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Strategy Formation in Entrepreneurial Settings: Past Insights and Future Directions

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Abstract

Research Summary: Examining the strategy formation process is central to understanding why some firms in entrepreneurial settings create competitive advantage and succeed while others do not. The strategy formation process, however, remains unclear. While existing work shows the value of learning from experience *or* having a holistic understanding of how the pieces fit together, there is limited empirical research that fuses the two streams. We first review the extant literature on strategy formation in entrepreneurial settings by organizing around this fundamental tension between strategizing by "doing" v. "thinking". We then describe recent work that blends the two, and conclude with a future research agenda.

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Managerial Summary: An effective strategy can be the difference between becoming the next Google or Netflix, and floundering as an also-ran. But how should executives in entrepreneurial settings form strategy? Are they better off letting strategy emerge incrementally by learning from experience? Or, should they create a holistic understanding of the interdependent activities that constitute strategy with cognitive structures like mental models and analogies? Here, we indicate the extant research findings on strategy formation in entrepreneurial settings for each of these approaches. We also discuss the new research on how they can be effectively combined, and outline an agenda for future research to help executives to improve their strategy formation process.

INTRODUCTION

In 1997, Reed Hastings and Marc Randolph spotted a promising opportunity at the intersection of the emerging Internet and DVD technologies, and launched Netflix. But while Netflix is now a huge success, its success was not assured. Forming a winning strategy that linked together key activities like movie acquisition, pricing, and recommendations was a mistake-filled and time-consuming process (Shih and Kaufman, 2014). They worked for over two years to form the strategy that eventually led Netflix to dominance of Blockbuster and success.

As the Netflix vignette suggests, strategy formation is central to understanding why some firms in entrepreneurial settings succeed while others do not. By strategy formation, we mean the process by which executives create a unique set of interdependent activities to create and capture value. By entrepreneurial settings, we mean the context of entrepreneurial firms (i.e., young firms competing in nascent or highly unpredictable markets) and of established firms competing in similar markets or with innovation-driven strategies.

Despite the importance of strategy formation in entrepreneurial settings, this process remains unclear. Should strategy emerge incrementally by taking actions and then learning from those actions (Baker and Nelson, 2005; Bingham and Eisenhardt, 2011)? Or, is it better to create a holistic understanding of the interdependent activities that constitute strategy (Gary and Wood, 2011; Gavetti, Levinthal, and Rivkin, 2005)? At its core, this dichotomy between *doing* and

thinking stems from the tension between the novelty of the opportunity and the complexity of the set of activities that must mesh together to capture that opportunity. On the one hand, executives in entrepreneurial settings must form viable strategies around novel ideas in nascent markets. But the ambiguity and unpredictability of these markets limit executives' ability to predict the consequences of their actions, and makes them more likely to form strategy by *doing* - using experiential processes that emphasize learning about what works in the market (Rindova and Kotha, 2001; Baker and Nelson, 2005; Bingham and Eisenhardt, 2011). On the other hand, executives must also form strategies that combine many individual activities like product development and sales into a complex activity system in which each activity fits and reinforces the others (Porter, 1996; Rivkin, 2000; Siggelkow, 2002). This complexity requires comprehending the interdependencies among activities, and makes executives more likely to form strategy by *thinking* - using cognitive structures that promote a holistic understanding of the strategy and its causal logic. The limited resources of many firms in entrepreneurial settings exacerbate this tension, and so further complicate the strategy formation process.

In this paper, our goal is to illuminate the past insights and future research directions related to how strategy forms in entrepreneurial settings. We begin with a literature review that we organize around the core tension: *doing* (action) versus *thinking* (cognition). We then discuss the limited work that directly addresses this tension, and conclude with a future research agenda.

STRATEGIZING BY DOING – LEARNING FROM EXPERIENCE

One prominent research stream on strategy formation in entrepreneurial settings looks at how executives *strategize by doing* – i.e. form strategies by taking action and then learning from their experience (Table 1). The underlying assumptions are that executives cannot effectively think through the consequences of firm actions or predict the future in entrepreneurial settings because

they are characterized by high velocity – i.e., novel, unpredictable, ambiguous, and fast-paced markets (Eisenhardt, 1989). Instead, executives effectively form strategy by engaging in flexible behaviors like trial-and-error learning (Bingham and Davis, 2012), bricolage (Baker and Nelson, 2005), improvisation (Miner, Bassoff, and Moorman, 2001) and experimentation (Andries, Debackere, and Van Looy, 2013) that emphasize learning from experience.[1] Finally, while these processes involve cognition, their emphasis is on action.

<Insert Table 1 Here>

Trial-and-error is a learning process by which executives persist in their behaviors when outcomes are positive, but adjust their behaviors in response to negative outcomes (Bingham and Davis, 2012). Thus, executives who engage in trial-and-error learning (and relatedly, local search (Cyert and March, 1963; Nelson and Winter, 1982)), attempt to form their strategies incrementally based on the consequences of their actions. Core to the effectiveness of trial-and-error learning is codifying experiential learning into structure such as "simple rules" heuristics (Bingham, Eisenhardt, and Furr, 2007) and routines (Zollo and Winter, 2002). For instance, Bingham and Eisenhardt (2011) explore how entrepreneurs at six technology-based ventures used trial-and-error learning to create simple rules that formed the basis of their strategies. Moreover, those entrepreneurs who converted their trial-and-error learning to simple rules built more successful ventures than those entrepreneurs who simply gained experience, but failed to learn explicit simple rules (Bingham *et al*, 2007).

Bricolage is a second learning process by which executives in entrepreneurial settings form strategy by doing. Following others, we define bricolage as "making do by applying combinations of the resources at hand to new problems and opportunities" (Baker and Nelson,

[1] Although we do not directly discuss the effectuation (Sarasvarthy, 2001) and lean startup (Reis, 2011) approaches, they are amalgams that draw heavily from "strategizing by doing" processes like bricolage and experimentation.

2005: 333). When executives engage in bricolage, they ignore commonly accepted constraints such as traditional uses of materials in order to form strategies based on re-purposing resources and recombining them in novel ways. Thus, executives form strategy by taking actions that use existing resources in unexpected ways to create new sources of value (Welter, Mauer, and Wuebker, 2016).

For instance, Baker and Nelson (2005) examine how 29 resource-constrained entrepreneurs "create something from nothing" by engaging in bricolage. The authors explain how effective bricoleur-entrepreneurs ignore accepted constraints, and instead take actions that re-imagine how existing resources can be used. In one example, a farmer harvested seemingly worthless methane gas from abandoned coal mine tunnels under his land, and then re-sold the gas to a utility company. He then focused on this activity to scale it into an ongoing business. When the farmer's methane generator unexpectedly produced heat, he broadened his strategy by exploiting the heat to create a hydroponic greenhouse-vegetable business. When he realized that he now had "free" trenches of nutrient-rich water, the farmer expanded his strategy again to include farming tilapia among the roots of his tomatoes. Baker and Nelson (2005) further show that using bricolage only occasionally (selective bricolage) to locate scalable opportunities is the key to effective strategy formation. In contrast, continuously engaging in bricolage (parallel bricolage) limits the ability of entrepreneurs to focus on forming coherent strategies.

More recently, research suggests using bricolage as a design philosophy to ideate novel alternatives in both new and established firms (Mair and Marti, 2009; Seelos *et al*., 2011; Senyard *et al*., 2014). Ideational bricolage involves executives in relatively munificent entrepreneurial settings using bricolage to explore widely and so craft innovative strategies (Desa and Basu, 2013; Senyard *et al*., 2014; Bechky and Okhuysen, 2011). For instance, Senyard and

colleagues (2014) survey executives at 658 firms about their bricolage activities, such as resource recombination, and their strategic innovativeness. They find that executives who use bricolage are more likely to generate innovative strategies that target entirely new products, customers, or markets. Thus bricolage can be a process for both: 1) forming a strategy using minimal resources, and 2) forming a strategy that goes beyond the bounds of current activities.

A related learning process is *improvisation.* Following others, we define improvisation as the deliberate fusing of the design and execution of a novel production (Miner *et al*., 2001). Executives who improvise to form strategy "do so on the fly" with activities that may or may not become permanent (Baker, Miner, and Eesley, 2003). Improvisation can be especially effective for forming strategy in entrepreneurial settings because it takes advantage of the surprises that characterize these settings. Bingham (2009), for example, describes how improvisation helped entrepreneurs in Finland, Singapore and the U.S. to form their strategies. In one Singapore-based security software venture, the founders unexpectedly learned that a specific customer would pay only for hardware. As a result, they improvised a one-off solution whereby they packaged their software into a physical box for that customer that then became part of their ongoing strategy.

Executives in entrepreneurial settings can use improvisation both during founding (new firms) and later (established firms) to form strategies, and often combine improvisation with other learning processes like bricolage and trial-and-error. For example, Baker *et al*. (2003) study 25 knowledge-intensive ventures in the computing and clean tech industries. In one example, entrepreneurs improvised to capture an opportunity outside their expertise in order to temporarily generate extra revenue. When an opportunity arose later to gain further business related to this improvisation, they then re-configured their resources via bricolage to form a new strategy.

Improvisation has two key features that facilitate strategy formation: 1) extensive

communication and 2) reframing. Extensive communication enables executives to understand surprises more effectively and discuss their responses more fully (Edmondson, Bohmer, and Pisano, 2001). It also provides more room for the flexibility needed to generate novel ideas (Weick, 1993) and more pathways for sharing solutions (Brown and Eisenhardt, 1997). Second, reframing permits executives to exploit serendipitous opportunities that surface while forming strategy in the moment (Weick, 1993). In this regard, reframing of events during improvisation is similar to the reframing of resources during bricolage. Miner and colleagues (2001) note several examples of reframing in their study of entrepreneurial product development in established firms. In one case, an engineer stumbled on a solution to enhance search speed while correcting a software bug that was completely unrelated to speed. With this serendipitous solution, searches that had taken 22 seconds could now be done in $1/10^{th}$ the time. After discussions with colleagues, the engineering team realized that their new solution could be reframed as a "speedy reporting feature that could be emphasized in marketing efforts" (Miner *et al*., 2001:312). Thus, although the engineer could have seen the solution as just a bug fix, reframing the unexpected event with a new meaning enabled executives to improvise an updated strategy.

Experimentation is another learning process by which executives form strategy by doing in entrepreneurial settings. Experimentation involves controlled variation of activities and context in order to produce knowledge (Miner *et al*., 2001) and resolve uncertainties. It is distinct from trial-and-error learning, bricolage, and improvisation because it is both deliberate and "offline". In contrast, the others involve learning from or exploiting unanticipated events in real-time.

There are several approaches to experimentation including: visionaries (Brown and Eisenhardt, 1997; Helfat and Raubitschek, 2000), product tests (Brown and Eisenhardt, 1997; Miller and Shamsie, 2001), prototyping (Pisano, 1994; Thomke, 2003), and exploratory alliances

(Santos and Eisenhardt, 2009). Andries and colleagues (2013), for example, describe how executives in more successful ventures ran simultaneous experiments pitting unique business models against one another to improve their strategies while executives in less effective ventures committed to a single strategy. Similarly, in their study of investment ventures, McDonald and Eisenhardt (2017) find that explicitly experimenting to test assumptions leads to faster, better strategy formation. A key insight is that probing with a wide variety of low-cost experiments (not narrow and expensive ones) is particularly useful for rapid and efficient strategy formation (Brown and Eisenhardt, 1997).

Overall, this research stream highlights *strategizing by doing*, and emphasizes how learning processes like trial-and-error, bricolage, improvisation and experimentation can drive strategy formation in entrepreneurial settings. These processes often involve thinking such as by reframing resources and surprises and by planning experiments, but their emphasis is on action. Finally, while very helpful, this work generally overlooks that strategy formation often involves coherently combining many interconnected activities - a process that requires a holistic understanding of how activities fit together.

STRATEGIZING BY THINKING – CREATING HOLISTIC UNDERSTANDING

A second prominent research stream emphasizes *thinking,* and looks at how executives form strategy by relying on cognition. The assumption is that, even though executives in entrepreneurial settings cannot predict the future, they form better strategies when they have a holistic understanding of opportunities, markets, and their own firms (Barr, Stimpert and Huff, 1992; Gary and Wood, 2011) Thus, this stream emphasizes strategizing by thinking (cognition) over doing (action) (Table 2). That is, executives in entrepreneurial settings effectively form strategies by relying cognitive structures like accurate mental models (Marcel, Barr, and

Duhaime, 2010; Kiss and Barr, 2015), appropriate analogies (Gavetti, Levinthal and Rivkin, 2005; Gregoire, Barr, and Shepherd, 2010), and identity (Powell and Baker, 2014; Fauchart and Gruber, 2013).

<Insert Table 2 Here>

Mental models are simplified cognitive structures by which individuals organize knowledge into a representation or map that facilitates understanding of markets, firms, and strategies (Gary and Wood, 2011; Walsh, 1995). They are relevant for strategy formation because individuals reason by using mental models of possibilities (Johnson-Laird, 1983). For example, research finds that executives' mental models can influence how quickly they act in the face of competitive moves (Marcel, Barr, and Duhaime, 2010) and market shifts (Nadkarni and Barr, 2008). The overall argument is that executives with more holistic and accurate mental models, including the causal logics of their businesses and markets, are likely to form more effective strategies.

For instance, Gary and Wood (2011) examine the relationship between mental models and performance in a strategy simulation game using 63 MBA subjects. The results indicate that the student-strategists with more accurate mental models (i.e., they better understood the deep structure and causal logic of their business and market) formed better strategies with more accurate decision rules, and achieved higher performance than the others. Similarly, Kiss and Barr (2015) investigate the mental models of executives at 104 technology-based firms by performing a content analysis of their shareholder letters during their IPO year. The authors find that executives with more complex mental models and more causal links were more likely to form strategies with more diverse actions than others, and have better performance.

Related work focuses on creating a holistic vision. Sometimes this vision emerges from

formal planning that creates a comprehensive view of the industry and focal firm (Delmar and Shane, 2003; Brinckmann and Kim, 2015). At other times, it may involve creatively conceptualizing the roles of firms within a nascent market, and thus imagining a "blueprint" of the industry. For example, in a multiple-case theory building study, Ozcan and Eisenhardt (2009) examine strategy formation in six entrepreneurial firms entering the nascent mobile gaming industry. Forming appropriate alliance portfolios is central to effective strategy in ecosystems like this. The successful entrepreneurs formed strategy by conceptualizing a vision or "blueprint" for the industry ecosystem that specified their own roles and those of complementors like brand owners, handset makers, and telecommunication carriers. Guided by their holistic vision, they intertwined relationships with and between complementors. By contrast, entrepreneurs without a holistic vision formed more myopic, incremental, and less successful strategies.

Other research emphasizing cognitive structures explores how executives use *analogies*. Analogies are cognitive structures that enable problem solving whereby individuals use mental representations from previous situations to form an understanding of the current situation (Holyoak and Thagard, 1996; Gentner, 1983). Executives may draw on analogies from their own experience (Maitland and Sammartino, 2015), personal values (Gavetti and Rivkin, 2007), or knowledge of exemplar firms (Rindova and Kotha, 2001). Analogies can facilitate strategy formation by accelerating the creation of accurate and holistic mental models. To illustrate, in their study of the design firm IDEO, Hargadon and Sutton (1997: 739) noted that executives formed strategies by making analogies between past solutions and current problems. In one situation, executives who were trying to power a door opener using an electric vehicle charger re-formulated their product strategy when they recalled an analogy to pistons that open the rear windows of station wagons. Similarly, Gregoire *et al*. (2010) observe how executives form

hypothetical strategies for bringing new technologies to market in entrepreneurial settings. Executives who used analogies had improved opportunity recognition and formed better strategies. Overall, analogies provide integrative templates for linking together disparate activities to form coherent strategies.

Yet, analogies can also be difficult to use well. Individuals use analogies most effectively when they recognize the differences between the analogical source and target (Holyoak and Thagard, 1996). Research indicates that executives can better recognize these differences by using multiple analogies rather than one (Lovallo, Clarke, and Camerer, 2012) and that analogies are most effective at the beginning of strategy formation. Further work indicates that using analogies may also help executives to align their own strategies more effectively with those of other stakeholders (Bingham and Kahl, 2013). For instance, Kaplan (2008) uses ethnography to explore how executives in an established firm competing in entrepreneurial settings framed strategy formation in terms of their prior knowledge.[2] These executives had repertoires of knowledge that they used to source multiple analogies for the same strategic problem, and then flexibly used those representations in "contests" with their colleagues. Executives were thus better able to gain support for their strategies when they could frame them in terms of analogies that aligned more closely with others' mental models.

Other research on cognitive structures emphasizes how executives draw on *identity* to form strategy. Personal identity is the cognitive conceptualization of "who I am" while organizational identity is the shared cognitive conceptualization of "who we are." Research indicates that personal identity affects how executives filter information and incorporate their values as they form strategies (Tripsas and Gavetti, 2000; Fauchart and Gruber, 2011). For

[2] Kaplan's work highlights a key boundary condition of our paper. We include established firms in entrepreneurial settings, but focus on doing v. thinking. Thus, we exclude the political and organizational challenges of strategy formation in large firms such as those studied by Kaplan 2008, Huy, 2011, and Martin and Eisenhardt, 2010.

instance, Powell and Baker (2014) conduct a multiple-case theory building study of 13 established textile and apparel firms to explore how founder-executives form strategy under adversity. They show that the personal identities of these founders shaped their firms' strategies in response to a steep industry decline. Consistent with their identities, some founders conceptualized this adverse situation as an opportunity, and formed strategies that embraced adversity. In contrast, others with different identities viewed the situation as a challenge, and formed strategies to counter adversity. The point is that differences in personal identity can guide executives to form different strategies even in the same situation.

Organizational identity also affects strategy formation (Santos and Eisenhardt, 2009; Zuzul and Tripsas, 2017). For instance, in a longitudinal case-study of "Lynco", Tripsas (2009) shows how organizational identity shaped executives' conceptualization of strategy. Further, Lynco executives also enticed insiders and outsiders to adopt the firm's organizational identity as "the digital photography company." This led to a widely-shared understanding among stakeholders that any digital photography opportunity could form part of Lynco's strategy.

Santos and Eisenhardt (2009) also discuss the role of identity in helping entrepreneurs form their strategies. They describe Secret, a pioneering security software new venture, where executives spent considerable time grappling with questions like: "Who are we?" and "What are we selling?" The founders also actively discussed what the term "security" meant to them and how it differed from "trust". They decided that trust should be a defining trait of their organizational identity, and so be reflected in their strategy. Supporting the tie between organizational identity and strategy formation, one founder recalled: "We believed that we had a broader obligation to the Internet, which was to have this underlying trust infrastructure.... Trust was not just security in terms of keeping people out, but it also was letting people in. And we

realized that a lot of what we did – digital certificates, digital signatures, was not really security technology... It was a trust technology." Thus, trust became central to Secret's organizational identity which, in turn, shaped both their strategy and how it was conveyed (e.g., "ID Card", "passport" and "wallet") to outsiders.

Overall, this research stream underscores *strategizing by thinking,* and emphasizes how cognitive structures like mental models including visions and plans, analogies, and identities can drive strategy formation in entrepreneurial settings. These cognitive structures can provide holistic strategic "blueprints" that enable executives to conceptualize how the interdependent activities that constitute strategy mesh together. At the same time, cognitive structures can also become automatic and create strategic inertia when they are held too long or too mindlessly (Tripsas and Gavetti, 2000; Furr *et al*., 2012). Finally, while very insightful, this stream often misses how cognitive structures emerge and how executives can update them in inherently high-velocity – i.e., novel, unpredictable, ambiguous and fast-paced – entrepreneurial settings (Eisenhardt, 1989).

STRATEGIZING BY DOING AND BY THINKING

A few studies have begun to explore how executives can fuse doing (action) and thinking (cognition) (Baumann and Siggelkow, 2013; Reyman *et al*., 2015). This work focuses on how executives form the individual pieces of a strategy via learning from experience, and yet also rely on a holistic understanding of how the pieces fit together (Table 3). These studies frame strategy formation both as a question of action - how executives form strategy by learning from experience – and as a question of cognition – how executives form a strategy that combines diverse activities into a coherent whole.

<Insert Table 3 Here>

Siggelkow (2002) provides an early empirical illustration of strategy formation that combines action and cognition. He describes how Vanguard executives launched their strategy by initially thinking through five core activities that emphasized cost leadership. The "blueprint" for these activities was largely borrowed from Vanguard's parent company, and reflected the personal values of Vanguard founder, John Bogle. In particular, Bogle valued low-cost yet high-quality investment services. In the context of this holistic understanding, Vanguard executives progressively "thickened" some core activities by adding new and inter-connected elements. Meanwhile, they "coasted" (i.e., did not change) activities around other elements. They also "patched" in two new core elements that fit into their existing holistic view, and later thickened the activities around these new core elements as well. Overall, the Vanguard strategy formation began with strategizing by thinking, and followed with emphasis on strategizing by doing to fill in the activities within their blueprint.

Gavetti and colleagues extend the Vanguard insights in their studies of strategy formation at Lycos (Gavetti and Rivkin 2007) and Merrill Lynch (Gavetti and Menon, 2016). Unlike Vanguard, strategy formation at Lycos began with doing – i.e., local search. This strategy of competing as a technology company bounded the actions of executives as they adjusted their strategy through experimentation and trial-and-error to learn specific activities and form heuristics. A combination of the personal values of executives and their mental representations of the Internet portal industry further formed the Lycos strategy. Also unlike Vanguard, Lycos executives interleaved thinking and doing. For example, after a period of learning how to improve their technology-oriented strategy, the executives acted on negative feedback and shifted to a thinking approach to strategy formation by using an analogy to media companies. This analogy provided a new holistic understanding of the business which, in turn, led to new

activities and heuristics around acquiring media properties. In recent work, Gavetti and Menon (2016) examine strategy formation by Charles Merrill as he founded Merrill Lynch. Similar to the Lycos executives, Merrill interleaved analogy (in this case, to grocery stores), an understanding of the economics of the industry, and prior experiential learning to form the strategy of this Wall Street innovator.

Lastly, Ott and Eisenhardt (2017) advance the discussion by describing how doing and thinking can simultaneously occur during strategy formation. They study how entrepreneurs develop novel strategies of interconnected activities in eight early-stage ventures addressing two-sided markets. These entrepreneurs were better able to form strategy using a pattern that the authors term "decision weaving." Decision weaving involves simultaneously combining: 1) sequential focus on experiential learning (doing) in a focal strategic domain like adding sellers to the market with 2) stepping-stone activities in background domains in order to maintain a holistic and evolving understanding (thinking) of the strategy.

