an entrepreneur's inner and outer network circles.

Key Collaborators	**Risks/Costs**	**Collaborative Opportunity**	**Collaborative Constraint**	**Optimal Pre-firm Task**
Inner Network	Social Risk	Buy-in, non-linear discourse	Lack of expertise, limited SC	Conceptualizing
Outer Network	Social Risk	Broad expertise	Irregular participation, limited SC	Contextualizing
Low-Cost Market Collab.	Financial Risk	Regular participation	Low communication, buy-in, limited FC	Substantiating
High-Cost Market Collab.	Financial Risk	Expertise, buy-in	Transaction Costs, limited FC	Capitalizing

Table 3: An Emerging Model of Optimal Collaborators for Pre-firm Tasks According to Collaborative Characteristics and Costs

4.2 Contextualizing with Outer Network Collaborators

The context and expertise needed to complete contextualization tasks in pre-firm entrepreneurship are often found through outer network engagement (Adler & Kwon, 2002; Burt, 2000; Granovetter, 1973). Weak and bridging ties provide access to expert perspectives that can be activated with social capital (Burt, 2000, 2004; Granovetter, 1973). Even if funds are available for paid consultants, the social process of creative disambiguation and uncertainty management in the first two stages is often best accomplished outside market boundaries and incentives. Unclear deliverables and the inherently social process of learning and contextualizing are better suited to amiable meet ups than hourly-rated consultations (Bledow et al., 2013; Perry-Smith & Coff, 2011).

Expert collaboration is crucial to bridging social and market processes (Goswami et al., 2018; Perry-Smith & Mannucci, 2017; Vissa & Chacar, 2009). Entrepreneurs must use outer

network ties to learn—often through a mix of preparation, trial, and error—the language and norms of key gatekeepers and influencers (Bourdieu, 1993; Granovetter, 1978; Hallen, 2007; Huang & Knight, 2017; O'Neil & Ucbasaran, 2016). They must seek validation from contributors who are both sufficiently expert and unbiased that they can provide valid information (Casciaro & Lobo, 2008). Nascent entrepreneurs must then strategically vet responses weighing the quality of communication, understanding, expertise and motivation, and triangulate the critical context of their endeavour from the collaborators' contributions (Mannucci & Perry-Smith, 2022). The more the vision has matured through conceptualization processes, the more plans take the form of clear deliverables as opposed to ambiguous endeavours (Perry-Smith & Mannucci, 2017). Due to the constraints of entry-level market providers, the more generic and defined the tasks, the more likely the success of market collaboration.

Although an entrepreneur can always choose to expand their outer network connections, the search and emotional/cognitive costs of engaging new collaborators will eventually drive the entrepreneur towards other means (Burt, 2000; Vissa & Bhagavatula, 2012). Additionally, if they are successful in generating a contextualized, actionable plan to realize their value proposition, the component parts of this plan are often poorly suited to the entrepreneur's weak ties. Outer ties fail to provide the regular, sustained collaboration necessary for substantiation tasks, and engaging expert contributors in generic activities sends negative signals about the worth of their time (Casciaro et al., 2014; Granovetter, 1973; Kacperczyk & Younkin, 2017).

If there is insufficient social capital to engage more expert participants, entrepreneurs may sometimes choose inefficient behaviors to compensate. To illustrate, consider an entrepreneur who is seeking to understand the viability of a certain technology as a component for their value proposition. If they have an outer network contact with whom they have

sufficient relational capital, they can simply request the pertinent information or consultation. If they lack sufficient relational capital, however, the entrepreneur, eager to make progress, might extend an equity partnership to a contact that has yet to demonstrate potential, make false assumptions about the absent information, or choose to enrol in a course that would teach them in months what a trusted conversation could grant in hours. In sum, the contextualization stage represents another juncture where a lack of social capital is often paid for in funds, time, effort, and potentially failures.

Proposition 2A: Outer network collaborators are better suited for contextualization efforts than inner network or market collaborators.

Proposition 2B:. Low levels of social capital in an entrepreneur's outer network increases the likelihood of a failure to adequately complete contextualization tasks.