Overall, a handful of new studies are beginning to provide a much needed theoretical bridge between strategizing by doing v. thinking in entrepreneurial settings. They suggest that cognitive structures can provide starting points for experiential learning in the doing stream, and that unexpected information revealed by learning processes can at least sometimes lead to evolution of holistic understanding in the thinking stream. Nonetheless, despite useful insights into action and cognition as separate aspects of strategy formation and at their intersection, gaps remain that, in turn, suggest a rich agenda for future research.

AGENDA FOR FUTURE RESEARCH

Multiple research opportunities exist to improve understanding of strategy formation in entrepreneurial settings. As noted earlier, one research stream emphasizes strategizing by doing,

and so focuses on action – i.e., how executives form strategy by learning from experience. This stream, however, pays little attention to how executives might link separate learned activities together to form a coherent strategy – i.e., build the interlocking activities that comprise a strategy. By contrast, the second stream emphasizes strategizing by thinking, and so focuses on cognition – i.e., how executives benefit from holistic cognitive structures. This research, however, provides less insight into how these cognitive structures emerge and change, especially collectively in organizations rather than simply in the minds of individuals. (See Table 4 for a summary)

<Insert Table 4 Here>

These observations point to the complex character of strategy formation that makes it difficult for researchers to isolate the distinct aspects of strategy formation as they unfold and inter-relate over time. This difficulty indicates a research agenda that focuses on how executives in entrepreneurial settings manage the *interdependence* of action and cognition over *time*, and points to the relevance of process research. By process research, we mean research centers on understanding the temporal flow of phenomena (Langley, 1999). Specifically, we note three particularly promising process-based avenues for future research: 1) deeper understanding of doing (action) and thinking (cognition) per se; 2) more importantly, the temporal interplay of strategizing by doing and by thinking; and 3) a richer repertoire of process (longitudinal) methods.

Better understanding of doing (action) and thinking (cognition)

While there is substantial research in both the strategizing by doing (action) and by thinking (cognition) streams, opportunities remain to advance each. For the thinking research stream, we offer two avenues. First, we suggest that researchers explore the often left-censored temporal

dynamics of doing and thinking such as how executives' cognitive structures emerge. Research finds that these structures often arise from personal values (Gavetti and Rivkin, 2007), identity (Powell and Baker, 2014), and analogies (Gregoire *et al*., 2010; Rindova and Kotha, 2001). Yet we still know little about the processes by which executives choose the specific values, identities, and analogies to use given that most people have a rich base of experiences from which to draw these structures. Which of the many cognitive structures do they choose and why?

A second avenue is to expand the set of cognitive structures to include the economic underpinnings of strategy. Gavetti and Menon (2016), for example, observe that Charles Merrill had an accurate understanding of the economics of consumer brokerage that positively influenced his strategy formation process at Merrill Lynch. Similarly, Ozcan and Eisenhardt (2009) note that some mobile gaming entrepreneurs had a more accurate understanding of the role of complementors and networks than others, and this shaped their ability to form superior strategies. Hannah and Eisenhardt (2017) also find that more successful entrepreneurs in the residential solar industry had more complete and sophisticated strategic insight into the dynamics of ecosystems. Yet, despite the likely importance of an accurate understanding of the economic underpinnings of strategy as a relevant cognitive structure, it is rarely part of the discourse in strategy formation research. Future work could explore how and when understanding underlying economics leads to more effective strategies and better performance.

For the doing stream, we suggest future exploration of the temporal sequences of learning processes. Research indicates that using learning processes like improvisation, bricolage, and experimentation is related to effective strategy formation (Brown and Eisenhardt, 1997; Miner *et al*., 2001; McDonald and Eisenhardt, 2017). But there is limited research indicating how executives might productively combine them (see Baker *et al*., 2003 for an exception). While

insight into each process is useful, understanding when and how executives combine these learning processes is likely to be a fruitful next step. Specifically, since process research attempts to provide explanations for phenomena as time unfolds, how is strategy formation affected by using particular learning processes in specific temporal orders?

As one step in this direction, Bingham and Davis (2012) establish "sequences" as a meaningful concept. Using data on how entrepreneurs attempt to form their internationalization strategies, the authors uncover distinct learning sequences such as "seeding" and "soloing". Seeding sequences begin with indirect learning (e.g., vicarious learning) before direct learning (e.g., trial-and-error, experimentation, and improvisation) while soloing sequences begin with direct learning and continue with direct learning. The authors find that soloing sequences are better for short-term performance while seeding sequences are better for long term performance. Overall, this research usefully suggests that the sequence of learning processes matters in strategy formation, and is likely to a fruitful avenue for future research.

Interplay of doing (action) and thinking (cognition)

More importantly, there are promising areas for strategy formation research at the important intersection of strategizing by doing (action) and by thinking (cognition). One area of interplay to explore is how simple rules emerge from experiential learning, holistic understanding, or both. By simple rules (also termed decision rules and heuristics in strategy formation research), we mean short-cut heuristics that save time and effort by focusing attention and simplifying how people think. As such, they occupy a middle ground between holistic understanding and detailed activities (Gavetti and Rivkin, 2007). Existing research cites the importance of "simple rules" heuristics as central features of successful strategies (Gary and Wood, 2011; Bingham *et al*., 2007; Gavetti and Rivkin, 2007), and has begun to explore types of simple rules and the order in

which they are learned (Bingham and Eisenhardt, 2011). Major next steps include better understanding their sources and evolution.

A second promising area is unpacking the tradeoff between remaining flexible enough to learn v. creating a holistic understanding of how activities fit together. While this tradeoff is a variant of the classic flexibility v. efficiency tradeoff (Davis *et al*., 2009), it has specific implications for strategy formation. For instance, Zuzul and Edmondson (forthcoming) explore the disadvantages of holistic understanding. They observe how the entrepreneurs at an early "smart-city" venture fell into an "advocacy trap" – i.e., they focused on extensive legitimacy-building activities such as communicating a holistic industry vision, but were then unable to engage effectively in experiential learning to determine the appropriate activities and update the vision.

A third area is to examine the interplay of less commonly studied forms of action and cognition, particularly those emphasizing interdependencies among strategic activities. One example is the recent empirical work by Cohen, Bingham and Hallen (2017) on seed accelerators – i.e., roughly 3-month programs to help entrepreneurs quickly form their strategies. The authors find that accelerators require entrepreneurs to alternate between action and cognition. In the first month, entrepreneurs must stop implementing their existing (and likely flawed) strategies, and instead present their strategy to about 75 mentors. These mentors often help entrepreneurs to re-frame their holistic understanding of their strategies. In the second month, the emphasis switches from thinking to doing. Entrepreneurs rapidly develop their products and refine their strategies based on experiential learning with customers. In the final month, entrepreneurs hone their strategies further as they repeatedly "pitch" their strategies to potential investors. In sum, Cohen and colleagues (2017) reveal a pattern in which strategy formation in entrepreneurial settings

involves a nuanced and temporally compressed interplay between action and cognition. One next step is to explore how various information sources (e.g., mentors, peers and customers) and different time-pacing of activities (e.g., compressed v. extended) influence strategy formation.

Broader repertoire of process (longitudinal) methods

A third avenue for future research is to enhance the traditional process methods within strategy formation research. For example, much of the research on strategy formation in entrepreneurial settings relies on inductive (qualitative) methods including ethnographic, interpretivist, and case study approaches to provide a longitudinal process perspective. These methods are particularly appropriate for understanding complex phenomena like strategy formation, identifying configurations of processes, and unpacking temporal dynamics (Langley, 1999). Yet some of this work relies on single cases, is grounded primarily in interview data, and is often descriptive rather than normative. As such, it is likely that researchers can add to current research by using more multiple case studies which enable better theoretical grounding, more accurate abstraction levels, and easier access to normative implications (Eisenhardt and Graebner, 2007). Similarly, researchers can likely improve depth by using a richer mix of data types including traditional sources like interviews and observations as well as contemporary sources like online videos, blogs, and websites (Eisenhardt, Graebner and Sonenshein, 2016). Finally, a more normative emphasis will tie research more clearly to the central concerns of strategy.

Another traditional method for studying strategy formation is computational simulation (Csaszar and Levinthal, 2015; Baumann and Siggelkow, 2013; Gavetti *et al*., 2005). Simulation enables researchers to experiment with longitudinal and non-linear phenomena related to strategy formation, and to do so with control that is impossible to achieve in "real life (Davis, Eisenhardt, and Bingham, 2007). It is particularly attractive when there is some basic theoretical

understanding. The NK approach has been popular because it models search over a rugged landscape to an optimal point like an optimal strategy – a representation that fits the strategy formation process well. Nonetheless, a next step might be to expand the range of simulation approaches. Other approaches including customized stochastic models may, for example, more readily accommodate experimentation with different market conditions.

Non-traditional methods for studying strategy formation in entrepreneurial settings might be especially helpful for uncovering new insights. One such method is QCA (Qualitative Comparative Analysis) (Fiss, 2011). QCA is well-suited to research in the "sweet spot" between small sample, theory building case studies and large sample, deductive studies. Its ability to cope well with intermediate scale research (N=10-150), and reveal configurations and equifinal outcomes may be important for understanding strategy formation in entrepreneurial settings where there is often insufficient data to meet the demands of large-scale econometric approaches and configurations of elements are germane, respectively. QCA enables researchers to conceptualize phenomena like strategy as combinations of attributes (Fiss, 2011), and then use Boolean algebra to explore which combinations of attributes result in particular outcomes.

One idea for future work is using QCA to examine how combinations of experiential learning and cognitive structures might affect strategy formation. For instance, researchers could measure the use of bricolage, experimentation, analogy, and identity in strategy formation. Using QCA, they could then analyze the various combinations of processes that were necessary or sufficient to form an effective strategy. Such a study would move beyond sequences of strategy formation processes to illuminating when each configuration of processes is most effective.

Another promising non-traditional method is fMRI (functional Magnetic Resonance Imaging). In fMRI, researchers ask subjects to perform a cognitive or behavioral task like

strategy formation while undergoing an MRI, and then examine subjects' brain activity (Powell, 2011). For example, recent fMRI work suggests that strategies emphasizing exploitation activate areas in the brain associated with reward-seeking (Laurelio-Martinez *et al*., 2015). By contrast, strategies emphasizing exploration activate areas in the brain related to attentional control.

Future work could extend these insights into a physiological understanding of strategy formation. As an example, entrepreneur-subjects could be given a task such as forming a holistic strategy based on their understanding of the market and then improving that strategy over time. A control group of entrepreneurs could be given a different task that requires only developing a holistic strategy (but never improving). The fMRI analysis could then compare the brain activity across the two groups over time. Neural areas that reveal high activity levels for subjects doing both the thinking and doing tasks, but not the thinking task alone (control group), might reveal which parts of the brain are most influential for strategy formation. Such a study would contribute not only by shedding light on how thinking and doing combine in strategy formation (a gap in the literature noted above), but also by deepening the increasingly important cognitive and emotional (and even physiological) underpinnings of strategy formation.

Finally, we are enthusiastic about research that blends research methods, and thereby provides triangulated insights into the temporal dynamics of strategy formation. One multi-method example is research that combines inductive and simulation methods. Some of the limited work adopting this combination of methods uses 1) inductive methods to gain insights into strategy formation concepts like mental models (Tripsas and Gavetti, 2000) and simple rules (Bingham and Eisenhardt, 2011), and 2) simulation methods to experiment by extending the case-based insights (Gavetti and Levinthal, 2000; Davis *et al*. 2009 respectively). Mixed method studies such as these are particularly powerful because they combine the benefits of forming

basic theory from rich case data and then exploring that theory through computational experiments such as introducing market variations.

A related multi-method approach is combining small N, inductive case study research with large N, regression-based studies. The benefits of this multi-method approach include greater internal validity and so more accurate logic, combined with greater external validity and so more generalizable findings. Bingham and colleagues (2015) employed this multi-method approach to understand how Dow Chemical formed its corporate development strategy for innovation over a twenty-year period. The authors began with a case study of Dow's acquisitions, joint ventures and divestitures that revealed an unexpected temporal pattern of strategy formation – i.e., Dow leaders first learned how to do the integration phase of all three modes, and then moved backwards to learn how to conduct the earlier phases like due diligence and transaction. The authors then used a quantitative event study to explore and confirm their emergent inductive understanding. They were able to show that Dow's performance as an innovation leader improved over time for acquisitions, joint ventures and divestitures.

In sum, while all research methods exhibit tradeoffs between internal vs. external validity and theoretical vs. statistical generalizability, promising avenues for future research on strategy formation in entrepreneurial settings are likely to be the ones that introduce non-traditional methods (e.g., fMRI and QCA) or that combine the strengths of traditional methods (e.g., theory-building cases and simulation) while offsetting their weaknesses.

CONCLUSION

We began by organizing the research on strategy formation in entrepreneurial settings into two primary streams: one emphasizing *strategizing by doing* (action) and learning from experience, and the other emphasizing *strategizing by thinking* (cognition) and creating a holistic

understanding. The former has rich insights into how executives incrementally form strategies using learning processes while the latter contributes insights into how executives holistically understand their strategies using cognitive structures. Our research agenda explicates promising theoretical and methodological avenues to add to our understanding of strategy formation in entrepreneurial settings. Given the increasingly vital role that entrepreneurial firms (both new and established ones) play in the global economy, research on strategy formation in entrepreneurial settings is both critical and likely to flourish as a vibrant focus in the future.

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Table 1: Strategizing by doing – Learning from experience (selected studies)

Author(s)	Method	Sample	DV	IV	Key insights
Andries, Debackere, and van Looy (2013)	Multiple case study	6 ventures in various industries	Growth	Experimentation	• Simultaneous experimentation with business models reduces initial growth but increases later growth.
Baker and Nelson (2005)	Ethnography, some interviews	40 independent, local businesses	Implications of parallel v. selective bricolage	Bricolage	• Executives engage in bricolage to form strategy by using the resources on hand in creative ways.
Baker, Miner, and Eesley (2003)	Observation and interviews	25 firms in computer training and consulting	Strategic formation	Improvisation	• Firms often founded with improvised strategies.
Baum and Bird (2010)	Survey and interviews	143 founders in printing and graphics industry	Strategy and growth	Successful intelligence	• Executives w/higher successful intelligence are more likely to form strategy through swift action and multiple improvement activities.
Bingham (2009)	Multiple case study	9 ventures in global IT industry	Market entry success	Improvisation and opportunities	• Firms with more successful foreign market entries decrease improvisation in opportunity selection but increase improvisation in opportunity execution.
Bingham and Davis (2012)	Multiple case study	9 ventures in global IT industry	Learning sequences and performance	Types of learning	• Direct learning sequences are more effective in the short term but sequences with indirect learning then direct learning are more effective in the long term.
Bingham and Eisenhardt (2011)	Multiple case study	6 IT ventures from US, Singapore and Finland	Simple rules and strategy formation	Trial-and-error learning	• Managers learn types of simple rules heuristics in a specific order and refine them over time.
Brown and Eisenhardt (1997)	Multiple case study	9 global computing businesses	Successful product portfolios	Improvisation, experimentation, time-pacing	• Adaptive businesses improvised current product projects, experiment with probes for future ones, and time-

Author(s)	Method	Sample	DV	IV	Key insights
					pace product introductions.
Davis, Eisenhardt, and Bingham (2009)	Stochastic simulation	N/A	Performance	Improvisation, simple rules and environmental dynamism	• Simple rules enable improvisation in unpredictable environments, routines create efficiency in predictable ones. • Also addresses complexity, ambiguity and velocity.
Edmonson, Bohmer, and Pisano (2001)	Multiple case study	16 hospitals	New technological routines	Learning processes	• Successful implementation of routines determined by differences in team learning process.
Miner, Bassoff, and Moorman (2001)	Multiple case study	1 technology product firm and 1 food product firm	Improvisation, experimentation and strategy formation	RandD activities	• Improvisation v. experimentation v. bricolage. • Improvisation supports long-term trial-and-error learning and strategy formation.
Pisano, G. (1994)	Survey	23 process development projects	Rapid process development (lead time)	Experimentation	• In domains of deep theoretical and practical knowledge, experimentation (learning before doing) is associated with more rapid development.
Senyard (2014)	Survey	658 Australian ventures	Firm innovativeness	Bricolage	• Firms with higher bricolage form more innovative strategies.

Table 2: Strategizing by thinking – Creating holistic understanding (selected studies)

Author(s)	Method	Sample	DV	IV	Key insights
Bingham and Kahl (2013)	Historical case study	Life insurance industry (1945-1975)	Schema emergence	Analogies	• The more an analogy's categories and relations assimilate into an existing schema, the less central the novel categories become in an emerging schema.

Author(s)	Method	Sample	DV	IV	Key insights
Csaszar and Levinthal (2015)	NK Simulation	NA	Strategy fitness	Mental models and search time	• Executives should search for a better mental model when there is time to do so.
Delmar and Shane (2003)	Survey	223 founders of Swedish ventures	Survival	Planning	• Founders who use planning (e.g. business plans) are less likely to have a failed venture.
Fauchart and Gruber (2011)	Exploratory, qualitative study	49 founders of European sports equipment ventures	Founder strategic decisions	Founder identity	• Founder's social identity (Darwinian, Missionary, or Communitarian) affects their decisions for market segments, customer needs, and capabilities
Furr, Cavarretta, and Garg (2012)	Interviews and archival data	68 Solar PV firms	Scale of technical product changes	Mental models and flexibility	• TMTs with outsiders are more cognitively flexible than industry insiders and make larger technical product changes.
Gary and Wood (2011)	Business simu-lation experiment	63 MBA students	Performance (Cumulative profit)	Mental models	• Accurate mental models of causal and deep structure relationships result in superior performance.
Gavetti, Levinthal and Rivkin (2005)	NK Simulation	NA	Strategy fitness	Mental models.	• Analogies to past experience are valuable for seeding strategy formation in new environments.
Gregoire, Barr and Shepherd (2010)	Verbal protocol study (content analysis)	9 senior executives in life sciences and marketing services	Cognitive alignment of problem to mental representation	Expertise	• Expertise is associated with greater cognitive effort to align structural relationships than superficial features, enhancing opportunity recognition.
Hargadon and Sutton (1997)	Ethnography	IDEO	Innovative solutions	Analogies	• Executives form innovative strategies by making analogies from past solutions to current problems
Kaplan (2008)	Ethnography	Decisions in major technology firm.	Organizational frames for resource decisions	Mental models and analogies	• A manager's frame is influenced by functional unit and is used to influence others in strategy formation.
Kiss and Barr (2015)	Content analysis	104 public, high-tech firms	Diversity, frequency, and	Mental models	• Executives with more complex mental models use a more diverse set of

Author(s)	Method	Sample	DV	IV	Key insights
			speed of actions		strategic actions form strategy.
Lovallo, Clarke, and Camerer (2012)	Lab experiment	38 Private equity firm employees	Rate of return projections	Multiple analogies	• Developing analogies takes effort to make design choices and avoid simple memory sampling,
Maitland *et al* (2015)	Field study	Australian mining firm	Firm strategy	Mental models from business experience	• Executives draw on prior business experience to form strategies for novel business problems.
Marcel, Barr, and Dunhaime (2010)	Content analysis	271 initial actions in US airline industry	Likelihood and timing of retaliation	Mental models of competitor actions	• Executives are more likely to respond to competitor action when it is important in their mental model.
Ozcan and Eisenhardt (2009)	Multiple case study	6 US wireless gaming ventures	Firm and alliance portfolio success	Industry vision	• Firms with more complete industry visions build better alliance portfolios and are higher performing.
Powell and Baker (2014)	Multiple case study	13 U.S. manufacturing firms	Founder strategy for response to adversity	Founder identity	• Strategy under adverse conditions is driven by how founders' personal identities frame the adversity.
Santos and Eisenhardt (2009)	Multiple case study	5 entrepreneurial firms	Successful market construction strategy	Organizational identity	• Firms that use identity-claiming more likely become the cognitive referent in new markets.
Tripsas (2009)	Single case study	"The Digital Photography Company"	Firm strategy and industry identity	Organizational identity	• Firms in emerging industries can create an identity that is intertwined with the identity of the industry as a whole and thus shape key aspects of the industry.

Table 3: Strategy formation – Strategizing by doing and by thinking

Author(s)	Method	Sample	DV	IV	Key insights
Baumann and Siggelkow (2013)	NK Simulation	NA	Strategy fitness	Local search, size of initial search chunk.	• Beginning with an understanding of interdependencies in initial domain (chunk) of activities plus trial-and-error local search is more effective for forming strategy than beginning with local search across the entire set of activities.

Gavetti and Menon (2016)	Historical single case study	Merrill Lynch	Strategy foresight	Unintended preadaptation and local search, analogy, and strategic understanding	• Successful strategic foresight was shaped by unintended preadaptation to opportunity, grocery/Safeway analogy, and strategic understanding of positioning.
Gavetti and Rivkin (2007)	Single case study	Lycos	Strategy evolution	Local search, analogies and strategic understanding.	• Strategy began with luck and local search, then creation of heuristics. Personal values and analogies along with strategic understanding (e.g. role of scale economies) further shaped heuristics, activities, and strategic evolution.
Ott and Eisenhardt (2017)	Multiple case study	8 ventures in two-sided markets	Strategy formation	Strategy formation processes combining strategic vision and disciplined experiential learning.	• Entrepreneurs combine strategic vision and action through decision weaving: sequential focus on a single domain until a learning plateau (e.g. simple rules) and simultaneous opportunistic advancement in background domains.
Reymen, *et al*. (2015)	Qualitative and quantitative methods	385 decisions in 9 technology-based ventures	Strategic decision making process	Effectuation (experiential) and causation (planning) logics.	• Entrepreneurs shift between effectuation (experiential) and causation (planning) logics, using the former more in early stages and when widening strategic scope
Siggelkow (2002)	Single case study	Vanguard	Strategy evolution	NA	• Strategy began with core elements in place, evolved by thickening some elements, coasting in others, and patching in new ones.