Proposition 3C: A failure to complete contextualization tasks will increase the difficulty and likelihood of failure of substantiation and capitalization tasks.

4.3 Substantiating with Low-Cost Market Collaborators

Low-cost market options tend to be an ideal means by which to accomplish substantiating tasks. Basic capacities and services are often sufficient for the initial tests and signals entrepreneurs will need to advance to capitalization stages. Since entrepreneurs tend to either lack significant financial resources or be unwilling to spend them until they are more confident of their value-proposition's viability and validity (Arikan et al., 2020; Townsend et al., 2018), high-cost collaborators are generally unavailable at this stage. Additionally, substantiation tasks are often only initial, intermediate steps as part of an "agile" or "lean" development

process and thus should not necessitate significant investment (Reis, 2011). As mentioned, social capital tends to be a poor means for engaging collaborators on substantiation tasks since it is hard to get sustained, mundane contribution without breaking social norms.

Proposition 3A: Low-cost market collaborators are better suited for substantiation efforts than network or high-cost collaborators.

Proposition 3B: An absence of financial capital increases the likelihood of a failure to adequately complete substantiation tasks.

Proposition 3C: A failure to complete substantiation tasks will increase the difficulty and likelihood of failure of capitalization tasks.

The degree to which entrepreneurs can use the advantages of low-cost providers and avoid potential pitfalls is partially dependent on the nature of the platform on which their collaboration is facilitated (Botelho & Abraham, 2017; Smith, Smith, & Shaw, 2017; Wang & Wright, 2020). Online marketplaces, communication platforms, social media sites, aggregators, provider lists, or local professional services, while all providing the foundation for collaborative exchange, all vary in terms of the means and nature of interaction they facilitate (Elfenbein & Zenger, 2017; Poppo & Zenger, 1998; Williamson, 1981). Low-cost collaborations tend to facilitate relatively limited communication and involvement such that small differences in communication channels or incentives can greatly impact collaborative success (Harrison & Rouse, 2015).

Proposition 3D: Platform characteristics, including communication bandwidth, search optimization, trust mechanisms, and compensation facilitation, moderate the success of substantiation tasks with low-cost market collaborators.

4.4 Stage IV: Capitalizing with Premium Market Collaborators

Entrepreneurs will often need to engage costly market collaborators like investors or product engineers to successfully capitalize their enterprise (Huang & Knight, 2017; Zott & Huy, 2007). To produce the inputs of a successful firm in their full complexity, entrepreneurs will need expertise and buy-in from collaborators. High-cost market options, though often unavailable to entrepreneurs in their earliest stages (Clough et al., 2019), provide many of the advantages of network interactions without the need to spend relational capital or assume social risk. If entrepreneurs have been successful in the substantiation stage, they likely have early signals with which to engage investors and subsequently employ premium market collaborators.

The complexities of design and production require long, stable relationships and the effective fulfilment of checkpoints (Huang & Knight, 2017)—qualities rarely found outside of premium market providers. Premium, paid collaborators are generally more trustworthy, engaged, and qualified. At higher price points, experience and expertise are easier to find, and a higher level of communication and creative collaboration is expected (Curtis Eaton & Lipsey, 1989; Saxon et al., 1999). Reputational and profit incentives are more likely to protect entrepreneurs from significant hold-up and termination risks (Klein & Sykuta, 2010; Williamson, 1981).

If financial resources are successfully garnered and deployed through capitalization tasks, the entrepreneur should be left with the means to establish an entrepreneurial firm. With production potential validated and demonstrated, an entrepreneur can now confidently seek the

financial investment, asset accumulation, and team expansion that shifts nascent strategy to that of an entrepreneurial firm.

Proposition 4A: Premium market collaborators are better suited for capitalization efforts than network or low-cost collaborators.

Proposition 4B: An absence of significant financial capital increases the likelihood of a failure to establish an entrepreneurial firm.

Most firms will require an infusion of financial capital while uncertainty remains high and before a formal organization is in place. Consistent with a wide literature on entrepreneurial resources (Brinckmann, Villanueva, Grichnik, & Singh, 2019; Clough et al., 2019; Huang & Knight, 2017), nascent entrepreneurs often use personal savings, friends and family funds, and angel investors to meet early financial needs. Network literatures suggest that friends and family contributions tend to be products of rich inner network environments while outside funding like angel investors are best sourced through weak, bridging ties in the outer network (Adler & Kwon, 2002; Burt, 2000; Clough et al., 2018; Huang & Knight, 2017). These trends are well established.