Table 4: Conceptual framework: Strategy formation in entrepreneurial settings

Stream	DOING (Action)				THINKING (Cognition)		
	Trial and error	***Bricolage***	***Improvisation***	***Experimentation***	***Mental model***	***Analogy***	***Identity***
Definition	Adjusting behavior when outcomes are negative (Bingham and Davis, 2012)	Making do with what is at hand (Baker and Nelson, 2003).	Learning on the fly as design and action converge (Miner *et al*., 2001).	Learning through deliberate and "offline" controlled variations (Miner *et al*., 2001).	Cognitive structure that organizes knowledge and often causal relationships (Gary and Wood, 2011).	Cognitive structure for understanding a current situation through prior mental models (Holyoak and Thagard, 1996).	Cognitive structure conceptualizing "who I am" or "who we are" (Powell and Baker, 2014).
Purpose	Keep activities with desired outcomes and change those with negative ones.	Create unexpected solutions using existing and often limited resources.	Address surprising problems and/or opportunities with new solutions.	Develop new knowledge and resolve uncertainties for future activities.	Guide information processing, decisions, and strategy.	Enable holistic transfer of representations from one setting to another.	Frames information processing, decisions and strategy.
Influence on strategy formation	Helpful, especially when firms codify learning into simple rules and routines.	Helps firms flexibly capture opportunities in short run and may lead to strategy in long run.	Helps firms succeed with unexpected opportunities or pro-blems and may lead to strategy in long run.	By changing inputs and observing outputs, firms can resolve uncertainties and gain understanding of successful (or not) strategy.	Executives with accurate mental models of business and market are likely to form more effective strategies.	Executives using relevant analogies gain integrative templates that speed effective strategy formation.	Executives using identity gain a shared understanding of what strategies are legitimate to pursue.

Reliance on past, present or future	*Past and Present.* Firms address past problems by changing current behavior.	*Past and Present*. Firms use resources in novel ways that differ from the past.	*Present*. Design and action converge, and result in a novel strategy that is specific to unique context.	*Present and Future*. Experimental outcomes can resolve present and future uncertainties, and lead to better strategy.	*Past, Present, and Future.* Past knowledge creates a map to guide strategy in the present and future.	*Past, Present, and Future*. Map of a similar past situation used to form present and future strategy in new situation.	*Past, Present, and Future.* Identity is reflected in a venture's past, present and future strategy.
Pros and cons for strategy formation	*Pro:* Strategy is based on direct experience. *Con:* Firms may get stuck where no one change produces better outcomes.	*Pro:* Can move quickly to address opportunities. *Con:* Solutions are often sub-optimal and may not scale into long-term strategy.	*Pro*: Can move quickly to attractive new opportunities. *Con*: Learned content is idiosyncratic to particular situation and so may not scale into long-term strategy.	*Pro*: May generate high quality knowledge about uncertainties with better understanding of main and interaction effects. *Con*: Experimentation can be costly or infeasible.	*Pro:* Provides efficient understanding of past experience to form current strategy. *Con:* Situations can change thereby making mental models obsolete.	*Pro:* Provides template for quick guidance for strategy formation. *Con:* Important facets of past situation may not be appropriate for current situation.	*Pro:* Provides strategy aligned with values. *Con:* Identity may become a rigidity locking firms into past.
Selected open questions	• How are new "trials" chosen? • How are simple rules and routines updated? • When do executives learn v. fail	• What scale and rate of bricolage is effective in strategy formation? • How do executives convert bricolage activities into scalable	• How does improvisation take place within strategy formation? • How does learning from improvisation in one strategic	• How are experiments created and deployed in entrepreneurial settings? • What is the right number and mix of experiments for strategy formation?	• Where do mental maps, visions, or "blueprints" come from? • Do mental models simultaneously hurt and help strategy formation?	• Which competing analogies will executives use? • How do executives recognize helpful analogies? • When should an analogy be	• How do identities emerge? • What makes an identity resistant to change? • How do executives resolve conflicting identities in

	to learn from experience ?	strategy?	activity affect others?	• How do firms translate experimental learning into strategy?		dropped?	strategy formation?

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The Strategic Entrepreneurship Journal at 10: Retrospect and Prospect

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Recent decades have witnessed a remarkable increase in interest in entrepreneurship research, practice and policy. Since its founding in 2007, the Strategic Entrepreneurship Journal (SEJ) has sought to contribute by publishing high quality papers on a range of themes relating to strategic

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entrepreneurship, broadly defined. The ten year anniversary of SEJ provides an opportunity both to reflect on the road travelled so far, and to chart out future directions for the route ahead. We are pleased to do so in this special issue, which draws on themes of enduring and emerging interests to scholars at the interface of strategy and entrepreneurship.

Apropos to the evolution of the journal, the first of the special issue articles begins with a retrospective article by founding editor Mike Hitt and former editor Mike Wright. Hitt and Wright (2017) provide the rationale for creating the SEJ, and the ten themes identified at founding. They review the development of these themes through published articles over the last ten years, and provide evidence on progress in terms of key trends, including submissions, rejection and acceptance rates, downloads. Salient in the journal's growth trajectory are critical milestones such as the journal's inclusion in the Social Science Citation Index, and the Financial Times' list of 50 business school journals. Hitt and Wright (2017) also discuss some general developments in strategic entrepreneurship and their implications for future research.

The remaining papers in this special issue delve deeper into the content areas of specific themes in the area of strategic entrepreneurship, with an eye towards agenda setting. In selecting both the themes and authors represented in these papers, the current SEJ co-editor team sought to build on emerging trends in strategy and entrepreneurship scholarship both within SEJ, and in the broader scholarly community. The authors of the articles represent a mix of both established and emerging scholars, all of whom represent domain experts within the themes. All papers were subject to the rigorous double-blind review process of SEJ. We are delighted at the depth and breadth of scholarly thought of the special issue articles, which provide a big picture lens of "taking stock" of existing work, and identification of potential research avenues for the future. Within and across papers, the themes represent a diversity of theoretical lenses, levels of analysis, and methodological approaches employed within the scholarly literature. It echoes the open and

inclusive mindset that has characterized the Strategic Entrepreneurship Journal during its first decade.

We next provide a brief overview of each papers, commenting on some salient issues which connect across the papers for a holistic view of the dynamic factors at play in terms of the environmental context, entrepreneurial processes, and interactions among various stakeholders for value creation and appropriation.

Internationalization, technology and digitization, social issues and the financial crisis have together defined the environmental context within which we now live. Not surprisingly then, these have all been subjects of deep study within the strategy and entrepreneurship research community. Erkko Autio (2017) reviews the early literature on international new ventures (INVs) literature, which has typically viewed internationalization strategies as emanating from firm-specific advantages that existed prior to internationalization. Autio (2017) extends this literature by drawing on organizational capability and business model literatures to develop a Strategic Entrepreneurial Internationalization (SEI) framework. This framework opens up new research directions by articulating how INVs can leverage internationalization to drive competitive advantage of new ventures.

An equally powerful force within the environment is the advent and evolution of digital technologies. Raffi Amit and Xu Han (2017) propose a conceptual framework for examining the value-creation potential embedded into novel, digitally powered resource configurations. They discuss the ramifications of digitization for theory on firms' resource configuration and its underlying processes to enable strategic entrepreneurship. Future research opportunities relate to the exploration of resource-configuration prototypes, value-creation sources, and the underlying resource-configuration processes enabled by digitization.

Together, the increasing global scope of entrepreneurial activity combined with changes in technology and institutions worldwide have also increased the salience of social issues, within and

across countries. Within the evolving theme of social entrepreneurship, Jeff McMullen and Brian Bergman (2017) examine research opportunities by dwelling on how social entrepreneurs make sense of hybrid goods. These sense-making activities have significant implications for the social enterprise's marketing mix and stakeholders' expectations of the enterprise's rights and responsibilities.

Relatedly, the study of entrepreneurial behaviour needs to extend beyond theories of economic rationality and focus on for-profit ventures. Drawing on identity theory, Marc Gruber and Ian MacMillan (2017) propose a reconceptualization that emphasizes the "identity relevance" of entrepreneurial behavior. Such an approach allows for different meanings associated by founders with entrepreneurship. By viewing founders as pursuing meanings they deem most appropriate, Gruber and MacMillan (2017) open up pathways for an integrated understanding across future studies that encompass not only entrepreneurs starting ventures out of economic self-interest, and as motivated by socially oriented goals.

Complementing the above focus on diversity of entrepreneurial motivations, Rajshree Agarwal, Mahka Moeen and Sonali Shah (2017) examine industry emergence arising from diverse triggers and knowledge sources. Much of the existing literature on industry evolution has focused on post commercialization stages, and has largely been informed by work stemming from technology triggers. Agarwal, Moeen and Shah (2017) develop a preliminary framework to conceptualize the incubation stage from trigger events through the first instances of product commercialization. They illuminate the actions of multiple and heterogeneous actors that help shape industry structure and strategic action post-commercialization, and identify future research avenues for a deeper examination of the pre-commercialization stages of an industry.

The dynamics of the environmental context within which enterprising individuals and firms operate also has several implications for entrepreneurial processes. Tim Ott, Kathleen Eisenhardt and Chris Bingham (2017) build on prior work on strategy process to show why the strategy

formation process is central to understanding how some firms in entrepreneurial settings are able to create competitive advantage. They suggest that future research needs to meld research streams relating to the value of learning from experience ('doing') and having a holistic understanding of how the pieces fit together ('thinking'). In doing so, they refocus scholarly attention for parsing out the importance of both prior experience and deliberate cognitive processes.

The focus on process and evolution of entrepreneurial firms is also examined by Sam Garg and Nathan Furr (2017), as they review research on venture boards. Garg and Furr (2017) clarify how venture boards are distinct from venture investors and from public firm boards. They set out a future research agenda focusing on venture board composition and structure, venture board process, and venture board transitions to public firm boards.

Several of the above papers, implicitly or explicitly, highlight the role of individuals embedded within organizations, industry and regional contexts. Individuals' interactions within and across such contexts have implications for both value creation and value appropriation. Ben Campbell, David Kryscynski and Dan Olson (2017) propose a conceptual framework highlighting the role of market frictions in human capital markets. Their paper integrates literature streams in strategic human capital (with a focal firm perspective) and employee mobility and entrepreneurship (with an individual perspective) to enhance our understanding of the antecedents and consequences of human capital based value creation and capture.

In addition to human capital, a critical resource for entrepreneurial firms relates to access to finance. In the final paper of the special issue, Doug Cumming and Sofia Johan (2017) examine the surge of interest in this area of research, through trends in citation activity in entrepreneurial finance. They highlight an important segmentation which divides the literature between the finance and entrepreneurship/management fields and identify significant research opportunities from bringing these fields together to explore new forms of entrepreneurial finance such as crowdfunding and co-investment by different types of finance providers.

Taken together, the papers in this special issue point to a vibrancy of scholarly engagement on themes of enduring and emerging practical and policy interest. For sure, these themes represent a subset of research paths for strategic entrepreneurship in the next decade and beyond. However, they also provide directions towards future steps in extending the longevity of the strategic entrepreneurship research program.

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Strategic Entrepreneurship and SEJ: Development and Current Progress

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In this retrospective article, we outline the rationale for starting *Strategic Entrepreneurship Journal*. We provide evidence on the percentage of published papers in SEJ in each of 10 key themes in strategic entrepreneurship identified when the journal was founded. Evidence on progress toward goal achievement in terms of trends in submissions, desk reject and acceptances rates, and downloads, plus examples of highly cited papers and entry into key indicators such as the *Financial Times* list of 50 journals. We outline developments in strategic entrepreneurship and their implications for future research, notably the need to consider multiple levels of analysis and the role of context variety. Finally, we discuss some of the lessons we learned from SEJ in terms of general challenges that arise in starting a new journal. Copyright © 2017 Strategic Management Society.

Building on the ideas of Gary Hamel (2000) suggesting that we are in a new age of uncertainty and opportunity, a special issue on strategic entrepreneurship was published in *Strategic Management Journal* (SMJ) in 2001. In this special issue, Hitt, Ireland, Camp, and Sexton (2001) explored the independent development, linkages, and complementarities of strategic management and entrepreneurship. They noted that both fields have the end goal of creating wealth, by gaining and sustaining competitive advantages in strategic management and by exploiting opportunities in entrepreneurship. Yet, they also noted that although the two fields and streams of research are independent, their boundaries overlap. For example, firms trying to gain competitive advantages may do so by exploiting opportunities. Additionally, when exploiting opportunities, entrepreneurs seek to establish competitive advantages to sustain their wealth creation (Hitt et al., 2001). Thus, this work suggests the existence of a strategic entrepreneurship construct. As such, strategic entrepreneurship is derived from the integration of entrepreneurship and strategic management. Strategic entrepreneurship occurs when individuals or organizations simultaneously act entrepreneurially (i.e., seek to identify and exploit opportunities) and strategically (i.e., seek to establish and maintain a competitive advantage). So, this special issue highlighted the value and importance of the strategic entrepreneurship construct. In addition, other research in entrepreneurship and strategic management questioned how firms create value (e.g., Bruyat & Julien, 2001), what the source of value in resources is, and then how those resources contribute to achieving a competitive advantage and firm value creation (e.g., Priem & Butler, 2001). These works and research thrusts in both entrepreneurship and strategic management served as a catalyst for new research to examine and understand how firms create value that eventually spawned *Strategic Entrepreneurship Journal* (SEJ).

Keywords: strategic entrepreneurship, entrepreneurship, opportunity, resource-based view, start-up
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Ireland, Hitt, and Sirmon (2003) further elaborated the notion of strategic entrepreneurship, proposing a model of the strategic entrepreneurship construct. They argued that strategic entrepreneurship is derived from the integration of strategic and entrepreneurial knowledge and results from analyzing entrepreneurial actions using a strategic perspective. They suggested that firms that identify opportunities but are unable to exploit them will not create wealth. Likewise, firms with competitive advantages but without new opportunities will be unable to sustain their advantages. As such, Ireland et al. explained that firms need to employ an entrepreneurial mind-set and exercise entrepreneurial leadership to manage the firm's resources (including critical capabilities) to create innovation that produces a competitive advantage. Thus, this work extended our understanding by explaining the process by which strategic entrepreneurship is enacted. The model Ireland et al. present demonstrates the strategic entrepreneurship process (i.e., the process to create/develop strategic entrepreneurship). This work then suggests that strategic entrepreneurship is both a process and a construct, thereby providing further impetus to foster research within the strategic entrepreneurship umbrella.

Using this work as a base and analyzing other external factors such as the market for entrepreneurship research, competitive journals, and internal factors [including the capabilities existing within the Strategic Management Society (SMS) and its other resources (e.g., financial)], discussions about developing a new journal commenced.

Reasons for Founding SEJ

With the continuing popularity of SMJ, demonstrated by its high quality ranking by a number of groups (e.g., *Financial Times* list of top journals), its strong impact factor, and the increasing number of manuscripts submitted for publication, discussion began in the SMS executive committee and board of directors about starting one or more new journals. Three content areas for new journals of SMS were identified: strategic entrepreneurship, international strategy, and executive strategic practices. The publication committee analyzed each of the three alternatives and produced positive assessments for strategic entrepreneurship and international strategy. Although there was a need for another journal on the strategic practices of executives [that would fit the mission of SMS to integrate business executives and management consultants (B's and C's) with academics (A's)], the market for such work is exceedingly difficult to penetrate. Thus, the committee decided not to proceed with the development of a journal on the strategic practices of executives.

The other two journal alternatives were both considered favorably. Thus, the decision was to implement them in sequential fashion separated by a few years in time so as not to overburden the editorial capabilities and financial resources of SMS and the production capabilities of the editorial staff dedicated to SMS journals. The evaluation suggested that there was demand and opportunity for a new journal in international strategy. At the time, SMJ was receiving an increasing number of submissions focused on international strategy and the top scholarly journal publishing work in this content area, *Journal of International Business Studies,* was publishing a significant amount of research on international strategy (about 50% of the articles published during the period examined). Even so, the immediate opportunity was evaluated to be greater for a new journal on strategic entrepreneurship.

There was a growing amount of research in the entrepreneurship field, and the quality of this work was also increasing. The SMS had a growing and healthy interest group on strategic entrepreneurship. As such, it had an internal source of scholarship relevant for publication in such a journal. And, there had been an increasing number of manuscripts on strategic entrepreneurship topics submitted to SMJ in the most recent years. Among the large number of entrepreneurship journals, two—*Journal of Business Venturing* (JBV) and *Entrepreneurship Theory and Practice* (ET&P)—especially published the kind of high quality work SEJ envisioned,. Even though both were perceived to be quality journals, neither was considered to be a consensus A journal at the time. Additionally, the analysis concluded that no major field gained respect and legitimacy until it had a specialized consensus A journal in the field. This is true even if other A journals with a more general focus (e.g., *Academy of Management Journal, or* AMJ) published work in the specialty area. As such, there was a need for an entrepreneurship journal that published high quality research, and there was an

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opportunity because no consensus A journal in the entrepreneurship field existed at that time.

There were two other factors that contributed to a positive decision for starting SEJ. Entrepreneurship is a field that spans several social science and business disciplines such as economics, psychology, sociology, finance, etc. A focus on strategic entrepreneurship was expected to attract the work of scholars interested in entrepreneurship across these disciplines. In fact, strategic entrepreneurship was envisioned to be a broad rather than a narrow construct that encompassed work across several disciplines and subdisciplines within the broader management field. Thus, there was an opportunity to encourage and publish high quality research on entrepreneurship with a strategic frame from multiple disciplinary perspectives and broaden the conversation and richness of knowledge in the field. Also, there was a cadre of high quality scholars in SMS who could help develop a strategic entrepreneurship journal and move it forward over time. This group consisted of a significant number of scholars with interests in the area who could serve on editorial teams and the review board. These scholars had published important research in the top scholarly journals in the field (e.g., SMJ, AMJ, *Academy of Management Review*, etc.) and had produced valuable research in entrepreneurship. This capability was predicted to grow over time, providing a wealth of talent for the journal and its future development.

For these reasons, the leadership of the SMS (officers and board members) decided to found and develop *Strategic Entrepreneurship Journal.*

Foci of the New Journal

SMS's intent for SEJ was stated in the first issue published in 2007. We desired to encourage, support, and provide visibility to research at the intersection of entrepreneurship and strategic management that focuses on one or more of the four i's: imagination, ideas, invention, and innovation (Schendel & Hitt, 2007). Thus, the research "focuses on the discovery or creation of new things, with advances from which society benefits through new value propositions that better serve the needs of some segment, or the whole, of society" (Schendel & Hitt, p.1).

To clearly define the vision and scope of SEJ, we developed 10 major themes within which we desired to publish research. We will list and briefly define them:

Strategy vs. Entrepreneurship

The integration of strategy and entrepreneurship to create new value.

Creativity, Imagination, and Opportunities

Applying imagination and insight to produce opportunities that lead to valuable inventions and innovations.

Risk and Uncertainty

Understanding the risk inherent in entrepreneurship and how to manage uncertainty to exploit opportunities.

Innovation

Because of its importance for survival and success in many markets, we need to understand how to rapidly create multiple forms of innovation.

Change

Change continues to occur and at a faster pace, requiring a better understanding of how to be proactive in the creation and implementation of change.

Technology

Understanding the creation, development and use of new technology to gain a competitive advantage.

Entrepreneurial Actions, Innovation, and Appropriability

Emphasizes the importance of protecting intellectual property rights and extracting value from technological change.

Behavioral Characteristics of Entrepreneurial Activity

The influence of individuals and groups on entrepreneurial activity, especially in the invention and innovation processes.

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Entrepreneurship and Economic Growth

The role of entrepreneurship in the growth and development of geographic entities.

Social Role of Entrepreneurship

Understanding the activities and processes of social entrepreneurship and entrepreneurship in public and nonprofit organizations.

The intent of providing this information was to guide and encourage potential authors working on research in any of these areas to submit their work to SEJ. It also demonstrated the desired breadth of research to be covered by the journal and communicated the intent to publish research from multiple disciplines. Obviously, most—if not all—of these topics can be addressed in research by traditional entrepreneurship and strategic management scholars. But, some of these themes clearly encompass foci most relevant to other disciplinary domains. For example, creativity and imagination and behavioral characteristics of entrepreneurship yield research questions that can be addressed by scholars in psychology and the management subdiscipline of organizational behavior. Additionally, several research questions within the themes related to risk and uncertainty, innovation (and appropriability thereof), and entrepreneurship and economic growth can be addressed by economics scholars. The theme of the social role of entrepreneurship has foci important for sociology and political science scholars. And, themes focused on technology and innovation are relevant to scholars interested in the management of technology. Finally, the theme of change yields research questions relevant to organization theory scholars and scholars of organizational change (and development).

For the first volume of the journal, prominent scholars were invited to produce research papers relevant for each of the 10 themes to provide exemplary work representing these areas (in the hope of guiding future submissions to the journal). Although many of the scholars from whom we invited work are more focused on entrepreneurship and strategic management (or strategic entrepreneurship), scholars with other disciplinary training and foci were also invited. For example, we invited and published articles by scholars whose training, focus, and/or primary home base were in a discipline other than entrepreneurship and management, including sociology, social psychology, and economics, along with scholars working in other subdisciplines within management, such as organizational behavior, organization theory, and organizational change. Several of the papers in the first volume have been influential, as measured by their number of citations. These are exemplified by Alvarez and Barney's (2007) article on discovery *versus* creation, the Shah and Tripsas (2007) article focused on user entrepreneurship, the Agarwal, Audretsch, and Sarkar (2007) article on knowledge spillovers and creative destruction, and Baron's (2007) article on behavioral and cognitive factors in entrepreneurship.

We have achieved a moderate degree of success in attracting research that seeks to answer research questions relating to the various themes. We analyzed all of the work published in SEJ after the first volume (in which the papers were invited to include foci to cover the themes). Unsurprisingly, some of the research addressed foci that spanned more than one theme area (almost 30% of the articles had multiple foci). Table 1 shows the percentage of research published in SEJ that fit within each theme across two time periods (2008–2011; 2012–2016).

As shown in the table, the largest percentage of articles is in the more general category of strategy vs. entrepreneurship (41.8% in 2008–2011 and 49.5% in 2012–2016). Perhaps this is not surprising given the journal's focus on strategic entrepreneurship. These articles in some way integrated both strategic and entrepreneurial foci. However, a more careful examination of these articles suggests that other categories should be added. For example, 36.4% of the articles in this category during 2008–2011 and 20.8% during 2012–2016 examined international entrepreneurship topics, a trend that may have been influenced by the launch of *Global Strategy Journal*. Some 13.6% of the articles in this category during 2008–2011 and 21.9% during 2012–2016 examined entrepreneurial finance topics, an increase that reflects the burgeoning interest in this area (Cumming & Johan, 2017). Furthermore, 21.2% of the articles in this category during 2008–2011 focused on family business strategy and entrepreneurship, but surprisingly, only 2.1% did so during 2012–2016. The categories of Creativity, Imagination, and Opportunities and Behavioral Characteristics of Entrepreneurial Activity also displayed healthy

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Table 1
Articles in Projected Theme Areas

Theme	2008–2011 (%)	2012–2016 (%)
Strategy vs. entrepreneurship	41.8	49.5
Creativity, imagination, and opportunities	18.1	5.2
Risk and uncertainty	6.8	5.7
Innovation	1.9	6.7
Change	0.6	2.6
Technology	8.2	5.7
Entrepreneurial actions, innovation and appropriability	2.5	1.1
Behavioral characteristics of entrepreneurial activity	9.9	11.3
Entrepreneurship and economic growth	7.6	7.2
Social role of entrepreneurship	2.5	5.2

amounts of published articles across the two time periods. There was reasonable balance across the other categories; some research was published in each category in each of the two time periods.

The majority of the authors of the published work were home based in the United States. However, authors' home based in other countries also had articles published in SEJ. As shown in Table 2, 34.5% of the authors with articles published during 2008–2011 were home based in countries other than the U.S. And, it increased to 45.8% in the period of 2012–2016. Authors from 18 different countries had articles published in SEJ during the period of 2008–2011, and it increased to 24 different countries in the period of 2012–2016. The authors represent a broad range of countries from Asia, Africa, Europe, Latin America, the Middle East, and North America. All of these data suggest that SEJ is publishing a healthy amount of research on important and diverse topics to include creativity and opportunities, behavioral foci in entrepreneurship, risk and uncertainty, entrepreneurial implications for economic growth, and social and public entrepreneurship. And the reach of the journal based on the distribution of authors is broad, including many regions throughout the world.

SEJ has been at the forefront of the recent surge in interest in opportunities from the start, notably in the special issue led by Alvarez and Barney (2008). In addition, SEJ has published special and themed issues on topics of increasing interest and importance in the entrepreneurship field, such as international entrepreneurship, entrepreneurial finance, and entrepreneurship in family businesses. A major focus was placed on entrepreneurship in informal economies and building theory in the entrepreneurship field. As noted earlier, entrepreneurial finance and international entrepreneurship are important and evolving topics that might be added to (or replace some of) the original 10 research themes. Recent developments in entrepreneurial finance involving various forms of crowdfunding, microfinance, and accelerator programs are attracting considerable attention and potentially open up new research avenues for strategic entrepreneurship scholars (Wright, Lumpkin, Zott, & Agarwal, 2016).

Two of the smallest areas of published research during 2008–2011 were in the categories of Innovation and Change, but they both increased during 2012–2016. There was also a small amount of research on appropriability (2.5% in 2008–2011 and 1.1% in 2012–2016) and the social role of entrepreneurship (although research on social entrepreneurship increased in the second time period), both of which represent areas of opportunity for researchers interested in strategic entrepreneurship. It should also be noted that some topics such as risk and change are inherent in many of the studies focused on other topics. For example, entering new foreign markets with new products (international entrepreneurship) is inherently risky because of the complexity and uncertainty associated with the liability of foreignness and often more so than introducing a new product only in domestic markets. McMullen and Shepherd (2006) suggested that entrepreneurial action inherently entails uncertainty (thus also risk). Hence, much of the research on entrepreneurship at least implicitly assumes risk and uncertainty. Also, developing and bringing new technologies and innovative products to the market almost always requires change (in marketing campaigns, manufacturing processes, etc.).

Thus, analysis of the research published in SEJ in its first 10 years suggests that it is diverse, interdisciplinary and addresses important foci and research questions in the field, and the journal has attracted research from scholars throughout the world. We turn next to the impact of SEJ.

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Table 2
Authors' Home Countries

Home base	2008–2011	2012–2016
Home based in the U.S.	65.5%	54.2%
Home based in other countries	34.5%	45.8%
Authors' home countries	Belgium, Canada, China, Denmark, Finland, France, Germany, Greece, Ireland, Israel, Italy, Netherlands, Korea, Spain, Sweden, Switzerland, United Kingdom, United States	Austria, Belgium, Brazil, Canada, China, Denmark, Finland, France, Germany, Hong Kong, India, Italy, Mexico, Netherlands, Nigeria, Norway, Singapore, Slovenia, Spain, Sweden, Switzerland, Taiwan, United Kingdom, United States

Goal Achievement

As implied in earlier discussions, the general goal for SEJ was to establish a journal publishing high quality research that advances our understanding of entrepreneurship. And, as suggested earlier, the desire was to publish research addressing a broad array of foci and research questions important in the entrepreneurship domain. We also desired to encourage research from different disciplinary views and traditions to ensure that the value produced was greater and more applicable to the field of entrepreneurship.

Extracting from these general goals, a specific and very important goal was to become a highly respected scholarly journal that was regarded as one of the top scholarly outlets publishing entrepreneurship research. We desired to accomplish this goal by the end of its tenth year in operation. Our most immediate goal upon the start of the journal was to be accepted into the Thomson Reuters Web of Science (ISI), which assesses the relative impact of scholarly journals. This is an important signal of legitimacy for any journal. The legitimacy afforded the journal by its inclusion is critical to attracting quality scholarly work because the articles' citations "count" in the Web of Science—an important criterion for most authors and deans. The Web of Science requires several years of experience with the journal to ensure that it publishes timely and valuable research in order to be selected for inclusion. We were pleased to achieve this status at the earliest possible time (the first time we applied), and the status was made retroactive to the first issue published in 2007. Thus, all articles published in SEJ have been included in the Web of Science.

Other evaluations suggest the increasing stature of SEJ. For example, in recent Journal Citation Reports by ThomsonReuters, SEJ has been ranked highly—its journal influence score was second among entrepreneurship journals. SEJ has also been accorded the stature of an A journal in the GBH German ranking and ranked as a journal with the most original and best executed research (level 4) by the Association of Business Schools in the U.K. Perhaps the most positive assessment of the quality and impact of SEJ has been the inclusion on the *Financial Times* list of top business journals. The 50 journals included in the *Financial Times* list are used in the research ranking of business schools for input into their overall rankings of several MBA programs. Thus, this list is viewed positively by many deans, and faculty scholarly performance evaluation systems are often designed to reward faculty for articles published in these journals. SEJ's inclusion on this list is a significant accomplishment for the journal. Table 3 depicts a comparison of quality rankings and evaluations of SEJ and other prominent entrepreneurship journals. As shown in the table, only SEJ and two other entrepreneurship journals, ET&P and JBV, have the highest rating in the Association of Business Schools (ABS) (4) and are included in the *Financial Times* 50 list. Our overall evaluation is that the journal has made much progress and is evaluated highly in the field. But, it has not yet achieved the elusive and difficult-to-achieve goal of being considered as a top-class A journal in all circles. However, the continued advancement demonstrated by the increasing rating in the ABS and inclusion on the FT 50 list bodes well for the future.

Evidence supporting this assessment is shown by the number of submissions to the journal (see Table 4). In the first year of operation, SEJ

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Table 3
Comparison of SEJ Impact with Entrepreneurship Journals

Journal	FT50 2016	ABS 2015	ABS2010	ABS2009	Acceptance rate (%)[a]
SEJ	**Yes**	**4**	**3**	**n.a.**	**4–6**
ERD	No	3	3	3	5.4
ETP	Yes	4	4	4	8.5
FBR	No	3	2	2	7.4
ISBJ	No	3	3	3	10
JBV	Yes	4	4	4	10
JSBM	No[b]	3	3	3	8
SBE	No	3	3	3	21

[a]Fayolle and Wright (2014).
[b]Previously in FT list.

received a total of 129 manuscripts to be reviewed for publication. The number of submissions has increased, with more than 580 submitted in the last 2 years. And the standards for the journal have been high, as the average annual acceptance rate during the period of 2011–2014 has been 6.9%, and the average annual desk reject rate between 2011 and 2016 has been approximately 32%—both comparable to other top scholarly journals in our field. Table 4 also shows growing interest in and attention to SEJ articles as measured by the total number of downloads, which doubled from 2014 to 2016. In addition, SEJ has a global reach in terms of submissions, with authors from 73 countries submitting papers to the journal. The top five countries for submissions are the U.S. (34.8%), the U.K. (10.3%), Germany (6.3%), Spain (3.6%), and China (3.3%).

The work published in SEJ has been impactful in terms of citations, as well. For example, the article by Alvarez and Barney (2007) has been cited more than 1,100 times (Google Scholar) and more than 300 times in journals listed in the Web of Science. This article examines the debate regarding whether or not opportunities are discovered or created and the theoretical bases of each view. Short, Moss, and Lumpkin (2009) presented a review of the research on social entrepreneurship, examining its development and future research questions that need to be addressed. This article has been cited more than 600 times (Google Scholar) and almost 200 times in Web of Science journals. The articles by Shah and Tripsas (2007) on user entrepreneurship, Baron (2007) on the behavioral and cognitive factors in entrepreneurship, and Agarwal et al. (2007) on the process of creative destruction through knowledge spillovers have a combined total of more than 900 citations. There are many more articles that have been in print a much shorter time whose impact is impressive and growing. The trajectory for SEJ is, therefore, strongly positive.

Current View of Strategic Entrepreneurship

Early work in a particular field is often considered rather simplistic when viewed in retrospect. Initial models are frequently more general and perhaps overlook variables and relationships considered to be important in later research. Such an evaluation of the early work in strategic entrepreneurship was made by Kyrgidou and Hughes (2010). They suggested that the early models presented by scholars lacked the robustness to capture the richness of strategic entrepreneurship. The research published in SEJ and other top scholarly journals has provided a rich base to expand our models and understanding of the strategic entrepreneurship construct process. Therefore, Hitt, Ireland, Sirmon, and Trahms (2011) developed a broader and multilevel model that provides a more thorough, and hopefully more accurate, representation of the strategic entrepreneurship process. They presented an input-process-output model acknowledging the inputs of individual and organizational resources into entrepreneurial activity along with resources obtained from external sources (such as alliance partners). Unique for most models of entrepreneurial activity were three general types of outcomes—benefits for individuals, for organizations, and for the larger society. Specifically, they argued that

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Table 4
SEJ Trends

Year	Submissions (incl. special issues)	Desk rejects (%)	Acceptance rate (% of initial submissions in focal year)	Total downloads
2008	129	15.50	5.4	n.a.
2009	164	9.49	19.6	n.a.
2010	176	19.32	16.4	n.a.
2011	220	29.09	6.8	30,858
2012	193	32.64	7.8	29,293
2013	241	32.37	5.4	30,599
2014	255	18.04	7.5	34,906
2015	310	40.32	n.a.	54,645
2016	273	39.2	n.a.	69,096

Note: Final acceptance rates for 2015 and 2016 are not available, as not all papers submitted in these years have had final decisions at time of writing.

successful strategic entrepreneurial activity creates value for customers, stockholders, and other stakeholders. In particular, the activity creates wealth for the individual entrepreneur and his/her investors, but also helps to achieve personal satisfaction and fulfill other individual needs. As such, effective strategic entrepreneurship produces many benefits for multiple individuals and entities.

To be both entrepreneurial and strategic often requires individuals and organizations to be ambidextrous (Benner & Tushman, 2003) in order to balance exploring for new opportunities while simultaneously exploiting current opportunities. The strategic entrepreneurship construct is based on multiple unique but complementary knowledge stocks contributed by research from several disciplines. Thus, SEJ encourages multilevel research from multiple disciplines in the social sciences and is centered by research in entrepreneurship and strategic management. In fact, contextual effects on entrepreneurial activity are important and often significant, thereby requiring more exploration in general and from a strategic entrepreneurship perspective in particular. Context has been increasingly recognized as a multidimensional construct involving not only institutional, cultural, and sectoral factors, but also organizational, social, ownership, spatial, and temporal dimensions (Autio, Kenney, Mustar, Siegel, & Wright, 2014; Zahra & Wright, 2011). As such, we envision a research agenda that builds on Hitt et al.'s (2011) framework to incorporate the different dimensions of context (Figure 1).

Some work from a strategic entrepreneurship perspective that incorporates context is emerging. For example, Batjargal et al. (2013) found that the country's *institutional* environment influenced the social networks used by entrepreneurial ventures to access resources and, thereby, affect the growth of these new ventures. Additionally, Baert, Meuleman, Debruyne, and Wright (2016) show how the orchestration of resources by portfolio entrepreneurs [entrepreneurs who concurrently own a number of businesses that they have started or acquired (Westhead & Wright, 2017)] in the sectoral context of ICT differs from how resources are orchestrated by large corporations for entrepreneurial activities. Further studies could explore how the process functions in less high tech sectors or in high tech sectors with longer lead times. Additional work might also usefully explore how the resource orchestration constructs vary in other *organizational* contexts, such as venture capital (VC)-backed ventures, social enterprises, etc. Different forms of *ownership and governance*—such as family businesses, VC-backed firms, IPOs, socially owned ventures, etc.—introduce differences in the goals and time horizons of entrepreneurs with consequent implications for the opportunities they decide to pursue and the resources they access and orchestrate that warrant exploration. The *temporal* aspect also relates to the need to explore the life cycle stage of the firm and how strategic entrepreneurship evolves over this life cycle. The *spatial* aspect concerns contextual factors relating to resources and entrepreneurial opportunities in a particular locality. The spatial dimension also includes the mobility across localities, with recent work beginning to examine the strategic entrepreneurship

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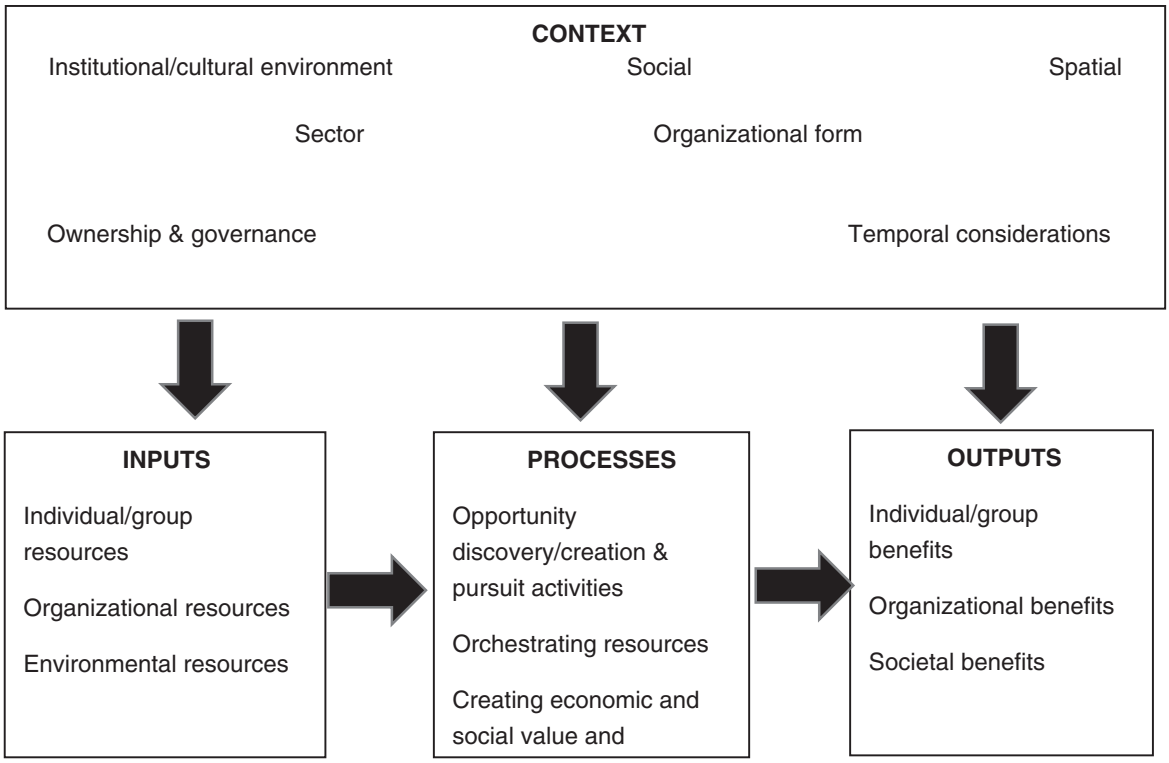

Figure 1. A framework for strategic entrepreneurship and its context (adapted from Hitt et al., 2011).

challenges of returnees and transnational entrepreneurs, such as their use of social networks (Qin & Estrin, 2015). Further work is needed to explore the challenges experienced by a returnee or transnational entrepreneur in opportunity formulation and resource accumulation and orchestration. More generally, additional studies are required to explore the influence of the dynamics of context on strategic entrepreneurship, both in relation to how contexts change over time and the mobility of entrepreneurs across spatial, organizational, and other contexts (Wright, 2011).

Conclusions

Starting a new journal is an entrepreneurial action and, as such, SEJ has had many challenges associated with uncertain demand and the liabilities of newness. Certainly, some of those challenges entail the attraction and development of quality research to publish and gaining the legitimacy and recognition as a high quality outlet for research in its domain. We discussed some of these challenges earlier. One of the concerns noted early in SEJ's existence was that the journal represented an attempt by the field of strategic management to "take over" the field of entrepreneurship which, if it occurred, would diminish the reputation and independence of entrepreneurship research (e.g., Meyer, 2009). Nothing could be further from the truth. In fact, given that both fields are multidisciplinary and much of the research is complementary, the intent was to highlight these facts and to emphasize the synergy that could be gained by integrating theory and empirical research using a strategic entrepreneurship lens. And, as noted earlier, the intent was to extend (broaden) the domain of entrepreneurship, which should only enhance the field.

Another challenge encountered in the start-up of SEJ was serving as a sister journal to SMJ. SMJ is more than 35 years old and has been considered a top scholarly journal (Class A journal) since the beginning of the 1990s. Early in the life of SEJ, many of the researchers engaged in strategic entrepreneurship research preferred to publish it in SMJ because they received higher rewards for those publications. Additionally, having SMJ as a sister

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journal likely created rather unrealistic expectations for SEJ (e.g., to achieve the recognition and visibility of SMJ in a very short time).

The experience of SEJ reflects general challenges concerning the development of a journal portfolio by societies and academies which relate to the differentiation between journals in terms of their scope as perceived by potential authors, how that differentiation is or is not reinforced by the policies of societies/academies and of editorial teams, and coordination in the selection of editorial teams. Societies and academies need to consider to what extent they nurture or constrain the development of new journals. To what extent are journals in a portfolio (e.g., SEJ, SMJ, and *Global Strategy Journal*) complementary or competing? These challenges are exacerbated by the inexorable increase in the number of (and heightened importance placed on) lists and rankings, which lead to greater focus on journals and less on the articles within those journals. Although quality of the journal is important, we believe that the primary focus should be on the quality of each of the articles and the contributions they make to knowledge in the field.

A simultaneous challenge to SEJ, in addition to that relating to SMJ, came from two primary competitors, the *Journal of Business Venturing* and *Entrepreneurship Theory and Practice*. Both perceived SEJ as a threat in the market for the best papers and made changes to respond to this threat. Both journals' statures and rankings have increased over the last 10 years. Of course, SEJ's stature and rankings have also improved markedly during its first 10 years in existence. Although challenges still exist, their importance has diminished as SEJ continues to achieve higher ratings by respected external sources such as the *Financial Times*. In a similar vein, SEJ must compete with other quality general management journals (e.g., AMJ) and, as noted earlier, with specialized entrepreneurship journals (e.g., ET&P and JBV). Yet, the comparable evaluations and status of SEJ relative to ET&P and JBV suggest that it has at least achieved competitive parity. Its growing number of submissions and interest as demonstrated by the rapid growth in the number of downloads bodes well for its competitive position in attracting and publishing high quality research. Thus, perhaps competition has enriched all of these journals. Likewise, entrepreneurship research has also improved over the last decade. We would like to believe SEJ played a role in the changes.

All of this said, the fields of entrepreneurship and strategic management are dynamic and, thus, the same conclusion is relevant for strategic entrepreneurship. There has been much research and development in this broad area of research that we refer to as strategic entrepreneurship. Thus, to understand where we have been, what has been accomplished, and the future work in this area, we must evaluate the research published in SEJ within a much larger milieu. Because of the research published in SEJ over the last 10 years and the work within this larger milieu, there are many exciting areas for potential research that can advance our understanding of strategic entrepreneurship. Several of the valuable research questions that highlight opportunities are addressed in the other articles included in this issue.

The journal has come a long way in its development thanks to many people. Although there is still "more of the mountain to climb," it is positioned to be a major player in the creation of knowledge and understanding related to strategic entrepreneurship.

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Strategic Entrepreneurial Internationalization: A Normative Framework

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Research summary: *Much of the literature on international new ventures (INVs) focuses on early internationalization and views it as an expression of firm-specific advantages that existed prior to internationalization. This article presents a normative framework that articulates how INVs can leverage internationalization to drive de novo competitive advantage. Drawing on the organizational capability and business model design literatures, the framework of strategic entrepreneurial internationalization (SEI) argues that INVs that adopt an active learning orientation, harness digital infrastructures for cross-border business model experimentation, encapsulate cross-border asymmetries in their activity system, and adopt a niche orientation are more likely to succeed in building sustainable competitive advantage.*

Managerial summary: *Internationalization can be used strategically to build competitive advantage in the firm and its business model. This is because internationalization exposes the firm to different markets and different competitive environments, therefore providing a potentially rich source of learning and capability development. However, competitive advantage does not automatically follow internationalization: managers of internationalizing new ventures must actively experiment with different business models in different markets to discover ones that work best. The firm also has to make an effort to distill the lessons learned from foreign markets and adjust its business model accordingly. Learning is more effective in narrow niches. Long-term advantage can be ensured by cementing cross-border advantages into the cross-border operation.*

Strategic entrepreneurship is the simultaneous pursuit of opportunity and competitive advantage (Hitt, 2011; Hitt, Ireland, Sirmon, & Trahms, 2011). Entrepreneurs behave strategically when they, for example, create valuable and difficult-to-replicate resource combinations through opportunity pursuit or when opportunity pursuit also drives the erection of barriers against competitive entry (Ozcan & Eisenhardt, 2009). But what becomes of strategic entrepreneurship when that opportunity pursuit crosses national borders? Would it make sense to talk about strategic internationalization? It seems that international entrepreneurship can meet the criterion of being strategic when internationalization leads to the creation of unique, valuable, and difficult-to-imitate resource combinations across national borders or perhaps when a cross-border operation drives the creation of organizational capabilities that are more effective and dynamic than what would normally be possible through a domestic operation (Kuemmerle, 2002; Sapienza, Autio, George, & Zahra, 2006). Indeed, given how

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internationalization challenges capability development in new ventures and how the new venture's operation in foreign markets increases its exposure to opportunities, it is surprising that international entrepreneurship (IE) research has largely sidestepped the study of internationalization as a *driver,* rather than an *expression*, of competitive advantage (Autio, 2005). In this article, I explore how new ventures should behave in order to build a sustainable competitive advantage through internationalization.