What is often overlooked about the relationship between pre-firm investment and social capital is that the success of soliciting investment in the outer network is dependent in part on the success of inner network conceptualization. If entrepreneurs approach potential investors without having decreased the ambiguity of their direction and provide half-baked propositions, they are unlikely to successfully receive financial support (Fisher, 2020; Huang & Knight, 2017). When inner network social capital is insufficient for the completion of initial tasks, the

inputs necessary to learn the language and meet expectations of outer network gatekeepers are absent (Fisher et al., 2020; Zott & Huy, 2007).

Additionally, to increase the likelihood of successfully utilizing funds to establish a firm (for example in engaging manufacturers or new employees), pre-firm entrepreneurs will need to have fully conceptualized and contextualized their budding enterprise. Thus, both the accumulation and use of pre-firm investment are likely dependent on social resources.

Proposition 5: High levels of social capital in inner and outer network stages increases the likelihood of the accumulation AND *successful utilization of financial resources.*

4.5 Summary

The "magic" of how an entrepreneur creates something from nothing is more accurately a story of iteratively converting a smaller, less convincing something into a more substantial and compelling something (Clough et al., 2019; Perry-Smith & Mannucci, 2017). There are broadly four tasks critical to the pre-firm entrepreneurial journey: conceptualization, contextualization, substantiation, and capitalization. The tasks all help answer the question: how does an entrepreneur turn an idea into uncertainty-reducing signals and the material inputs of a firm (support, business plan, prototypes, etc.)? The tasks are determined both by considering what components will be needed to assemble a productive firm (e.g., a prototype) as well as what inputs will be needed to successfully engage critical collaborators (e.g., a fluency in necessary technical language).

The interaction of task and collaborator characteristics suggest an optimal pattern for pre-firm task completion. During conceptualization tasks, entrepreneurs use inner networks to complete tasks that reduce ambiguity (refine idea, garner support, etc.) and partially articulate a previously unseen value relationship. Through contextualization, entrepreneurs use outer

networks to seek validation and contextual considerations from those with domain expertise to convert their semi-articulated idea into an actionable plan inclusive of discrete tasks (both creative and generic). In substantiation tasks, founders employ low-cost market collaborators to accomplish generic tasks necessary to realize the vision that is taking shape. Entrepreneurs capitalize by employing high-cost collaborators to establish and demonstrate productive capacities (technical development, product design, prototyping, etc.). Success in each task is dependent on having and selecting the appropriate resources to engage appropriate collaborators.

5.0 DISCUSSION

In this article we took first steps in examining the strategic factors pre-firm entrepreneurs face in strategically matching tasks, resources, and collaborators across their social and market contexts to reduce uncertainty and produce the inputs of an entrepreneurial firm. By outlining the role and nature of uncertainty-decreasing tasks (the what), the role and nature of collaborators available to complete these tasks (the who), and the role and nature of means by which collaborators are engaged (the how), we presented a more complete model of the pre-firm entrepreneurial process. The model we develop shows that the realization of entrepreneurial intentions relies not only on having sufficient capital to engage collaborators, but also the strategic matching of collaborators with uncertainty-reducing tasks. Below we discuss the contributions that our article makes to entrepreneurship and strategy research.

Our model contributes to our understanding of early entrepreneurial strategy (Arikan et al., 2020; Artinger & Powell, 2016; Mcgrath, 1999). It shows how entrepreneurs with a valuable idea, a rich and diverse network in terms of structure, and even an initial endowment of significant financial resources can still struggle or fail due to a strategic mismatch of collaborators and tasks (see also, Amezcua et al., 2013). Alternatively, it presents an

explanation of how a determined entrepreneur can convert social and relational capital into the successful utilization of market collaborators and the establishment of a viable firm.