Research exploring the internationalization of new and/or small firms has a long history. The first frameworks explicitly describing the internationalization process of small- and medium-sized companies data back to the 1970s (Johanson & Vahlne, 1977; Johanson & Wiedersheim-Paul, 1975), and the phenomenon of early and proactive internationalization was recognized by the entrepreneurship research community in the mid-1990s (McDougall, Shane, & Oviatt, 1994; Oviatt & McDougall, 1994; Rennie, 1993). However, while rich and varied, the research tradition focusing on new and entrepreneurial firm internationalization has seldom sought to elicit normative insights to inform entrepreneurs on *how* they should leverage internationalization for the creation of *de novo* competitive advantage, rather than for the exploitation of preexisting competitive advantage. This gap is reflected in the dearth of IE research on the effect of internationalization on long-term performance. For example, a fairly recent thematic ontology of international entrepreneurship research identified a cluster of studies exploring the effect of performance on internationalization, but no studies exploring the effect of internationalization on long-term performance (Jones, Coviello, & Tang, 2011). More recently, Cavusgil and Knight (2015) noted the same gap. This is a nontrivial gap, since the lack of evidence on the effect of entrepreneurial internationalization on long-term performance effectively means that we do not know whether and when internationalization is good for the new venture in the first place and, if so, how the venture should behave during the internationalization process in order to create and lock in long-term performance drivers.

Another gap in the international entrepreneurship literature compounds this problem. In their review of foreign market entry mode choices made by small- and medium-sized companies, Laufs and Schwens (2014) identified only two studies that focused on international new ventures. This reflects a broader dearth in the international entrepreneurship literature of studies focusing on the *governance* of the cross-border operation that results from early and proactive internationalization. This is significant, since any advantages built during internationalization must be incorporated into the new venture's governance system in order to convert them into enduring drivers of superior performance.[1]

I propose that these gaps are, at least in part, due to the focus of the dominant internationalization frameworks on the *process* of internationalization, rather than the *outcomes* of it (Chetty & Holm, 2000; Johanson & Mattsson, 1988; Johanson & Vahlne, 1977, 1990, 2009; Jones & Coviello, 2005; McDougall & Oviatt, 2000; Oviatt & McDougall, 1994).[2] Theoretical frameworks shape empirical designs. This perhaps explains why most studies exploring early and proactive internationalization by entrepreneurial ventures have focused on variables such as time to internationalization, speed of international expansion, number of foreign markets entered and exited, and so on. However, studies focusing on the process itself can produce only inferential insights regarding longer-term performance outcomes of internationalization, and they have only limited power to generate *normative* insight that informs practicing entrepreneurs. In effect, the dominant process frameworks typically ask: "how *does* the process of entrepreneurial internationalization unfold," instead of asking: "what *should* entrepreneurs do in order to harness internationalization for long-term advantage."

Although important and consequential, I suggest that these gaps also offer important research opportunities—and opportunities to increase the

[1] In contrast with the international entrepreneurship literature, research on multinational enterprises has placed significant emphasis on the governance of cross-border operations. For example, the "OLI framework" explicitly seeks to define the "MNE advantage" that arises *due* to the multinational operation (Cantwell & Narula, 2007; Dunning, 1977, 2000). However, since this research focuses on *existing* multinationals, it cannot directly inform how a new venture can *build* a sustainable multinational operation.

[2] There are also good practical reasons for this gap. Longitudinal archival data on firm-level internationalization remains rare. There is also a nontrivial problem with endogeneity and unobserved heterogeneity, as the link between internationalization and organizational performance is subject to multiple selections: firms self-select to internationalization, and not all internationalizing ventures survive.

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relevance of international entrepreneurship research for entrepreneurial practice. It is well established that internationalization can leave an important imprint on the venture's subsequent development (Autio, George, & Alexy, 2011; Sapienza et al., 2006; Zahra, Ireland, & Hitt, 2000). For example, internationalization typically entails nontrivial learning and capability development challenges, as the internationalizing new venture needs to accommodate different country-specific preferences, overcome barriers imposed by physical and psychic distance, and cope with increased organizational complexities introduced through cross-border operation. Such learning challenges can be proactively harnessed for capability development (Autio et al., 2011; De Clercq, Sapienza, Yavuz, & Zhou, 2012; Sapienza, De Clercq, & Sandberg, 2005). We also know that internationalization is likely to expose the new venture to unanticipated market and resource access opportunities and cross-border asymmetries, which can be harnessed for long-term performance if encapsulated into the venture's cross-border activity system (Bingham, Eisenhardt, & Furr, 2007; Di Gregorio, Musteen, & Thomas, 2008a; Kuemmerle, 1996). However, in order to shift the focus of international entrepreneurship research away from process and toward long-term performance outcomes, normative frameworks are needed that inform how entrepreneurs should behave in order to secure such outcomes.

In order to advance this objective, I propose a normative model of strategic entrepreneurial internationalization (SEI). The model articulates how internationalizing new ventures can proactively harness internationalization for the build-up of sustainable competitive advantage. The model draws on organizational capability and business model design frameworks to portray internationalization as a learning- and experimentation-driven process, during which the international new venture (INV) builds a transnational business model with built-in sources of sustainable competitive advantage (Amit & Zott, 2012, 2015; Knight & Cavusgil, 2004; Sosna et al., 2010). The model highlights the importance of a learning orientation, business model experimentation, cross-border asymmetry exploitation, and niche orientation as drivers of such advantage.

In this article, I first review received frameworks that address the internationalization of new and/or small firms, focusing particularly on their ontological content, theoretical logics, and implications for the build-up of competitive advantage. I then present the normative framework of strategic entrepreneurial internationalization. I conclude by discussing the framework and suggesting avenues for further research in international entrepreneurship.

Internationalization Theories and Competitive Advantage

Research on the internationalization of new and/or small firms goes back decades, yet the theoretical frameworks used to frame and ground this research remain few. In addition to the traditional process and network theories of internationalization, the IE literature builds on the international new ventures framework, as well as various frameworks borrowed from entrepreneurship research (notably, knowledge-based and dynamic capabilities frameworks). Because the underlying theoretical frameworks shape what questions are asked and how observations are interpreted, an examination of these frameworks provides a reasonably comprehensive overview of the epistemological content of the IE domain.

The process theory of internationalization underpins, directly or indirectly, much of the research on internationalizing new and/or small firms. Ontologically, this theory portrays internationalization as a learning and resource allocation process, where resource allocations to foreign markets inspire learning about those markets (i.e., "foreign market knowledge"), which reciprocally instill the internationalizing firm with confidence and commitment to making further resource allocations to foreign market activities (Eriksson, Johansson, Majkgård, & Sharma, 2000; Johanson & Vahlne, 1977, 1990, 2009; Johanson & Wiedersheim-Paul, 1975; Sullivan & Bauerschmidt, 1990). Internationalization, thus, is portrayed as a self-reinforcing feedback process, where the rate of internationalization is regulated by the speed with which the firm accumulates experiential learning from foreign markets and grows confident in making further investments in those markets. Because experience accumulates incrementally, the unfolding process is also necessarily incremental.

In the classic, "Uppsala" portrayal, a new and small firm enjoys few natural advantages in the early stages of the internationalization process

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(Johanson & Vahlne, 1977, 1990). This is because firms initially start with a zero stock of foreign market knowledge (Autio, 2005). The process ontology portrays foreign market knowledge as the critical regulator of foreign market penetration. Relevant knowledge regarding, for instance, culture, institutions, and power relationships among market players is considered to be inherently country specific and not easily spilled over across national borders. It is also considered to be mostly tacit and, therefore, primarily accessible through physical presence in the market. Because firms can pick up foreign market knowledge only through their operations abroad, there are few ways they can gain an initial advantage (relative to other internationalizing businesses) by exploiting preexisting knowledge about foreign markets. In this ontology, the primary source of advantage is domestic, manifested in products and services that are superior to those already found in the foreign market. Because foreign market knowledge is country specific, the presence in adjacent country markets does not confer an advantage in penetrating a given country market beyond endowing the firm with knowledge on how to manage a cross-border operation in general. Although accumulated foreign market knowledge gives the internationalizing firm an edge over other firms trying to enter the same market, the internationalizing firm is always at a disadvantage relative to domestic players in this regard. Ontologically, thus, the process framework provides relatively little basis for generating insight on how to harness internationalization for the creation of a sustainable competitive advantage.

The network perspective to internationalization originally built upon the Uppsala portrayal and shares many ontological features and elements of theoretical logic. Instead of considering "foreign market knowledge" as the critical regulator of the internationalization process, the network perspective emphasizes the need to access and mobilize downstream assets in foreign markets, associated resource dependencies, and consequent liabilities of outsidership (Chetty & Holm, 2000; Johanson & Mattsson, 1988; Johanson & Vahlne, 2009). Rather than portraying internationalization as a process of accumulating "foreign market knowledge," the process becomes one of expanding network relationships abroad. As the owners of downstream assets in foreign markets are typically controlled by locals, internationalizing new ventures are likely to face imbalanced power relationships when entering into foreign markets. This "liability of foreignness" then becomes a critical obstacle hindering rapid internationalization (Zaheer, 1995). Internationalizing firms need to build relationship-specific social capital to overcome their "liability of outsidership" (Johanson & Vahlne, 2009). Because trust builds slowly, especially with nondomestic entities who might have little reputation within the target market, the process of international expansion is inevitably slow and gradual.

In the network ontology, similar to the process ontology, there appear to be few shortcuts to overcome the liabilities of foreignness and outsidership. This is because the critical asset regulating network expansion abroad—the relationship-specific social capital—is specific to a given relationship with a given foreign partner. The relationship building always begins from scratch, and early internationalizers seldom possess reputational assets or established track records that might speed up the process of reputation building. Over time, as relationships are built, they can become a source of advantage relative to late entrants into the same market. However, relationship-specific social capital does not travel, and its utility outside a given country market is likely to be low.

In summary, both the process and network theories seem to offer few prescriptive insights for firm-level advantage building. The same also applies to the new venture internationalization framework. This is also because this framework seeks to explain a phenomenon (i.e., early and proactive internationalization) rather than provide prescriptive insight (McDougall & Oviatt, 2000; Oviatt & McDougall, 1994). Indeed, the original impetus for the INV research was to explain why some new ventures seemed able to deviate from the patterns predicted by the process and network perspectives by going international soon after their inception. Because of this heritage, the INV perspective tends to focus on internationalization process (e.g., timing and speed) and associated outcomes (e.g., post-internationalization sales growth).

The original objective of the INV perspective also explains its similarity to the process and network perspectives in that it assumes essentially a similar process and constraints of internationalization. The major difference between the INV perspective and the process and network perspectives is that the INV perspective does not assume the

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accumulation of critical resources to be exclusively a firm-specific experiential process. Instead of having to accumulate foreign market knowledge and relational assets through the firm's operations, new ventures can leverage entrepreneurs' pre-firm social capital and international experience to kick-start their internationalization processes. The experience, reputation, capabilities, and risk-taking abilities of dynamic and opportunity-seeking entrepreneurs help their ventures seek internationalization sooner after founding and expand their international operations more rapidly once internationalized (Cavusgil & Knight, 2015; Knight & Cavusgil, 2004). These internationalization outcomes are also facilitated by structural advantages enjoyed by new firms, such as the absence of age-induced rigidities that may enable the firm to more quickly adapt to international markets—effectively, picking up and adjusting to foreign market knowledge more quickly than late internationalizers would (Autio, Sapienza, & Almeida, 2000).

In the INV perspective, thus, early internationalizing new ventures leverage pre-firm capabilities to speed up their internationalization. Although this perspective recognizes that internationalization itself can drive the development of firm-specific advantages, notably, innovation, this aspect has not been systematically developed (Jones & Coviello, 2005; Weerawardena, Mort, Liesch, & Knight, 2007). Indeed, some of the intriguing early empirical observations—that international diversity appeared to drive technological learning and product innovation (Zahra et al., 2000) and an early internationalization appeared to lead to faster sales growth *both* internationally and *domestically* (Autio et al., 2000)—have not been followed up by systematic research exploring such performance-enhancing effects of internationalization.

In contrast with the above frameworks, theoretical frameworks developed for the study of multinational enterprises (MNEs) usually place firm-specific advantages at the center of their ontologies. For example, the OLI framework specifically articulates the importance of ownership advantages, location advantages, and internalization advantages in determining the extent and form of cross-border operations in an MNE (Dunning, 1988, 1998). Much research on multinational enterprises has consequently sought to assess firm-specific advantages arising due to a multinational operation, and the OLI framework is also attributed with prescriptive qualities (Brouthers, Brouthers, & Werner, 1999). In the OLI ontology, the balance of ownership, location, and internalization advantages determines the choice of an appropriate operational mode in a given country market, which should be associated with greater productivity in a given market.

Summarizing, the three ontologies (i.e., the process, network, and INV ontologies) share many ontological commonalities and assume largely the same constraints of the internationalization process. They also assume that internationalization occurs on the back of a firm-specific advantage that exists *before* the internationalization process begins. In the case of process and network ontologies, this advantage usually takes the form of a product or service advantage that the firm seeks to capitalize through an international operation. In the case of the INV ontology, the product or service advantage is complemented by the firm's entrepreneurial advantages—i.e., the pre-firm experience, social capital, and entrepreneurial orientation embedded in its entrepreneurial team. Schematically, the three ontologies can be represented as shown in Figure 1. Note that Figure 1 presents a simplifying summary only.

In Figure 1, $CA_{(t0)}$ represents the firm-specific pre-internationalization competitive advantage that the firm seeks to leverage through internationalization. Typically, $CA_{(t0)}$ takes the form of a product or service advantage the internationalizing firm has developed domestically. The term $FMK_{(t1)}$ represents the gradual accumulation of foreign market knowledge through international operations, which feeds

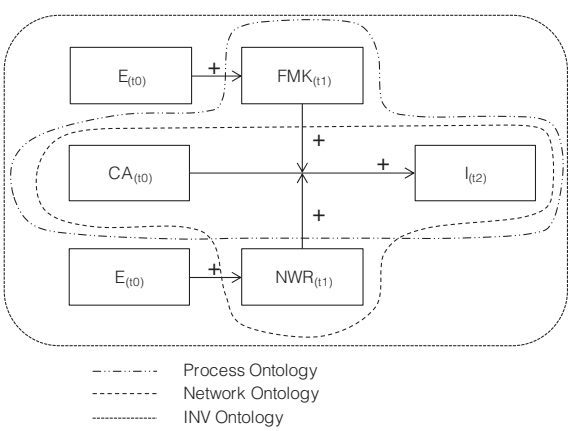

Figure 1. Competitive advantage and internationalization outcomes in popular internationalization ontologies.

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subsequent internationalization outcomes—i.e., $I_{(t2)}$. These can be characterized as, for example, internationalization extent, scope, and speed. Combined, $CA_{(t0)}$, $FMK_{(t1)}$, and $I_{(t2)}$ capture the core elements of the internationalization process ontology.

In Figure 1, $NWR_{(t1)}$ represents the accumulation of network relationships and relationship-specific social capital in foreign markets. Combined, $CA_{(t0)}$, $NWR_{(t1)}$, and $I_{(t2)}$ capture the core elements of the network ontology. Finally, $E_{(t0)}$ represents the entrepreneur-specific advantages that may be present at the time of founding the new venture. In the INV ontology, the entrepreneur's experience from foreign markets may contribute an initial stock of foreign market knowledge and network relationships that the new venture can leverage to kick-start internationalization early on and harness it to speed up internationalization subsequent to international entry.

In the combined ontology in Figure 1, the new firm starts out with an initial advantage developed during the domestic operation. This advantage triggers an initial internationalization process. The gradual accumulation of foreign market knowledge and network relationships enable the firm to make further resource commitments to internationalization, thus helping boost the effect of initial competitive advantage on internationalization outcomes. The entrepreneur-specific advantages may speed up this process.

This schematic representation illustrates the common shortcoming of the three ontologies: none of them consider firm development beyond $I_{(t2)}$. It is this shortcoming that limits the ability of the three ontologies to support normative insight and inform how internationalization could be leveraged for the build-up of a sustainable competitive advantage. Even the ontology of the eclectic theory of internationalization (i.e., the OLI framework) does not provide much support for entrepreneurial internationalization, since that ontology presents the multinational advantage as contemporaneous to the international operation: $CA_{(t0)} = I_{(t0)}$. The OLI framework is useful in explaining advantages associated with an *existing* international operation, but is less informative when it comes to *building* such an operation. In their recent review of the "born global" literature, Cavusgil and Knight (2015) recognized this shortcoming and the gap it had left in the IE literature, calling for more research to address the question of what happens to born globals after they grow up and where these firms end up 5 or 10 years after the initiation of the internationalization process.

Because of the shortcomings of the existing ontologies, we still know little about how new ventures can leverage internationalization to drive competitive advantage. This is the question I address next.

Normative Framework of Strategic Entrepreneurial Internationalization

Normative frameworks describe how things should be and how agents should behave in order to achieve a given valued outcome. In the context of international entrepreneurship, a normative framework contrasts with descriptive frameworks that seek to make positivistic claims about phenomena without normative intent (e.g., "how do internationalization processes unfold?"). Going beyond description, a normative framework in international entrepreneurship would support insights on how entrepreneurs *should* behave in order to achieve some strategic purpose—in our case, a post-internationalization competitive advantage.

For the purposes of my model development, I define *strategic entrepreneurial internationalization (SEI for short)* as *purposeful entrepreneurial action that seeks to derive and sustain a competitive advantage through the use of resources and the sale of outputs in multiple countries.* The conceptually tricky notion of "competitive advantage" is defined here simply as superior performance relative to comparable new ventures that do not adopt similar behavioral postures. The definition of strategic entrepreneurial internationalization is intentionally close to Oviatt and McDougall's (1994, p. 49) original definition of international new ventures as: "*business organization[s] that, from inception, seek to derive significant competitive advantage from the use of resources and the sale of outputs in multiple countries.*" The key difference between their model and the model to be constructed here is that although the Oviatt and McDougall definition evoked the notion of competitive advantage, their framework remained focused on describing *how* international new ventures *behave* and what conditions enable their existence, rather than describing what international entrepreneurs *should do* to purposefully leverage internationalization for the creation of competitive advantage.

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The SEI framework builds on the observation that internationalization presents significant challenges as well as opens up new opportunities for new ventures. Internationalization entails an element of entry into the unknown, as the firm expands its sphere of operation beyond the familiar domestic context. An extension of operations into nonlocal contexts is likely to increase the complexity of the firm's business operations and introduce the new venture to the challenge of interacting with nonlocal partners, suppliers, and customers. This entry into an unknown environment creates well-known learning and capability challenges for new ventures (De Clercq et al., 2012). In the model, I suggest that the internationalizing firm can turn such challenges into sources of sustainable competitive advantage by adopting a learning orientation and a niche orientation.

In addition to challenges, internationalization also opens up opportunities, not only in the form of new markets to exploit and new customers to gain, but more importantly, cross-border resource, knowledge, and price asymmetries that can be leveraged for sustainable, difficult-to-copy advantages in the international new venture's business model. Again, such potential advantages are well recognized, both in the new venture internationalization literature and in the OLI model (Di Gregorio et al., 2008a, 2008b; Dunning, 1977; Kuemmerle, 2002). In the SEI model, I elaborate how such opportunities can be converted into sustainable competitive advantages by encapsulating them into the international new venture's business model and by systematically conducting low-cost experiments with alternative business model configurations.

The SEI model combines two theoretical lenses—the learning and capability development lens and the business model design lens—to articulate how internationalizing new ventures can leverage internationalization for competitive advantage. Regarding the first, I adopt a cognitive (rather than a routines-based) view of learning and capability development in internationalization (Autio et al., 2011; De Clercq et al., 2012). In this view, cognitive representations of action-outcome relationships underpin internationalizing a new venture's organizational capability to "do" things (Winter, 2003) in foreign markets—e.g., close sales, access desired distribution channels, conduct advertising campaigns, and so on. Internationalizing ventures usually have some preconceived notion regarding how to accomplish a desired outcome (i.e., "when I want to accomplish X, I should do A") (Autio et al., 2011). Because foreign markets usually differ from the domestic one, the internationalizing firm will occasionally find such cognitive representations challenged (i.e., "I did A, but got Y instead"). Such challenges open up the opportunity for experiential learning, and potentially, for the internationalizing firm to update and expand its cognitive representations regarding action-outcome relationships. However, this outcome is not automatic: the internationalizing venture may simply ignore the incongruity and persist in its preconceptions, or it may adjust its routines "on the fly," without giving much thought to the failure of the action to prompt the desired outcome. Explicating action-outcome relationships requires cognitive effort, and failure to invest such effort may result either in a failure to learn or in a routines-based adjustment of actions without a corresponding update in cognitive representations of action-outcome relationships. Summarizing, although internationalization opens the possibility for the internationalizing new venture to expand its repository of cognitive representation regarding action-outcome relationships in different contexts (i.e., "what to do when" in order to accomplish X"), this outcome is not automatic. In the SEI model, I highlight strategic postures that the internationalizing new firm may adopt to leverage internationalization for capability development.

As the second theoretical angle, I adopt the business model design lens to highlight how the potential learning and capability development outcomes of internationalization can be combined with the exploitation of resource, knowledge, and price asymmetries opened up through internationalization (Amit & Zott, 2012, 2015). A business model is a "*system of interconnected and interdependent activities that determine the way the company does business*" (Amit & Zott, 2012: 42). A business model combines the configuration of the firm's internal activities with the firm's upstream and downstream activities and interactions with suppliers, collaborators, and customers, as well as its revenue model (Zott, Amit, & Massa, 2011). In the logic of the SEI model, the internationalizing new venture leverages the learning and capability development challenges of internationalization to "populate" its internal activity system such that it is able to support attractive value propositions. By

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configuring its relationships and interactions with suppliers, collaborators, and customers, the international new venture sets up a transnational activity and governance system that exploits cross-border asymmetries for sustainable competitive advantage. In the SEI model, I highlight strategic postures that the internationalizing new venture may adopt to leverage internationalization for the development of robust and internationally scalable business models.

Summarizing, the SEI model views strategic entrepreneurial internationalization as a proactive capability development and associated business model innovation process, one that encapsulates the learning and capability development advantages of internationalization within an enduring activity and governance system that exploits cross-border asymmetries. The model is shown in Figure 2.

In the SEI model, advantage creation begins concurrent with international expansion and is moderated by the firm's behavioral and strategic dispositions. The elements in the model are: learning orientation (LO); niche orientation (NO); asymmetry exploitation (AE); and business model experimentation (BME). Next, I discuss each element.

Learning Orientation and Internationalization Competitive Advantage

Learning orientation is the intensity of effort a given firm invests in articulating cognitive insights and explicating effective organizational practices from cross-border experience (Autio et al., 2011; Sapienza et al., 2005). As reviewed earlier, internationalization opens up the potential for the new venture to update and expand its cognitive representations regarding action-outcome relationships in foreign markets. However, experimentation with alternative actions and the articulation of cognitive insights from such experiments are cognitively intense and resource-consuming processes. The likelihood of developing articulated cognitive understandings regarding "what works" in a given situation is, therefore, likely to depend on the amount of learning effort invested into both experimenting with different processes and distilling insights from such experimentations (De Clercq et al., 2012; Sapienza et al., 2005). The propensity of the internationalizing venture to engage in such an effort is determined by its learning orientation (Sinkula, Baker, & Noordewier, 1997). Consistent with this, several studies have reported a positive association between a learning orientation and organizational performance in entrepreneurial ventures (Calantone, Cavusgil, & Zhao, 2002; Hsu & Pereira, 2008; Jantunen, Nummela, Puumalainen, & Saarenketo, 2008; Styles, Gray, Kropp, Lindsay, & Shoham, 2006; Wang, 2008). Supporting the salience of cognitive (rather than routines-based) learning, Bingham et al. (2007) found that the adoption of explicit learning heuristics enhanced organizational performance in international entries. Therefore, I propose that the degree to which an internationalizing new venture's intensity of cross-border operations drives the development of dynamic capabilities is regulated by its learning orientation. Dynamic capabilities enhance the new venture's ability to successfully pursue opportunities in both domestic and foreign markets.

Proposition 1: There is a positive association between a new venture's intensity of cross-border operations and subsequent competitive advantage. This association will be stronger in those ventures that adopt an active learning orientation.

Business Model Experimentation and Internationalization Competitive Advantage

A company's business model captures how it creates, delivers, and captures value (Amit & Zott, 2012).

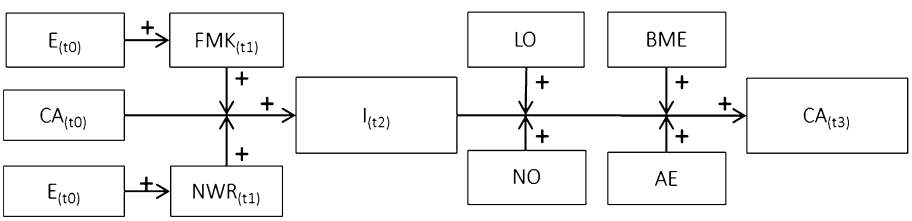

Figure 2. Normative framework of strategic entrepreneurial internationalization (SEI).

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The business model comprises the activity system (internal and external) for value creation and delivery, the revenue models for value capture, and the company's value proposition(s) to its different stakeholders. When experimenting with its business model, the company tests alternative configurations of its activity system and its governance (Wareham et al., 2014), as well as different value propositions. In contrast with learning and capability development, which focus primarily on the firm's internal capabilities, the emphasis of the this discussion is on the configuration and governance of the external activity system and the venture's value proposition(s).

I suggest that internationalization, if approached strategically, constitutes a potent enabler of business model innovation, or the discovery of robust and internationally scalable business models, especially when combined with "lean entrepreneurship" practices (Blank, 2013; Onetti, Zucchella, Jones, & McDougall-Covin, 2012; Reis, 2011). Characteristic of "lean entrepreneurship practices" are an explicit focus on experimentation-driven, practice-oriented learning, constant testing and validation of assumptions concerning different aspects of the business model, and frequent, iterative pivoting as assumptions are rejected and new ones tested (Autio & Zander, 2016). New ventures practicing lean entrepreneurship seek to explicate key assumptions of their intended business model and develop ways to test those assumptions through practical experiments without taking excessive risks in the process. As a heuristic, lean entrepreneurship represents an action-oriented approach to business model discovery that is guided by simple heuristics and decision rules. If experiments do not support key assumptions, they are revised and tested anew. As a learning heuristic, lean entrepreneurship practices systematically introduce variation in different elements of the new venture's business model, with a testing and retention heuristic to select successful variants.

Evidence suggests that systematic application of learning and experimentation heuristics can effectively support new venture internationalization. Studying successive foreign market entries, Bingham (2009) found that improvisation with entry heuristics (including the configuration of external relationships) was positively associated with performance in international new ventures. Bingham speculated that *not* using scripted routines to execute each entry enabled the internationalizing venture to experiment with alternative activity system configurations and discover the most effective ones. This conjecture echoed the assertion of Zahra (2005: 24; as quoted in Bingham, 2009: 322): "*Experimentation is essential for international new ventures to discover the winning business model and recipe. Openness to this sort of experimentation is a must.*" Lean entrepreneurship practices support exactly such experimentation to hone in on a robust business model.

As a downside, active business model experimentation could be costly, particularly when executed in distant markets. Geographical distance may also slow down the communication and absorption of lessons from business model experiments, particularly if the lessons conflict with the internationalizing new venture's established experience and "justified true beliefs" shaped by domestic experience (Autio et al., 2000; Nonaka, 1994). I suggest that while such arguments may have been more valid in the past, their salience is likely undermined by digitalization, or the implementation of digital technologies in business processes (Autio & Zander, 2016; Berman, Kesterson-Townes, Marshall, & Srivathsa, 2012). Digital infrastructures are inherently flexible and support flexible bundling of service offerings (Yoo, Boland, Lyytinen, & Majchrzak, 2012; Yoo, Henfridsson, & Lyytinen, 2010). This enables new ventures to flexibly reconfigure and test alternative value propositions and alternative ways to interact with customers, suppliers, and partners. Thanks to the ubiquity of the internet, digital services can be offered over a distance while still allowing the new venture to control the features of those services. Disintermediation makes it possible to directly engage end users in different country markets, which enables rich learning from end users and immediate feedback to alternative product, service, and delivery configurations (Jean, Sinkovics, & Cavusgil, 2010; Katz, 1988). Finally, the increasing sophistication and availability of business process outsourcing services makes these increasingly accessible to INVs, enabling them to experiment also with physical aspects of their business models (Glavas & Mathews, 2014; Lahiri & Kedia, 2011; Lewin & Volberda, 2011). I propose:

> *Proposition 2: The positive association between a new venture's intensity of cross-border operations and subsequent competitive advantage will be stronger in those ventures that actively engage in low-cost experiments with alternative business models in different country markets.*

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Asymmetry Exploitation and Internationalization Competitive Advantage

A major potential benefit of internationalization is that it exposes the internationalizing firm to asymmetries that exist between country-specific markets for goods, services, and factors of production, as well as in their cultural, institutional, and social outlook (Di Gregorio, Musteen, & Thomas, 2008b). Such asymmetries can act as a source of opportunity: the OLI model recognizes that asymmetries in strategic factor markets open up opportunities to create advantages in the cost and quality of production (Belderbos, Lykogianni, & Veugelers, 2008; Chung & Yeaple, 2008; Mottner & Johnson, 2000; Sirmon, Hitt, Ireland, & Gilbert, 2011). In his work, Kuemmerle (2002) found some new ventures to employ a "home base augmenting" mode of internationalization, seeking to create advantageous resource combinations by combining resources across national borders. On the demand side, asymmetries across product and service markets open up opportunities to extend product life cycles by timing product introductions differently in different markets (Sirmon et al., 2011; Vernon, 1966).

Cross-border asymmetries can also enable the new venture to establish advantageous positions in international value networks and establish a coordination and intermediation role, enhancing its ability to appropriate value (Etemad, Wright, & Dana, 2001; Wincent, Anokhin, Örtqvist, & Autio, 2009; Yeniyurt, Tamer Cavusgil, & Hult, 2005). Such positions increase in value if the firm controls or coordinates inputs that are scarce and important for the rest of the value chain or the broader innovation ecosystem. If the valuable positions are scarce, the very act of occupying them can drive up barriers to entry for prospective competitors (Ozcan & Eisenhardt, 2009).

While internationalization opens opportunities to exploit positional advantages such as the above, they become a source of sustainable competitive advantage only if built into the international new venture's cross-border activity system with its suppliers, partners, and customers. In order to act as sources of sustainable competitive advantage, the venture needs to create cross-border linkages, interactions, and resource and knowledge combinations that are more valuable than those available from domestic sources alone, and they also need to preempt similar combinations for potential competitors (Di Gregorio et al., 2008b). Incorporating cross-border linkages as an integral element of the international new venture's business model may offer cost advantages, flexibility advantages, and also specialization advantages, as an active use of cross-border outsourcing arrangements enables the international new venture to focus on its core competencies. Consistent with this argument, Di Gregorio et al. (2008b) found experience in offshore outsourcing to be positively related to the extent of internationalization of sales in SMEs. However, given that beneficial resource combinations are not be easy to recognize, the venture needs to be alert to the possibility of such combinations and actively look out for them. Also, it may be that the best combinations can be discovered only through experiments—see Proposition 2. Summarizing, I propose:

> *Proposition 3: The positive association between a new venture's intensity of cross-border operations and subsequent competitive advantage will be stronger in those ventures that exploit cross-border resource and knowledge asymmetries in their activity system.*

Niche Orientation and Internationalization Competitive Advantage

In a niche strategy, the firm competes with others by relying on distinctive products and processes that appeal to a highly specific group of customers (Echols & Tsai, 2005). By offering differentiated products and processes that appeal to a specific group of users, niche players create more value for that group. Because niche markets tend to be small, they are often overlooked by large, established players who need greater volume to drive economies of scale (Noy, 2010). A niche strategy, therefore, is often selected by new ventures, as it is easier to execute with limited resources (Carter, Stearns, Reynolds, & Miller, 1994; Noy, 2010).

The advantages of a niche strategy have not been examined extensively in the context of new venture internationalization (Bloodgood, Sapienza, & Almeida, 1996; Knight & Cavusgil, 2004; Moen, 2002). However, the merits of a specialized niche strategy versus a broad strategy (or "flexibility strategy") have been debated in the general

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context of entrepreneurial ventures (Amburgey & Rao, 1996; Carroll, 1985; Casciaro & Piskorski, 2005; Pfeffer & Salancik, 1978; Romanelli, 1989). The flexibility argument emphasizes the need of new ventures to adapt to unpredictable environments (Brown & Eisenhardt, 1997; Davis, Eisenhardt, & Bingham, 2009; Ebben & Johnson, 2005; Eisenhardt, Furr, & Bingham, 2010). To enhance adaptability in uncertain environments, some have argued that new ventures need to adopt a broad scope so as to be able to take advantage of unforeseen opportunities and adjust to rapid environmental changes (Ebben & Johnson, 2005; Katila & Ahuja, 2002; Klingebiel & Rammer, 2014). However, a broad portfolio of capabilities is costly to build and maintain, and the new venture may not be able to effectively address a broad range of customer requirements to their satisfaction (George, 2005; Zahra, Sapienza, & Davidsson, 2006). Still, by specializing, a new venture is able to develop select capabilities more fully. Specialization also enables the new venture to gain recognition for distinctive strengths that are valued in its niche, and it helps shelter the venture against competition by large incumbents (Agarwal & Audretsch, 2001; Carroll, 1985). On the downside, specialization may make the venture vulnerable to environmental jolts that undermine the venture's niche (Bradley, Aldrich, Shepherd, & Wiklund, 2011; Burns & Stalker, 1961; Freeman & Hannan, 1983).

I suggest that in the context of internationalization, a niche strategy should be more beneficial than a flexibility strategy. First, a niche strategy enables the new venture to focus its capability development efforts and achieve a good level of effectiveness more quickly than if the new venture attempted to develop a broad range of capabilities. This is likely to be particularly important in the context of internationalization, where the threshold of achieving credibility is higher and the ability to effectively address customer needs therefore more valuable. Second, the internationalizing new venture will be able to "grow" its niche by combining market demand from several countries and, thus, build scale efficiencies (Weerawardena et al., 2007). Cross-border niche integration has become more viable with digitalization, as the internet makes it easier for like-minded consumers to discover one another and also because the internet makes it easier for consumers to discover specialized offerings (Brynjolfsson, Hu, & Smith, 2006). Third, a niche strategy enables the internationalizing new venture to build a more coherent system of interactions with suppliers, partners, and customers than a broad-based strategy would. Finally, a niche orientation reduces the risk of competitive retaliation, thus affording the new venture more time to consolidate its operation. Supporting this reasoning, there is anecdotal evidence that a niche strategy is associated with stronger export performance and that niche-oriented INVs tend to be more successful than INVs that do not adopt a niche orientation (Gabrielsson, Kirpalani, Dimitratos, Solberg, & Zucchella, 2008; Zucchella, Palamara, & Denicolai, 2007). Therefore I propose:

Proposition 4: The positive association between a new venture's intensity of cross-border operations and subsequent competitive advantage will be stronger in those ventures that adopt a niche orientation.

Discussion

Although the phenomenon of international new ventures was first discovered by researchers 20-odd years ago (McDougall et al., 1994; Oviatt & McDougall, 1994; Rennie, 1993), the associated research tradition has remained largely focused on the phenomenon of internationalization itself, attempting to describe and explain its drivers and patterns (Cavusgil & Knight, 2015; Coviello, 2015; Jones et al., 2011). While this research stream has yielded substantial insight into the drivers and constraints into early and proactive international entry and post-entry international growth, there has been less research into the performance consequences of it (Autio et al., 2000; Mudambi & Zahra, 2007; Sapienza et al., 2006). There has been surprisingly little research exploring organizational performance outcomes in the context of internationalization, and normative frameworks have been missing. In short, thus far, a strategic perspective to new venture internationalization has been conspicuously absent. The model put forward in this article seeks to address this gap.

In the early days of INV research, international new ventures and "born globals" were treated as an exception, and much effort consequently focused on explaining why this phenomenon might be

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occurring. During the past 20 years, important global trends such as globalization and the emergence of the internet, first as a communication medium and subsequently as an engagement platform, have fundamentally transformed the environment in which new ventures emerge and do business, altering the role of internationalization in new venture development. In this article, I have argued that the ontologies of received internationalization frameworks applied to new and/or small firms are insufficiently equipped to handle this new reality, mostly because they consider internationalization as an expression of preexisting (and, hence, domestically developed) competitive advantage, rather than as a driver of one. This is an important shortcoming in the digital age, where the internet makes the transacting environment of most new ventures inherently global. To inform new ventures how to operate in a globalized context, theoretical frameworks are required that facilitate normative insight on how they should *behave* during the internationalization process in order to build and lock in firm-specific advantages that can act as a source of long-term superior performance.

The normative framework of strategic entrepreneurial internationalization suggested in this article articulates four firm-level strategic postures that the internationalizing new venture can adopt in order to successfully leverage internationalization for competitive advantage. Of these postures, two address how the firm can leverage internationalization to build distinctive capabilities, and the other two address how the internationalizing new firm can incorporate advantage-yielding cross-border asymmetries into its business model. The model suggests that by adopting an active learning orientation, the internationalizing new venture will be better able to harness internationalization for the development of firm-level dynamic capabilities and cognitive maps that enable it to select the appropriate organizing processes to address opportunities opened up by internationalization, as well as those emerging in its domestic context. The model also suggests that by adopting lean entrepreneurship principles and experimenting with different business model configurations during internationalization, the internationalizing new venture will be able to evolve a robust business model with cross-border advantages built into its activity system. A niche orientation reduces the risk of competitive retaliation during foreign market entry, allowing the venture time to build and lock in drivers of competitive advantage.

Each of the four postures articulated in the normative SEI framework can be proactively harnessed by the internationalizing new venture, and they can guide the venture's decision heuristics as it faces new situations and adapts its behaviors to changing conditions (Blank, 2013; Reis, 2011). A notable feature in the framework is that it explicitly integrates "lean entrepreneurship" practices through the business model design construct. Although the "lean entrepreneurship" movement has transformed entrepreneurship practice and teaching in recent years, the movement has remained practitioner driven, and the practices themselves have thus far received only scant attention by the entrepreneurship research community. There is a need for more conceptual research on "lean entrepreneurship" practices such that they can be operationalized empirically and their effectiveness tested in different situations.

Although the SEI framework has been informed by received empirical and conceptual research on INVs, the paucity of INV research explicitly addressing strategic implications of early and proactive internationalization is striking. As Coviello (2015) and Cavusgil and Knight (2015) noted in their recent reviews of the field, we still know alarmingly little about the medium- to long-term performance consequences of early and proactive internationalization, and normative insights are almost absent. One big reason for this paucity is the continued scarcity of large-scale, longitudinal datasets that track new venture internationalization activities over time (Coviello & Jones, 2004). Teasing out the performance implications of internationalization is further complicated because of potential bias caused by multiple selections (Mudambi & Zahra, 2007; Sui & Baum, 2014). First, there is the self-selection to internationalization, which is likely to bias any observations between performance predictors and performance outcomes. Then there are the survival biases, both in terms of continued presence in export markets and in terms of organizational survival in general. These problems are aggravated by the multiple faces of internationalization (Coviello, 2015), as some research has looked at export activities only and others have tracked cross-border engagements more broadly. The broader the engagement, the trickier it becomes to dissect different influences and the more scarce the data becomes.

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These challenges acknowledged, they should not deter researchers of international entrepreneurship from focusing more on explicating the performance outcomes of early and proactive internationalization. After all, MNE researchers have been exploring such outcomes for decades. Furthermore, these challenges also hold promise, as the performance drivers of SEI are unexplored. I see a number of promising opportunities for SEI research.

First, SEI research needs novel methodological designs to overcome or mitigate the endogeneity problem. To the extent that longitudinal data becomes available that contains sufficient data on pre-internationalization histories of INVs, appropriate statistical techniques (e.g., propensity score matching) can be employed to mitigate endogeneity concerns (Sui & Baum, 2014). In addition to longitudinal datasets, longitudinal qualitative designs can also be effective in highlighting strategic performance drivers in INVs (Bingham, 2009; Bingham et al., 2007). In addition to these conventional methods, new sources of data should also be explored. Notably, big data methods that scrape data from the web and analyze rich text data to operationalize complex constructs such as business model innovation seem to offer much promise for dissecting the performance drivers of INVs (Munzert, Rubba, Meißner, & Nyhuis, 2014).

Second, INV research could do more to better understand the context of early and proactive internationalization and how the context of INVs challenges established constraints and creates new ones. A key contextual trend that is currently affecting patterns of new venture internationalization is that of digitalization. Yet, there has been little research exploring how digitalization challenges received internationalization frameworks and how it transforms INV internationalization processes. (Brouthers, Geisser, & Rothlauf, 2016; Fischer & Reuber, 2014; Reuber, Fischer, & Morgan-Thomas, 2014). In their recent work, Autio and Zander (2016) proposed that digitalization attenuates vertical and horizontal asset specificity, thereby horizontalizing traditional, vertical value chains. They also argued that digitalization attenuates site specificity, thereby enabling INVs to manage cross-border operations from a distance. As noted earlier in this article, the digital affordance of disintermediation enables INVs to directly engage end users regardless of their geographical location, thereby cutting off the local middleman who features centrally in received internationalization frameworks. This could potentially transform the dynamic, and sometimes the very meaning, of foreign market learning. Such trends directly undermine several of the core assumptions that underpin received theoretical frameworks of new and small venture internationalization, yet there has been very few attempts to understand what the implications are for international entrepreneurship. Conceptual and empirical work directly addressing digitalization is therefore needed.

Third, INV frameworks need to address a related phenomenon head-on: that of platform-centric innovation ecosystems. By enabling open innovation and innovation ecosystems, digitalization is undermining the centrality of the concept of an "industry" as the defining context of internationalization. As digitalization reduces traditional, country-, and industry-specific barriers to entry and exit, it likely increases the importance of platform-centric innovation ecosystems as the context within which new ventures internationalize their operations. Therefore, it is important to explore what internationalization means for new ventures that contribute specialized offerings in specific platform ecosystems, how such ecosystems may facilitate and constrain international expansion, and what the implications are for the creation of competitive advantage.

Fourth, the SEI model itself should be tested empirically. The model articulates several strategic postures through which INVs can harness internationalization for competitive advantage. The salience of these postures should be tested empirically, as should associated boundary conditions: under which conditions are each of the postures effective in facilitating internationalization competitive advantage, and under which conditions might they be less effective? Another limitation of the SEI model is that it is derived from a verbal argument rather than from formal econometric modeling. I suggest this as another avenue for research.

Finally, as an important limitation of the SEI model, the model is likely to be more applicable to new ventures that will tangibly coordinate resources and interactions across national borders. The learning and capability development arguments have focused on physical operations abroad. Similarly, the asymmetry exploitation argument is best applicable when meaningful interactions and

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connections are established between resources and activities across national borders. The same also applies to the business model experimentation argument. This suggests that the model may be less salient to international new ventures that do not meaningfully mobilize resources or interact with others across national borders. This category would include, for example, application developers that develop mobile applications for smartphones. If the applications are distributed through Android or iPhone marketplaces, consequential cross-border interactions will be limited and the SEI arguments will be less applicable. The same would apply to any new venture that simply exploits valuable resources in their home base for the development of products and services for the export market without much cross-border interaction. Many of Kuemmerle's (2002) "home-base exploiters" would fall into this category.