5.1 Interacting Social and Financial Capital in Pre-firm Stages

Our model succeeds in identifying key relationships between multiple forms of capital in pre-firm stages. While the literature often considers them separately, entrepreneurs rarely experience social and market means in isolation. These two means both interact and are often substitutes (with trade-offs). By considering the parallel prerequisites of both social and market interactions (search, trust, communication, etc.) and by taking an agentic perspective to early entrepreneurial choices (Hallen et al., 2020), we demonstrate the strategically critical interaction between what are often considered separate domains of social and financial transaction. We uncover how varying endowments of socially and economically relevant capital interact with the needs of pre-firm entrepreneurs and lead to disparate early-stage outcomes (Clough et al., 2019). When strategically applied, social capital in pre-firm stages can establish the creative direction and context necessary for the successful application of financial capital. Inner network contacts can disambiguate value propositions while outer network contacts, by forcing the entrepreneur to engage in more expert language and articulated premises, can act as a crucial intermediary between early conceptualization tasks and market transactions.

The limits of social resources (Adler & Kwon, 2002) and the social costs of network participation (Casciaro et al., 2014) may drive a crucial transition from inner to outer network spaces and eventually further into market participation. When this transition runs parallel to the natural evolution of entrepreneurial needs, the process appears to be both value-productive and efficient. When the transition is forced by insufficient resources, the chances for failure in further stages may increase since alternative collaborators may be less suitable.

The relationship between social and financial capital use in pre-firm stages may shed light on important questions about the experience of minority or traditionally marginalized entrepreneurs. Extant research on gaps in the representation of well-financed entrepreneurs has focused predominantly on the biases of capitalization gatekeepers like investors (Ahl, 2006; Joshi, Oh, & DesJardine, 2022; Kwapisz & Hechavarría, 2018). Our research suggests that social factors come into play far earlier than the capitalization stages; social norms antagonistic to some aspects of the entrepreneurial process are likely to affect entrepreneurs first when they are embedded in their social context. Social factors affecting inner and outer network access will change the entire trajectory of the enterprise and can delay or diminish the momentum of productive signals and uncertainty reduction. In short, uncounted entrepreneurs likely face prohibitive collaborative frictions in the first two entrepreneurial tasks, abandoning valuable propositions before they can substantiate or attempt to capitalize their endeavour.

5.2 Cost pressures and Funding Gaps

By considering both the social and financial costs of pre-firm collaborators, we reveal previously unseen cost pressures in pre-firm entrepreneurship. By comparing potential pre-firm collaborators, we see that social and financial risks/costs may push entrepreneurs to use the collaborators that are least trustworthy or engaged (outer network and low-cost market collaborators). The high social risk and relational costs of engaging inner network ties may push entrepreneurs with low levels of social/relational capital to outer network and market means. The high financial risk of engaging with premium market providers may force money-poor entrepreneurs to choose low-cost and network means. Thus, entrepreneurs, struggling with uncertainty, may be shut out from communicative, trusting collaborators. Instead, resource-poor entrepreneurs must likely choose between outer network and low-cost market means that provide limited buy-in, bandwidth, or trust. Grit, hard work, and determination may

be insufficient in this situation since collaborators are not oriented or incentivized to remediate deficiencies. Such cost pressures are likely to have particularly poignant implications for traditionally marginalized or economically disadvantaged entrepreneurs that are may have different endowments of social and financial capital when compared to other entrepreneurs (Brands, Ertug, Fonti, & Tasselli, 2022; Kanze, Huang, Conley, & Higgins, 2018; Pidduck & Clark, 2021).

Relatedly, our model shows that entrepreneurs without access to a small amount of capital will struggle to progress past contextualization stages. Investors are generally uninterested in investing sums of only a few thousand dollars, and entrepreneurs are wise to not give equity at such an early stage. This fact, coupled with reports that the average household of even affluent nations is unable to provide such sums, indicates an early and systematic gap in entrepreneurial funding (*Survey of Consumer Finances*, 2019). Further contributing to this gap is the reality that financial limits are sometimes socially, as opposed to economically, imposed; entrepreneurs may struggle to divert family funds towards a promising enterprise if they are not deemed a legitimate entrepreneur by family stakeholders (Aldrich & Cliff, 2003; Fisher, 2020). Such obstacles can occur even when the sum is otherwise insignificant to family finances.