In conclusion, I have argued that international entrepreneurship needs to become more strategic in its orientation and do more to facilitate normative insight on how INVs should harness internationalization for competitive advantage. I hope that the SEI model introduced in this article will prove useful in informing future theoretical and empirical research in this important domain.

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Value Creation through Novel Resource Configurations in a Digitally Enabled World

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Research summary: *We propose a conceptual framework for examining the value-creation potential embedded into novel, digitally powered resource configurations. We suggest that business digitization calls for firms to adopt a system-based, value-creation-centric perspective for designing and organizing their resource configurations. Our conceptualization of a firm's resource configuration decisions centers on organizing access to resources controlled by value cocreators. We discuss resource configuration prototypes, value-creation sources, and the underlying resource configuration processes enabled by digitization. Our study contributes to the literature on strategic entrepreneurship by incorporating the ramifications of digitization into the theory on firms' resource configuration and its underlying processes to enable strategic entrepreneurship.*

Managerial summary: *Digitization has profoundly reshaped the way business opportunities are discovered and exploited. In this article, we suggest that digitization expands the scope of resources firm could utilize while requiring firms to take a holistic approach in considering the resources and addressing the needs of all customers and partners (e.g., resource providers). We highlight the importance of such a holistic approach to enhancing the value creation potential in the digital age for entrepreneurs and managers. In addition, we propose novel ways to connect resources with needs of customers and partners (e.g., enabling transactions and providing bridges) as well as the actionable microprocesses that undergird and enable these novel connections in a digitally enabled world.*

The resource configuration of a firm depicts the ways in which it orchestrates and connects the resources it utilizes (Sirmon, Hitt, & Ireland, 2007; Sirmon, Hitt, Ireland, & Gilbert, 2011). The rapidly increasing trend of digitizing companies has reshaped the ways in which firms do business (Weill & Woerner, 2013) and is fostering strategic entrepreneurship by enabling entrepreneurs and managers alike to create novel configurations of resources and, thereby, enhance their value (Hitt, Ireland, Sirmon, & Trahms, 2011). The substantial advances in computing and communication technologies have expanded firms' reach to resources and enhanced the effectiveness at which resources are exchanged, combined, and integrated. These developments have laid the foundations for the rise of the "born-on-the-cloud" innovators (e.g., Uber, Airbnb) and the sharing economy. Also, the power of individual customers has been elevated as a result of the proliferation of product and service information from digitally enabled platforms (e.g., Groupon) and social interaction (e.g., Facebook, Twitter), which allow exhaustive

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comparisons of products/services and collective bargaining by customers. Moreover, the potential of individual customers as contributors of value-creating resources (e.g., data) has been unlocked by digitally enabled devices (e.g., mobile phones, wearables, and Internet of Things) and technologies (e.g., big data analytics, image recognition, machine learning, and artificial intelligence). These developments have enhanced the scope and type of resources that the firm can access and utilize which, in turn, can lead to conceiving of and designing novel resource configurations (Afuah & Tucci, 2000; Amit & Zott, 2001).

The profound ramifications of digitization have yet to be incorporated in conceptualizing how firms conceive of, design, and organize their resource configurations. In particular, the extant literatures mostly conceptualize the resource configuration decisions of firms based on the implicit premise of the distinct roles of the focal firm, its partners as resource providers, and its customers as the locus of value creation (Priem, Butler, & Li, 2013). The role of customers as potential resource providers (Shah & Tripsas, 2007) and the role of a focal firm's partners as potential loci of value creation (Afuah, 2000; Chatain, 2011) have received only sparse attention. Indeed, researchers have suggested a shift from a product-based logic to a service-based logic of value creation as a result of digitally enabled information access and networking opportunities, and they have emphasized further the growing importance of customers as "value cocreators" for firms (Prahalad & Ramaswamy, 2004; Vargo & Lusch, 2004). Moreover, recent developments in the strategy and organizational design literatures have increasingly recognized the digitally enabled/enhanced interdependence among firms in value creation and innovation, suggesting a system-based approach toward firms and their value creation (Iansiti & Levien, 2004; Zott & Amit, 2010). In particular, such a system-based approach has explicitly considered the value creation for firms that are either transaction partners in a focal firm's business model (Amit & Zott, 2001, 2015) or parts of the "ecosystem" that enable the focal firms' value creation (Adner, 2006; Adner & Kapoor, 2010). However, these insights have yet to be incorporated into a conceptualization of the value-creation potential that is embedded into the resource configuration of a firm, which undergirds its strategy, business model, and organization (Sirmon et al., 2007; Zott & Amit, 2007).

In this article, we attempt to address these gaps by asking how firms create value through resource configurations in a digitally enabled world. Building on recent developments in the received research on resource orchestration (Sirmon et al., 2011) and the system-based approach on firms' value creation (Adner & Kapoor, 2016; Lusch, Sagarin, & Tang, 2016; Zott & Amit, 2015; Zott, Amit, & Massa, 2011), we propose a new conceptualization of a firm's resource configuration decisions and the resulting value creation in a digitally enabled world. We suggest that the digitization of businesses calls for firms to conceive of and design their resource configurations based on a system view and value-creation-centric perspective. In particular, this perspective views every potential value-creating participant as both a potential locus of value creation as well as a resource provider. It would help firms reimagine the locus of their value creation and the boundary of value-creating resources they could utilize which, in turn, would enable the design of innovative resource configurations. Hence, it calls for the examination into novel and innovative resource configuration prototypes as well as the associated resource configuration processes that have been largely enabled or empowered by digitization.

There are several contributions we attempt in the paper: First, we incorporate the far-reaching ramifications of digitization as well as recent theoretical developments in organizational design literature into the theory on firms' resource configurations by proposing a new conceptualization that centers on the digital age. Second, we complement the existing firm-based and value-capture-centric perspective on firms' resource configurations with a system-based and value-creation-centric perspective. Third, we illustrate distinct ways to create value with digitally enabled prototypes of resource configuration. In particular, we draw on the received resource orchestration framework and develop a number of digitally enabled resource configuration processes to extend the existing framework to the digital age. Finally, we suggest that value creation enabled by digitally powered resource configuration is centered on organizing access to resources that are owned by a range of value cocreators. Organizing resources is an element of modern organizational design and a manifestation of strategic entrepreneurship (Hitt, Ireland, Camp, & Sexton, 2001; Hitt et al., 2011).

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The article proceeds as follows: We first review literatures on resource configuration and recent developments in the literature on organizational design (e.g., business model design) to highlight the importance of advancing theories on resource configuration in a digitally enabled world. We then propose a new conceptualization of a firm's resource configuration decisions and illustrate it with some resource configuration prototypes. We proceed to discuss the impact of digitally enabled resource configuration on value creation. We conclude with a discussion of the implication of our conceptualization and directions for future studies.

Resource Configuration and Value Creation

In the recent decades, we have witnessed a shift of scholarly interest from examining the characteristics of a firm's resources as the source of its competitive advantage (Amit & Schoemaker, 1993; Barney, 1991; Peteraf, 1993) to understanding the managerial actions through which firms could configure and manage their resources to gain competitive advantage (Gruber, Heinemann, Brettel, & Hungeling, 2010; Sirmon et al., 2007). Indeed, how well a firm could access and orchestrate resources is viewed as core to a firm's dynamic capabilities (Helfat & Peteraf, 2003; Helfat et al., 2007). To create an integrated framework, Sirmon et al. (2011) synthesize resource management (e.g., structuring, bundling, and leveraging) with asset orchestration (e.g., search, selection, configuration, deployment) to develop a framework of resource orchestration, which has provided theoretical anchors for subsequent empirical studies that examine how resources could be managed better internally to enhance firm performance (Chadwick, Super, & Kwon, 2015; Chirico, Sirmon, Sciascia, & Mazzola, 2011; Ndofor, Sirmon, & He, 2015).

Deeply rooted in received literatures on the resource-based view (RBV) and dynamic capability (Barney, 1991; Teece, Pisano, & Shuen, 1997), the resource orchestration framework provides guidance on how the focal firm could gain a competitive advantage and capture value through its resource configuration (Hitt et al., 2011; Sirmon & Hitt, 2009). We build on this conceptualization to address the ways in which value is created for a focal firm's partners and customers in a digitally enhanced environment. Indeed, strategy scholars have noted the importance of first considering a focal firm's total value creation for all of its value-creation partners (e.g., customers, suppliers) in conceiving a focal firm's strategies (Brandenburger & Stuart, 1996; Makadok, 2003).

Priem et al. (2013) suggest that the new world of the "consumer internet" calls for a more balanced view on value creation and value capture of firms. Indeed, the elevated customer power in the digital age results in an increasing amount of scholarly attention shifting to the value-creation potential of firms as well as the heterogeneity of demands (rather than resources) as sources of firms' value creation (Adner & Kapoor, 2010; Priem, 2007; Ye, Priem, & Alshwer, 2012). Moreover, the digitization of businesses has substantially reduced information asymmetry and frictions in markets and enhanced the transparency among partners; these things have greatly increased the efficiency and effectiveness at which resources are exchanged, combined, and integrated (Barua, Konana, Whinston, & Yin, 2004). Hence, it encourages firms to pay more attention to cocreating value with their partners. Importantly, digitization has expanded the scope of resources that are accessible to firms and, therefore, allows them to conceive of and design novel configuration of resources which, in turn, enables value creation with a broader range of partners, including their customers (Amit & Zott, 2012; Prahalad & Ramaswamy, 2004).

Recent developments in the strategy and organizational design literatures have begun to highlight the ramifications of digitization in the design of a business model that centers on value creation (Amit & Zott, 2001, 2015; Zott et al., 2011). Increasingly, scholars emphasize the importance of adopting a system-based view and focusing more on the value creation enabled by the focal firm (Adner & Kapoor, 2010; Zott & Amit, 2010; Zott et al., 2011). Distinct from a firm-based perspective, the system-based view is characterized by considering explicitly the value propositions for all value-creation participants, rather than only those for the customers when designing a system (Amit & Zott, 2015). Thus, it acknowledges the potential multiple loci of value creation enabled by a focal firm in a system in which the focal firm is embedded. Such a system-based view draws on the ecosystem perspective by recognizing the important role of complementary resource providers in a focal

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firm's ecosystem in determining its value creation or innovation outcome (Adner & Kapoor, 2010). We note, however, that the system-based view centers on resources in the focal firm's ecosystem that are directly embedded into the focal firm's resource configuration, while the ecosystem perspective encompasses a much broader set of resources, some of which may be indirectly related to the focal firm or not currently related at all. The system-based view also highlights the value drivers that enable value creation (e.g., novelty, complementarity) and also value capture (e.g., lock-in) (Amit & Zott, 2001). Such a balanced view is in line with the strategic entrepreneurship perspective, which advocates a firm's simultaneous pursuit of opportunity seeking (value creation) and advantage seeking (value capture) (Hitt et al., 2001, 2011).

Built on design thinking (Beckman & Barry, 2007; Boland & Collopy, 2004; Brown, 2008, 2009), Zott and Amit (2015) propose a process model that centers on how a business model could be designed to create value. Specifically, the process model consists of five stages in which value could be created by observing, synthesizing, generating, refining, and implementing a system of interdependent activities with other value-creation participants. While scholars have suggested the importance of resources in enabling and undergirding business models in value creation (Johnson, Christensen, & Kagermann, 2008; Zott & Amit, 2007), these insights about the process of designing a value-creating business model have not yet been incorporated in examining value creation through resource configuration.

We suggest that these theoretical developments in the strategy and organizational design literatures represent a system-based, value-creation-centric approach, which complements the firm-based and value-capture-centric approach in the extant literature on resource configuration (Sirmon et al., 2011; Zott et al., 2011). Hence, drawing on these new insights is conducive in advancing our understanding about how resources could be configured to create value in a digital age. In particular, the digital age enables firms to create and manage more complicated systems of activities as well as the resources that undergird the activities (Weill & Woerner, 2013). Thus, it is imperative to take a system-based view to understand how the systems of resources are formed and managed. Also, the digital age has significantly empowered Metcalfe's law (e.g., the network effect) in driving customer acquisition and business model design strategies (Amit & Zott, 2012). As evidenced by the proliferation of "freemium" models, firms have increasingly prioritized their value-creation strategies for customers and partners over their value-capture strategies in order to gain first mover advantage, which is difficult to dislodge in the digital age. Thus, it calls for more attention to the aspects of a resource configuration that could accommodate and unleash the value-creation strategies.

Conceptual Framework

Drawing on the system-based and value-creation-centric approach, we first conceptualize the setting in which a focal firm's resource configuration decisions are made. A novel strategy boundary model is proposed by Priem et al. (2013), in which they integrate the RBV and the demand-side view and conceptualize the playing field for managers' strategic decisions as a system consisting of "heterogeneous raw materials" and "households" heterogeneous assortments."

Building on Priem et al. (2013), we propose a new conceptualization of a firm's resource configuration decision in a digitally enabled world. In particular, we suggest that in a digital age, every value-creation participant who is involved in the value-creation process, which we term a "value cocreator" (Vargo & Lusch, 2004), has dual identities: the resource provider and the value beneficiary. For instance, while individual customers are viewed mostly as only the beneficiaries of the value created by firms, they have also long been recognized as the providers of resources, such as money (e.g., customers' actual contribution to firms' revenue or their potential purchasing power) (Christensen & Bower, 1995), insights about product innovation (von Hippel, 1976), and customer data (Lengnick-Hall, 1996). The value-creation process is thus the process by which valuable resources of any and all value cocreators are deployed and utilized to address one or more needs of any and all value cocreators.

Figure 1 illustrates our conceptualization of the setting in which firms make resource configuration decisions to create value. The left circle of Figure 1 depicts heterogeneous resources of potential value cocreators and the diameter of the left circle depicts that boundary of resources that the focal firm could

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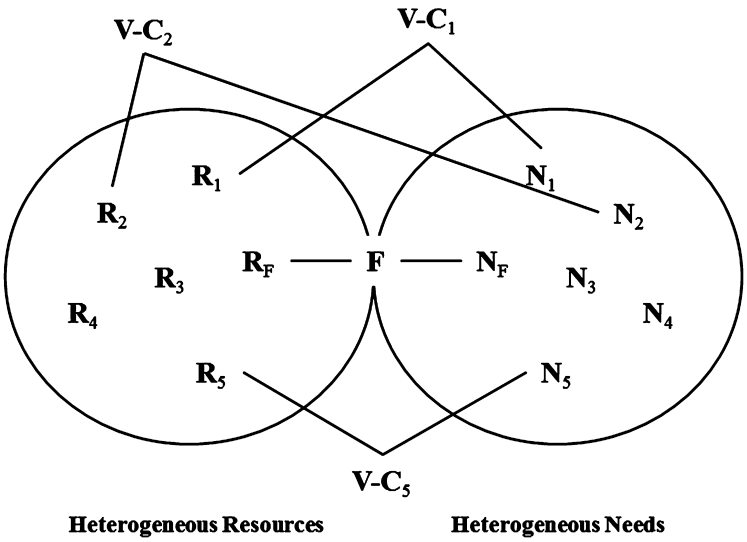

Legend: F: Focal Firm; N: Need; R: Resources; V-C: Value Cocreator; Subscript: ID of Value Cocreator

Figure 1. The conceptualization of the setting for a firm's resource configuration decisions.

access either physically or virtually. The potential value cocreators' needs are shown in the right circle. Every resource and need is associated with a potential value cocreator (e.g., N_1 and R_1 are associated with V-C_1).[1] For instance, assuming that V-C_1 is a customer of Google, N_1 could be the customer's need for online search services and R_1 could be the customer's data or advertisement eyeballs. The resource configuration decision of a focal firm is, thus, to create a structure that connects and orchestrates a selected group of value cocreators (including the focal firm, customers, and others).

The conceptualization represents a simple yet inclusive way to conceive of a firm's resource configuration decision in the digital age, as digitization enables firms to expand both the scope of resources they could access and utilize, as well as the needs they could address (e.g., the diameter of circles on both sides of Figure 1 are expanded). We suggest that value can also be created with digitally enabled, novel resource configurations, which imply heterogeneous resource inputs being accessed and utilized in novel ways and being transformed into distinct product/service outputs even though they address similar needs. Taking the car rental company Zipcar and the ride hailing company Uber as examples, both companies address the transportation needs of individuals in metropolitan cities. However, the resource configuration of Zipcar involves obtaining cars from car leasing companies and renting cars to individuals on an hourly or daily basis, while the resource configuration of Uber involves connecting passengers with individual drivers who provide a taxi-like transportation service. In particular, the resource inputs Zipcar utilizes to create value for its users include cars from car leasing companies, parking lots, and insurance plans, while the resource inputs Uber utilizes include (but are not limited to) cars, time, and individuals' driving skills. Moreover, while both resource configurations address similar customer needs, different value cocreators (e.g., resource controllers) are engaged in enabling the resource configurations. Building on the received literature (Sirmon et al., 2011) and our conceptualization as illustrated by the preceding example, we suggest that a resource configuration of a focal firm reflects its decisions on what resources to utilize; what needs are addressed with the resources; and how resources are accessed, connected, and coordinated to address the perceived needs.

As noted, the implications of digitization can be depicted as the expansion of the diameter of both circles in Figure 1. On the resource side, digitization enables the effective commercialization of underutilized resources controlled by individuals and firms alike (e.g., time, vehicles, space, and inventory) and allows the generation of new resources (e.g., data). On the need side, customers have been cultivated to

[1] R_i and N_i may each denote a vector of a set of resources and the associated needs.

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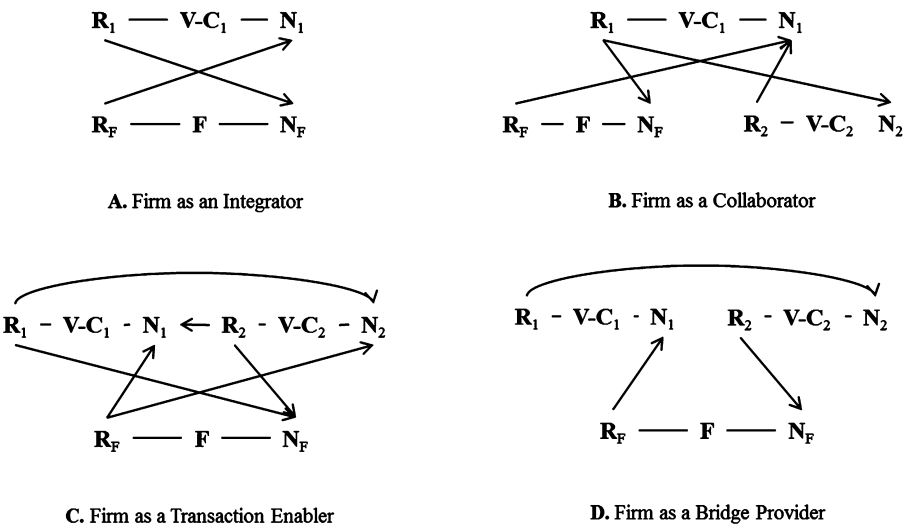

Figure 2. Resource configuration prototypes.

be "digital natives" and increasingly expect digitally enabled product features (e.g., internet, social) and service experience (e.g., real-time delivery). Accordingly, firms have increasingly valued online channels as means to market their products/services and engage with their customers and partners. The Internet of Things is commonly interpreted to imply giving a digital makeover—such as computerizing and connecting to the internet—to all sorts of physical things, including appliances, clothing, watches, cars, jet engines, factory equipment, and more.[2] Emerging technologies such as artificial intelligence (e.g., IBM's Watson) will enable reimagining of physical systems functionalities in health care, transportation, energy, and other sectors in ways that were not feasible before and, thereby, create new needs for stakeholders. In other words, the expansion of both accessible resources and addressable needs has increased significantly the variety of possible resource configurations a firm could design and enable in a digital age.

Figure 2 shows some distinct prototypes of resource configurations based on our conceptualization in order to illustrate the differences in resource configurations as well as the distinct roles of the focal firm. Prototype A illustrates the simplest resource configuration, in which the focal firm transforms the resources (R_F) to address the demand (N_1) and, as an exchange, the customers contribute to the revenue of the focal firm (N_F) with their resources (e.g., money) (R_1). Prototype B illustrates a resource configuration in which the focal firm collaborates with a partner ($V\text{-}C_2$) to address the demand (N_1). In particular, the resources that are utilized to address the demand (e.g., R_F and R_2) are not integrated inside the focal firm but are contributed separately by the focal firm and its partner(s). In this case, the partner is a "complementor" in the ecosystem of the focal firm (Adner & Kapoor, 2010) rather than its direct resource provider. The role of the focal firm is not an integrator (or a transformer) as in Prototype A, but a collaborator who discovers and engages other firms (e.g., $V\text{-}C_2$) to create value together for customers (e.g., $V\text{-}C_1$). Also, the customers contribute to the revenue of both the focal firm and its partner (N_F and N_2) with their resources (e.g., money) (R_1).

Prototype C illustrates the resource configuration in a firm-enabled two-sided market, which has been increasingly adopted by firms in the digital age (Eisenmann, Parker, & Van Alstyne, 2006; Rysman, 2009). Simply put, a firm contributes resources (R_f) to facilitate or enable transactions between two groups of value cocreators whose needs (e.g., N_1 and

[2] According to the market research firm Gartner, there were 6.4 billion Internet of Things devices in the world in 2016. By 2020, Gartner projects there will be 20.8 billion Internet of Things devices in use (Lohr, 2016).

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N_2) can be addressed by the other group's resources (e.g., R_2 and R_1). One example is Lending Club, a debt-based crowdfunding online platform, in which individual lenders provide capital to meet the needs of individual borrowers while individual borrowers pay premium interest to address the return on capital desired by the lenders. The distinct role of the focal firm as the enabler in this prototype is determined by how its resources are deployed. For instance, in the case of Lending Club, its technologies and human capital are utilized to facilitate transactions (e.g., through effective matching) between the two groups of value cocreators rather than directly addressing the needs (e.g., capital need) that resources of other value cocreators (e.g., capital) address.