Finally, this model lays bare the incredibly time-intensive nature of pre-firm stages and suggests time-poverty as a major filter to pre-firm entrepreneurial efforts. The many collaborations necessary throughout each of the four stages of pre-firm activity imply hundreds of hours of searching, soliciting, managing, and reshuffling collaborations. Since time can sometimes be bought by outsourcing caretaking or other life responsibilities, the relationship between time and money emphasizes again the critical nature of relatively small amounts of financial capital in pre-firm stages.

5.3 Limitations and Future Directions

Our theoretical model represents only the first, broad strokes in clarifying our understanding strategic task and collaborative factors in pre-firm entrepreneurship. Much work remains to qualify and elaborate on this initial direction.

Our model presents four tasks critical to pre-firm development, and more work is necessary to determine the iterative, cyclical processes at play between these four tasks (Clough et al., 2019; McMullen & Dimov, 2013). Resources and creative needs may prioritize specific concatenations of activity, and entrepreneurs are likely to regularly return to collaborators in patterned ways we have yet to fully understand (Perry-Smith & Mannucci, 2017; Reis, 2011).

Additionally, this model is deficient in acknowledging the full extent of challenges related to transitioning between collaborators. This and similar models often fail to account for the cognitive, social, and emotional cost of managing a long list of collaborators that differ dramatically in terms of motivation, social context, and communication (Adler & Kwon, 2002; Casciaro et al., 2014; Hallen et al., 2020; Vissa & Bhagavatula, 2012). Transaction cost literatures warn us of search costs, but the lived experience of entrepreneurs navigating networks and marketplaces likely holds more dimensions than our economic theories can express (Williamson, 1993). Further work on pre-firm stages would benefit from a clearer articulation of the costs of all entrepreneurial interactions (sensitive to both social and market contexts) and the efforts necessary to transition between disparate collaborators.

Another potential limitation of our study is that, due to the limits of the sample, it fails to reflect a variety of founding teams (Delmar & Shane, 2006; Jung, Vissa, & Pich, 2017; Ruef, Aldrihc, & Carter, 2004). Progress has been made in demonstrating how tasks are distributed between founders internally (Jung et al., 2017), but more research is needed to determine how the makeup of founding teams might change how they involve outsiders in tasks. Further

empirical enquiry will be necessary to see how team dynamics, size, and capacities may change the broad patterns of who entrepreneurs choose to collaborate with, when, and how.

Empirical work on pre-firm stages faces significant practical challenges related to access and methodology, but more direct observation of pre-firm experiences and factors is critical to entrepreneurship research (Bennett & Chatterji, 2019). Only by taking earlier samples of entrepreneurial activity can we begin to unwind the unseen biases that currently afflict our best theories. The digitalization of most interpersonal communication provides rich opportunities to observe the earliest entrepreneurial interactions, and algorithmic methods of analysis can assist in efficiently processing such data.

More work is needed to better understand the experience of entrepreneurs in engaging market collaborators. An emphasis on social capital and search in pre-firm moments has led to a neglect in how entrepreneurs successfully conduct paid collaborations to establish firm inputs (Clough et al., 2019; Mannucci & Perry-Smith, 2022). The experience and strategy of social capital and financial capital use are likely to differ dramatically, and first-time entrepreneurs are unlikely to have had opportunities to learn how to engage market collaborators in entrepreneurial tasks. Additionally, while we are aware of the risks and challenges of market transactions, we have yet to understand how a resource-poor, lone entrepreneur can productively overcome them. The establishment of a firm and commensurate resources may be the ultimate response to transaction costs, but entrepreneurs must necessarily provide interim solutions to accomplish pre-firm tasks (Klein & Sykuta, 2010; Williamson, 1993). The model presented in this article suggests that social capital and network collaborations will play a key role, but more theoretical and empirical work is needed to ascertain how pre-firm entrepreneurs grapple with market risks.

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Conclusion

Let's briefly review what we have learned:

We've learned that entrepreneurial interaction costs, the risks and costs of employing social capital instrumentally towards entrepreneurial aims, are present and determinative in pre-firm environments. Entrepreneurs must actively manage social risk and relationships as part of initiating, maintaining, and putting to rest socially-motivated collaborations. Interaction costs likely force an early (albeit partial) transition from social to market contexts that precedes the move to firm contexts; entrepreneurs might first trade interaction costs for transaction costs and then transaction costs for firm-related costs (Chapter 1).

We've learned that entrepreneurs have little power, resources, or knowledge available to deal with pre-firm transaction costs on their own and that social capital can be a tremendous tool in reducing such costs. Entrepreneurs can use their social capital to reduce the ambiguity of tasks, better understand their context, and improve their contracting approach in order to decrease the threat of opportunism, uncertainty, and hold-up in their collaborations. Social capital isn't just critical to having financial resources, it may be critical to using them well (Chapter 2).

We've learned that the collaborative options available to pre-firm entrepreneurs (by means of either social or financial capital) vary significantly in terms of collaborative risks and opportunities. Entrepreneurs must strategically match collaborations and tasks to reduce uncertainty and prepare the necessary inputs for future collaborations. Successful entrepreneurs likely engage their inner network for early conceptualization, their outer network for contextualization, low-cost market actors for initial substantiation, and high-cost collaborators for capitalization (Chapter 3).

While we have covered many implications of these findings throughout the preceding chapters, it serves us to take one last look at the broader picture. We will briefly cover a few

implications from this dissertation for entrepreneurial ecosystems, entrepreneurship practice, gender and racial gaps in entrepreneurship, and a few stragglers for strategic entrepreneurship research.

Implications for Entrepreneurial Ecosystems

Social capital, it would seem, does not only need to be present in an environment, but cost-effective. In acknowledging interaction costs, we unlock a long list of questions related to how a particular ecosystem structures the risks and efforts necessary for an entrepreneur to put social capital to use. Where social capital is both bountiful and frictionless, we can expect entrepreneurs to be better capable of navigating the many challenges of pre-firm collaborations and progress. Where social capital is sparce and cognitively, emotionally, or temporally expensive, we can expect entrepreneurs to choose inefficient strategies, struggle to collaborate, and make more mistakes.

Much more work is needed to understand, at the level of ecosystems, what drives patterns of interaction costs, but cultural expectations will undoubtedly be one critical factor (Camerer & Vepsalainen, 1988; Hechavarría et al., 2017; Patterson, 2014; Swidler, 1986; Van den Steen, 2010). What rituals does a particular culture require to request help/advice from others? What associations does the society have about entrepreneurship and the different segments of the population? What power dynamics and honorifics are at play?

Social structures and institutional features will also play a role (Beckert, 2010; DiMaggio & Powell, 1983; Logue & Grimes, 2019). What platforms and programs are available, and are they effective at mitigating rather than exacerbating interaction costs? What externalities from other institutional layers (e.g., religion, education) extend into the social fabric of entrepreneurs and shape their network interactions?

Interaction costs and the model of pre-firm stages both emphasize the reality of a time-intensive entrepreneurial process, rendering time-related ecosystem structures critical. Every network interaction, and for many entrepreneurs there will be hundreds before a firm is established, requires time to search, plan, connect, communicate, manage, maintain, and rest. The availability of child-care, the after-office hour expectations of local firms, commute and transport efficiency, and remote work policies will influence how much time is available to entrepreneurs to strategize and pursue their agenda. If we consider entrepreneurship to be a means for bringing about value to a society and entrepreneurs (Koppl, Kauffman, Felin, & Longo, 2015; Lepak, Smith, & Taylor, 2007), both insufficient time or delays to entrepreneurial success are extremely costly.

Implications for Entrepreneurship Practice

The preceding chapters hint at a critical funding gap in the very early stages of pre-firm activity. Low-cost market collaborators are critical to substantiating the value proposition and transitioning to capitalization (funding, production, firm) stages. Entrepreneurs who have successfully carried out conceptualizing and contextualizing tasks will have reduced critical uncertainties, but in a world where most of the population struggles to cover unexpected expenses, a few thousand dollars can be hard to come by. Hypothetically, outside investors could intervene at this incipient stage, but micro-finance models have had mixed results and can quickly devolve into a loan-shark environment (Battilana & Dorado, 2010). Scholarship has maintained a hand-waving policy that uses family, friends, and fools (the three F's) as a convenient catch-all to any early funding needs (Clough, Fang, Vissa, & Wu, 2019; Fisher, Kotha, & Lahiri, 2016). Yet, anyone familiar with on-the-ground entrepreneurship knows that the *vast* majority of entrepreneurs have zero F's to give funding, much less three. A little funding in pre-firm stages can also be key to relieving time pressures (childcare, etc.).

Once we have identified patterns for how much is needed at this critical stage, we can begin to design better interventions. Banks may be willing to offer low-interest, small loans along with business banking services. Many university, non-profit, and accelerator programs are willing to provide early resources, and when these earliest expenses (in the range of a few thousand dollars) are as widely acknowledged as those associated with pre-seed, seed, or series A funding (tens, hundreds, or millions of dollars), these institutions may be able to expand their services to close some of this gap. To get the ball rolling, let's name our pre-pre-seed funding 'exploration funding.' We'll see if it catches.

While not addressed directly in any of the chapters, one can see the importance of a well-functioning founding team (Aldrich & Kim, 2007; Blatt, 2009; Delmar & Shane, 2006; Jung, Vissa, & Pich, 2017; Lazar et al., 2022). Another critical obstacle to pre-firm entrepreneurs seems to be a dearth of trustworthy and engaged collaborators in contextualizing and substantiating stages. While Chapter 2 suggests that network actors can help structure tasks to great effect, social pressures do make it hard to continuously draw on network resources for complex projects. Having co-founders to do the bulk of the creative work with and then using networks to refine that direction is a much more efficient experience than a lone entrepreneur constantly pinballing between network actors to get stuff done. Founding teams can, from this lens, be thought of as an internalizing/verticalizing strategy in response to interaction costs. Expanded founding teams also essentially double or triple the network ties available and are more likely to have someone with a networking skillset.

Implications for Gender and Racial Gaps

A focus on interaction cost and collaborative processes have the potential to be a game-changer in the way we approach gender and racial gaps (Ahl, 2006; Ahl & Marlow, 2012; Henry, Foss, & Ahl, 2016). The base networks of under-represented founders are less likely to be commonly

used for (high-growth) entrepreneurial purposes, and these founders are more likely to experience greater interaction costs in both inner and outer-network structures. The social risk of being an entrepreneur is (in many western contexts) higher for those who don't fit the mould of the traditionally white and male entrepreneur, and the risk tolerance of economically marginalized communities is often (very rationally) lower (Desmond, 2016; Pidduck & Clark, 2021).

Since the nature of entrepreneurship is incredibly risky and hard, these marginal interaction costs may be highly determinative. Diffuse, yet discouraging, patterns and light skepticism in their observable network may be enough to convince an entrepreneur that they aren't meant to pursue something innovative (Botelho & Abraham, 2017; Gupta, Turban, & Bhawe, 2008; Kwapisz & Hechavarría, 2018) particularly when anyone must squint to see any form of entrepreneurship as barely rational (Artinger & Powell, 2016; Ucbasaran, Shepherd, Lockett, & Lyon, 2013). Committed entrepreneurs are often successful *eventually,* but women and other under-represented entrepreneurs are less likely to have the luxury of time and expensive effort since they are statistically more likely to be dealing with childcare or making ends meet.

Traditional interventions like bias training in investment panels and providing mentoring networks only scratch the surface across a landscape of interaction costs and collaborative challenges (Joshi, Oh, & DesJardine, 2022; Kanze, Huang, Conley, & Higgins, 2018). The questions program designers and policymakers must answer are: How do we tip the scales in the entrepreneurship cost-benefit analysis for under-represented founders? How do we decrease the social risk and effort necessary to maintain an entrepreneurial narrative? How do we make it easier for them to initiate, maintain, and put to rest productive collaborative relationships across a wide, dynamic, and diverse network? How do we ensure they have the time and resources necessary to move through pre-firm stages?

These interventions aren't easy, but they put power directly in the hands of the entrepreneurs. The onus of progress will always be on the entrepreneur's shoulders; no intervention can do the work of entrepreneurship for a founder. Decreasing obstacles is a necessary part of the problem, but programs that don't consider the lived experience and rationale of entrepreneurs will fall short of meaningful change.

Broad Implications for Research

Many research implications have already been covered throughout the preceding chapters, so only two high-level observations will be made here.

Pre-firm entrepreneurship research is hard, but recent institutional trends are making it easier. It is difficult to be in the trenches with entrepreneurs in these early moments and hard to construct large data sets from their messy experiences (Bennett & Chatterji, 2019; Clough et al., 2019). The institutionalization of entrepreneurial support as seen in university and community settings, however, does offer interesting opportunities for experimental methods. There are many more entrepreneurial cohorts from all types of programs worldwide, and the frequency of these cohorts provides opportunities to isolate variables and conduct tests (Cohen, Bingham, & Hallen, 2019; Goswami, Mitchell, & Bhagavatula, 2018). Researchers pushing a 'scientific approach' to entrepreneurship, among others, have already started capitalizing on this opportunity and conducting randomized control trials of entrepreneurial interventions (Camuffo, Cordova, Gambardella, & Spina, 2019; Zellweger & Zenger, 2022).

Let's consider a simple example of how this could be used to test hypothesis related to interaction costs. Interaction cost economics proposes that entrepreneurs who don't have to work as hard to explain their identity as an entrepreneur will find it less costly to engage network help and be more successful. A full-time caretaker of three kids, for example, may have to spend more time justifying their choice and explaining their experience to network

contributors than a software engineer at a tech company looking to work for themself. To test this hypothesis, we might take two cohorts of randomly assigned women entrepreneurs from a women-focused university program (holding gender constant). Leaving training and support constant, we might assign one cohort an official title such as 'X University Innovation Fellow' and reinforce that identity to them throughout the program. Both cohorts would be taught to use legitimization strategies and signalling in their network conversations, but only one would be given a legitimate-sounding title. Both cohorts would record their networking conversations (or ethics-approved data from them) and measures of network and business success would be compared across the two cohorts to see if interaction costs were meaningfully affected.

Besides an increase in institutional programs and cohorts, another interesting development in the entrepreneurial process is the 'zoomification' of networking. Zoom chats have unseated coffee chats as the de facto network ask; requesting twenty minutes of someone's time on zoom is much easier than asking them to drive to a coffee shop, meet in person, and then drive home. Thus, pandemic and technology trends have decreased interaction costs related to conducting network meetings. The pandemic's exogenous shock itself provides an interesting case study, but this particular behavioural trend highlights the role of platforms and technology in defining costs and opportunities throughout pre-firm processes.

What is most interesting about this trend is the way that it clearly highlights that the interaction costs at play are defined not only by technological possibility but by social expectation. Bell labs had a video phone in 1927, and people have had video-call capable smartphones on their persons for a decade. It wasn't enough that entrepreneurs *could* organize these calls for years now; it had to be a *low-cost* request. Suggesting a zoom call is natural and effortless in a way it wasn't just three years ago. Entrepreneurs that are persuasive and skilled at organizing rich networking experiences can likely render otherwise costly requests less so, but most entrepreneurs will be inclined to navigate their network according to the rules imposed

by social and technological inertia. Much more work is needed to see what roles society has given technologies like search, email, calls, texts, social media, video-conferencing, forums, and YouTube in the entrepreneurial process and how entrepreneurs can strategically stretch or co-opt those roles (Fischer & Reuber, 2011; Seidel, Hannigan, & Phillips, 2020; Smith, Smith, & Shaw, 2017). Similarly, it will be important to see how institutions set expectations and use their power to shape the roles of these technologies to better support entrepreneurs (e.g., letting alumni use university email addresses).

Final Note

We did it. We've reached the end of this very long, yet dare I say, riveting, dissertation. Take a long stretch. Go hug an entrepreneur (or PhD student). Give yourself a big hug. Thank you for coming on this journey with me. It's one I have thoroughly enjoyed, and I am so grateful to you for being a part of it. Have a wonderful rest of your day.

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