Prototype D illustrates the resource configuration in a firm-bridged two-sided market. Distinct from the role of the focal firm as a transaction enabler in Prototype C, the focal firm is a bridge provider in Prototype D. As Figure 2d shows, the focal firm uses its resources (R_F) to address the need of one group of value cocreators (N_1). The focal firm further enables the utilization of the resources controlled by that group of value cocreators (R_1) to address needs of another group of value cocreators (N_2) and gets revenue (N_F) from the latter group of value cocreators (R_2). One example is Google's ad-sponsored search engine, in which consumers enjoy the search engine developed by Google for free. Google (F) in turn enables advertisers (V-C_2) to leverage the search by consumers (V-C_1) to market their products and services, and advertisers pay Google for the marketing. Whether the advertisements add value to customers is arguable and varies with the specific scenarios; for example, Google ads might serve the users' needs for information, yet Spotify's ads during its free music service undermine the users' experience. A major distinction of Prototype D versus Prototype C is that the needs of the focal firm are often satisfied only with the resources from one side of the market (e.g., R_1 is not utilized to satisfy N_f directly). It is possible that a bridge provider (Prototype D) might morph into a transaction enabler (Prototype C) once the focal firm starts to exploit resources on both sides of the market.

Indeed, Prototypes C and D have been largely enabled by the rapid expansion of both circles in Figure 1 as a result of digitization. In particular, firms' broader and easier access to resources in the digital age allows them to build two-sided markets (e.g., Prototype C) much faster than before. Moreover, the increasing variety of digitally associated needs and virtual resources (e.g., data), together with the unprecedented rate of customer acquisition enabled by digital means, significantly enhance the potential for firms to bridge a novel set of value cocreators (e.g., Prototype D) that have not been connected before. Both of them have increasingly been embraced by companies, especially start-up companies, in the digital age.

Resource Configuration as a Source of Value Creation in a Digitally Enabled World

Building on the system-based and value-creation-centric conceptualization, we explore sources of value creation that may be supported by novel resource configuration in a digitally enabled world. We note that the resource configuration Prototype A in Figure 2, in which the focal firm transforms resources to create value for customers, has been the predominant type of resource configuration for traditional "brick and mortar" firms (e.g., manufacturers) and, hence, has also been addressed by the received theories on resource configuration (Sirmon et al., 2007). Also, the importance of resource configuration Prototype B, in which firms collaborate with partners who own complementary resources, as a value-creating resource configuration has been increasingly recognized by the received literatures on alliances (Lavie, 2007; Wassmer & Dussauge, 2011) and business ecosystems (Adner & Kapoor, 2010; Ceccagnoli, Forman, Huang, & DJ, 2012). Since Prototypes C and D have been adopted by more and more firms in the digital age, particularly the "born-on-the-cloud" start-up companies (e.g., Uber, Airbnb, Snapchat), and have proven to be successful in value creation,[3] we focus on these two prototypes (*i.e.*, C & D) to discuss the sources of value creation in a digitally enabled world.

Identifying New Needs and Resources

The identification of new needs enabled by emerging digital technologies can be achieved through a combination of several processes that are high-

[3] Among the five highest-valued private companies in United States, Uber and Airbnb are based mainly on Prototype C, and Snapchat is based mainly on Prototype D.

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lighted in the received literature; these include *observing* and *synthesizing* the needs of customers and partners (Zott & Amit, 2015), *identifying* the owners of resources, and *selecting* the resources to be utilized (Helfat et al., 2007). Value is created for all value cocreators when new needs, which have not been addressed before, are added or underutilized resources are used in a more effective manner in the resource configuration. For instance, Zappos, the online shoe store, was started as a result of the founder's identification of individuals' unmet needs to compare and buy shoes through the internet, as well as the underutilized inventory of shoe stores. Instacart, the online grocery shopping platform, was started as a result of the founders' identification of the unmet need of working urban residents to save time on grocery shopping as well as the underutilized time and labor of other urban residents (e.g., those who are unemployed). We observe that the importance of identifying unmet needs and underutilized resources in value creation is elevated by digitization, as it has created new needs (which were nonexistent) and expanded firms' reach to underutilized resources (which were inaccessible).

We further suggest that there are two digitally empowered value-creation processes that facilitate the identification of new needs and underutilized resources. The first process is continuous testing, in which firms calibrate their offerings (e.g., products or services) to the unmet and changing needs of their value cocreators (e.g., customers or partners) through testing and modifying/pivoting its offerings with their value cocreators (Vargo & Lusch, 2004). This process is characterized by the fast feedback loop between a focal firm and its value cocreators and the continuous enhancements of the focal firm's offerings (Ries, 2011). It is particularly important when firms take a discovery-driven planning approach to uncover unmet needs (McGrath & MacMillan, 1995). The digitization has largely enabled this process by increasing the number of channels (e.g., APPs or websites) to conduct the testing and easing the collection, analysis, and interpretation of the data (e.g., A/B testing). We suggest that in a digital age, iterative testing enhances the efficiency and effectiveness at which new unmet needs are discovered and, hence, enhances the value-creation potential of resource configurations. Thus, we propose:

Proposition 1a: Continuous testing facilitates the focal firm's identification of new unmet needs of potential value cocreators and enhances the value creation of a focal firm's resource configuration in a digitally enabled world.

The second process is resource crowdsourcing. Afuah and Tucci (2012) have highlighted the importance of crowdsourcing as a problem-solving mechanism in certain circumstances (e.g., when the crowd is large, with some members of the crowd motivated and knowledgeable enough to self-select and solve problems). Building on their insights, we suggest that crowdsourcing might also be a mechanism through which a focal firm discovers and accesses underutilized resources at a large scale. In particular, resource crowdsourcing is characterized by a focal firm amassing a small amount of underutilized resources from a large group of resource providers and is more important when underutilized resources are scattered (or widely distributed) in a large group of value cocreators. For instance, the premise of the sharing economy (e.g., Uber and Airbnb) includes the existence of sufficient underutilized resources as well as individuals' motivation yet incapacity to monetize their underutilized resources (e.g., time or space) on their own. The process of crowdsourcing could quickly amass resources to reach a scale that enables a two-sided marketplace and allows the resource controllers to benefit from the economies of scale, which is often available only for large firms. As digitization has significantly broadened a focal firm's reach to resources and reduced the transaction cost of accessing resources, crowdsourcing is increasingly becoming an important means to discover and acquire underutilized resources. Hence, we propose:

Proposition 1b: Resource crowdsourcing facilitates the focal firm's identification of new underutilized resources of potential value cocreators and enhances the value creation of a focal firm's resource configuration in a digitally enabled world.

Matching Needs with Resources

One profound change in the digital age is the significant decrease in transaction costs due to the

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proliferation of information and enhanced transparency. As a result, the roles of traditional intermediaries (e.g., agents) have been reduced and replaced by a new generation of firms that focus on their roles as "enablers" of transactions. In particular, instead of leveraging their information advantage to arbitrage between upstream resources owners and downstream customers, the enablers often directly connect upstream resources with downstream customers (e.g., Prototype C) and leverage their information advantage to facilitate transactions. One such strategy is to enable more efficient and effective matching of transaction parties.

One source of value creation that is depicted by Prototype C is the increased efficiency and effectiveness at which needs are matched with resources. Note that the matching is a two-way process. Taking Lending Club (assuming it is F in Prototype C) as an example, the availability of capital and interest rate required by the lender (R_1) need to meet the demands of the borrower (N_2). Also, the credibility of the borrower and the capacity to return the principal and the interest (R_2) also need to meet the risk and return profile of the lender (N_1). The information and algorithm that Lending Club contributes (R_f) is to locate borrowers and lenders and to enable the match between them more efficiently and effectively. The matching of new needs and resources requires the focal firm to "generate" activities to collect information and categorize transaction partners (Zott & Amit, 2015). It might also require the focal firm to acquire, accumulate ("structure"), and enrich ("bundle") its resources (e.g., acquire and accumulate data, develop matching algorithm and strategies) (Sirmon et al., 2007). Value is created for all value cocreators when new transactions are enabled through matching and/or the efficiency and effectiveness at which the matching is conducted are enhanced.

We suggest that there are two processes that are critical in matching needs with resources in a digital age. The first is the process of sorting, in which firms develop methods and strategies to categorize both needs and resources so they can be matched in a more efficient and effective manner. For instance, Lending Club develops algorithms to categorize borrowers based on their profile information and, thereby, makes it easier for lenders to select borrowers and price their loans. AngelList, an equity-based crowdfunding online platform, enables syndication between "star" angel investors and other investors on the platform to alleviate the information asymmetry concerns of other investors and, thereby, facilitate the matching of angel investors with start-up companies. This process is characterized by the focal firm developing and refining the categorization of needs based on different value propositions (e.g., convenience and price) and the categorization of resources based on their (and their owners') characteristics (e.g., quality and return expectation). This process is particularly important when the markets for needs and resources are very "fragmented." The digitization has largely empowered this process by enabling the collection and synthetization of more data, as well as more refined and accurate categorizations. Such categorizations could further simplify and accelerate the matching process and enhance the efficiency and effectiveness at which value is created. Hence, we propose:

> *Proposition 2a: Sorting increases the efficiency and effectiveness in matching unmet needs with underutilized resources of potential value cocreators and enhances the value creation of a focal firm's resource configuration in a digitally enabled world.*

The second process that facilitates the matching of needs with resources is prospecting. It is a process in which the focal firm predicts the needs for certain resources as well as resource controllers' expectations so that it can *proactively* match them through selective advertising or making recommendations. Entrepreneurship scholars have noted that prospecting activities reflect the proactivity in individuals' entrepreneurial orientations, which could be a source of value creation (Lumpkin & Dess, 1996). Drawing on their insights, we suggest that such a process could also be a source of value creation at the organizational level. In particular, the prospecting process is characterized by a focal firm analyzing both the needs and resources of its value cocreators based on historical or current data and prioritizing the *most relevant* information when disseminating them to value cocreators. The relevance of the information is determined by its likelihood of leading to a transaction or effective matching. This process is particularly important when value cocreators are overwhelmed by information or have latent needs to be uncovered. For instance, many

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online shopping marketplaces (e.g., Amazon or eBay) make recommendations based on customers' purchase history. Online marketplaces for restaurants or food delivery services (e.g., OpenTable or Caviar) promote information about the trending restaurants or dishes, which influences customers' purchase decisions. The capability of firms to conduct prospecting has been largely elevated by big-data analytics and increased computing power made possible by digitization. Such a process not only increases the efficiency at which current needs meet resources, but also may unveil needs that are latent. Hence, it enhances the effectiveness at which existing resources are utilized and unlocks their value-creation potential. Therefore, we propose:

Proposition 2b: Prospecting increases efficiency and effectiveness in matching unmet needs with underutilized resources of potential value cocreators and enhances the value creation of a focal firm's resource configuration in a digitally enabled world.

Bridging Needs and Resources

As noted, digitization has elevated the role of customers as both the locus of value creation and as resource providers. Increasingly, firms in the digital age prioritize value creation for customers in the early stage of their development to establish their first-mover advantage, which is often difficult to dislodge due to network effects and gradually bring in other value cocreators to balance the value equation. Prototype D illustrates one scenario of this customer-centric resource configuration, in which the focal firm uses its resources (R_f) to address needs of customers (N_1) for free. Nevertheless, the focal firm brings in another value cocreator ($V\text{-}C_2$) whose needs could be addressed by customers' resources (R_1). The value cocreator ($V\text{-}C_2$) pays its resources (R_2) to the focal firm for the focal firm's complementary resources (R_f) that enable the use of customers' resources (R_1).

In Prototype D, the focal firm provides the bridge that "intermediates" two groups of value cocreators; however, unlike traditional intermediaries, who leverage their information advantage mostly to capture value, the focal firm in Prototype D creates value through digitally enabled novel combination of value cocreators. Prototype D has become increasingly prevalent since being pioneered by Google. For instance, Square Inc. (F) started by providing retail stores ($V\text{-}C_1$) with free payment processing machines to help them with their credit card processing (N_1). However, the company later brought in finance providers (e.g., institutional investors) ($V\text{-}C_2$) who would like to pay for (R_2) the access to information (R_1) about Square's retail store clients in order to provide cash advance services (N_2). Another example is Pinterest (F), which started as a visual bookmarking tool to address individuals' ($V\text{-}C_1$) needs to save and post pictures online (N_1). Yet, the company later brought in fashion brands ($V\text{-}C_2$) that would like to pay for (R_2) the views of users (R_1 and R_f), as the brands' marketing could be more effective through pictures (N_2). To bridge two groups of value cocreators, it undoubtedly requires the insights of the focal firms in discovering the needs and resources of customers ($V\text{-}C_1$) in the first place; however, what is equally important is bringing other value cocreators (e.g., $V\text{-}C_2$) into the process of *refining* and *implementing* the initial resource configuration (Zott & Amit, 2015). Moreover, the bridging role also requires the focal firms to coordinate the resources and activities of all value cocreators (Helfat et al., 2007). Value is created for all value cocreators when new value cocreators with distinct yet complementary resources and needs are added into the configuration and the overall complementarity of the resource configuration is enhanced.

We suggest that there are two processes that are critical in bridging needs and resources in a digital age. The first is the process of grafting. It is a process in which a focal firm experiments with new combinations of heretofore unconnected (or less connected) resources and needs. For instance, Square has been experimenting with connecting its retail store clients with many other value cocreators that have not had effective connections with retail stores. Such value cocreators include, but are not limited to, financial service providers (e.g., credit report services), business service providers (e.g., tax service), and logistics service providers (e.g., on-demand delivery service). The objective of the grafting is to identify unique complementarity between resources and needs and enhance the value creation of the resource configuration.

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Distinct from a typical problem-solving process, the grafting process often starts with resources at hand and searches for needs of new value cocreators that enable firms to leverage the resources to create more value (Hitt et al., 2011). The process involves a lot of creativity and serendipity, and it is particularly important when firms have the capabilities to access resources at a faster pace and at a larger scale. The digitization empowers firms with that capability through allowing firms to reach resource controllers (e.g., customers) at an unprecedented pace and to experiment with new combinations of resources and needs with minimum costs (Ries, 2011). The unique complementarity a focal firm identifies and realizes leads to value creation for all value cocreators. Hence, we propose:

Proposition 3a: Grafting enables the creation of the unique complementarity among the value cocreators that the focal firm bridges and enhances the value creation of a focal firm's resource configuration in a digitally enabled world.

The second process that enables a firm to bridge needs and resources is streamlining. It is the process in which the focal firm provides or connects additional resources to enable or enrich the unique and novel complementarity they create through bridging needs and resources. For instance, Pinterest identifies the unique complementarity between its fashion-chasing users and the fashion brands, who commit substantial resources to attract and engage with such prospective customers. While the fashion brands might have the resources (e.g., image of their fashion goods) that Pinterest's fashion-chasing users need, their current marketing channels (e.g., exclusive shops) do not allow them to reach these customers effectively. Pinterest enriches the marketing of fashion brands through collecting trending and customer preference information, which enables more targeted and effective image-based marketing. Moreover, Pinterest connects image data analytics and data solution companies to facilitate customers' purchase of fashion brands through images. The streamlining process reduces the incompatibilities and uncertainties as a result of the unique and novel complementarity the bridging process creates. The mitigation of the uncertainties and incompatibility is critical in realizing the full value-creation potential of the firm's resource configuration. The digitization has largely enabled the streamlining process by increasing the variety of digitally enabled resources (e.g., data in multiple digital formats), which could be utilized to complement existing resources and address the incompatibility issue. These digitally enabled resources indeed enable the creation or enrichment of the unique complementarity between resource bundles and unmet needs that a firm bridges. Hence, we propose:

Proposition 3b: Streamlining enables the unique and novel complementarity among the value cocreators that the focal firm bridges and enhances the value creation of a focal firm's resource configuration in a digitally enabled world.

Conclusion

The digitization of businesses allows entrepreneurs and managers alike to reimagine the boundary of their resource configurations and, thereby, enhance the value-creation potential of resources. Figure 3 summarizes our framework on resource configuration in a digitally enabled world. The framework we propose highlights the importance of adopting a system-based and value-creation-centric perspective that considers the needs and resources of all value cocreators when conceiving of resource configuration. The resource-configuration prototypes illustrate distinct means of value creation, which are enabled by the digitization of businesses. Building on these prototypes as well as on the received literatures on resource orchestration (Sirmon et al., 2011) and business-model design (Zott & Amit, 2015), we discuss distinct sources of value creation (e.g., discovering new needs and resources, matching needs with resources, bridging needs and resources) in the digital era as well as the processes that enable the value creation, which we hope will inspire new value-creation strategies by both scholars and practitioners.

Our framework intends to provide the foundation for conceiving of and designing novel ways to link heterogeneous resources with heterogeneous needs in a digitally enabled world. In line with the business

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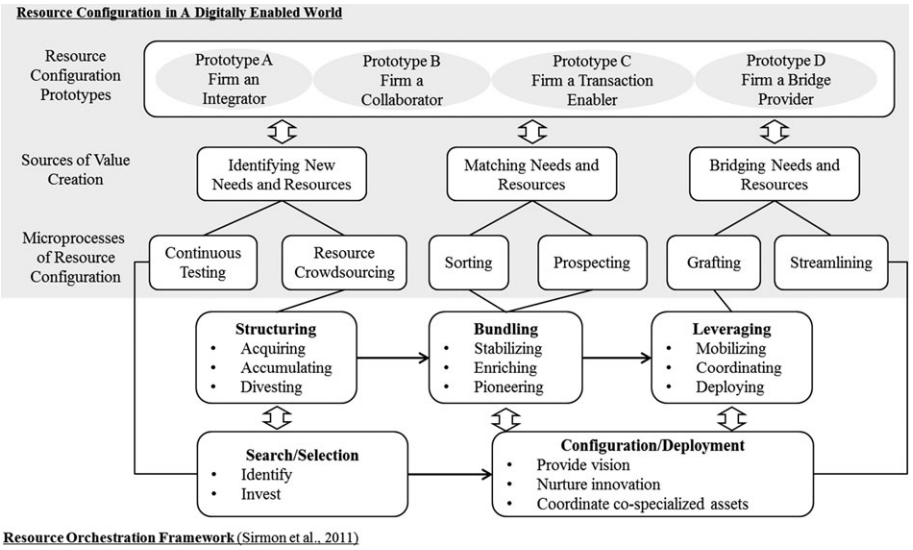

Figure 3. Framework of resource configuration in a digitally enabled world.

model innovation literature (Amit & Zott, 2001, 2012), we suggest that the novelty of a digitally powered resource configuration may come from: (a) the newness of the needs to be met and/or the newness of resources to be more effectively utilized, (b) the innovative ways through which the matching of resources and needs are enabled and more efficiently and effectively managed, and (c) the uniqueness of the complementarity among all value cocreators that the focal firm bridges and involves in the value-creation process. We note that the specific resource configuration prototypes we use illustrate sources of value creation. They are templates (Amit & Zott, 2015) that could be modified, combined, integrated, or even disrupted so that novel resource configuration could arise through "the gales of creative destruction" (Schumpeter, 1934).

We also intend to advance the strategic entrepreneurship literature through introducing digitization as an important contextual element for firms when conceiving of and designing their resource configurations. In particular, building on the extant framework of how strategic entrepreneurship could be achieved through resource orchestration (Hitt et al., 2011), we propose specific microresource configuration processes, which largely have been enabled (e.g., crowdsourcing) or enhanced (e.g., continuous testing) by digitization. In Figure 3, we illustrate how our resource configuration processes link to the processes in the resource orchestration framework. As Figure 3 depicts, we anchor our process model on the resource orchestration framework (Sirmon et al., 2011) and further crystalize the underlying microprocesses that have been significantly empowered by digitization. In particular, we illustrate how these microprocesses are, on the one hand, rooted in the existing resource orchestration framework, and, on the other hand, linked with distinct digitally enabled ways to create value through resource configuration. We thereby enrich the strategic entrepreneurship literature by highlighting the processes through which existing resources could be exploited to explore new opportunities in the digital age. In addition, our framework also builds linkages among resource configuration prototypes, their sources of value creation, and the underlying resource orchestration processes in the digital age. By incorporating the ramifications of digitization into the existing resource orchestration framework, we extend the framework to a digitally enabled world.

Future studies may advance our conceptualization in several ways. First, while acknowledging the fact that the needs and resources in our framework are representations of a vector of needs and resources, we have not explicitly addressed the heterogeneity of resources and needs that are associated with each value cocreator. In particular, each value cocreator (e.g., a customer) often has multiple needs (e.g., quality, ease of use) and controls multiple types of resources (e.g., money, data, and knowledge). Factoring such heterogeneity into the

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conceptualization would make it more complex yet theoretically more interesting and practical. Second, our conceptual framework assumes that there are identifiable needs of value cocreators. In future work, one may consider extending the framework to allow for the creation of new entrepreneurial opportunities. Third, the prototypes we develop are meant to be illustrative rather than exhaustive. Moreover, in practice we often observe variations or combinations of these prototypes. For instance, Pinterest (our example for Prototype D) later brought in another group of value cocreators, which are data analytics companies, to provide their complementary resources (e.g., image recognition and analytics technologies) to help brands better collect customer data and convert picture viewers into buyers. The data analytics companies are collaborators of Pinterest, which transforms its resource configuration to become a combination of Prototypes B and D. Future studies could draw on our prototypes to examine the variations in resource configuration prototypes enabled by digitization and to further understand their implications on value creation. Finally, while we have suggested sources of value creation by distinct, digitally enabled resource configuration prototypes, we have not addressed explicitly the capabilities and processes the focal firm needs in order to exploit these sources of value creation. These and related questions may be addressed in future studies.

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Social Entrepreneurship and the Development Paradox of Prosocial Motivation: A Cautionary Tale

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Research summary: *We provide an ethnographic account of how social entrepreneurs in the Safe Water for Africa program made sense of hybrid goods, as well as how and why those understandings affected both the social enterprise's marketing mix and stakeholders' expectations of the enterprise's rights and responsibilities. We find that output maximizing-behavior enabled by prosocial motivation elicits a psychological feeling of entitlement to a socio-emotional return on investment in the form of beneficiary gratitude. When external stakeholders consider them justified, these feelings become moral norms that can induce or prevent the institutionalization of a suboptimal path of development, depending on the motivations of competitors. We show that social entrepreneurs' emotional attachment can have consequences for development, challenging the functionalist conception of social enterprise as a temporary patch to institutional voids.*

Managerial summary: *We present a detailed account of the Safe Water for Africa program that examines: (a) how the program's stakeholders made sense of water as a "hybrid good;" and (b) how these understandings shaped the social entrepreneurs' attitudes, the social enterprise's marketing mix, and stakeholder's expectations of the enterprise's rights and responsibilities. We find that the same motivation that prompted social entrepreneurs to act on behalf of those without safe water elicited a sense of entitlement to a "return on investment" in the form of beneficiary gratitude. If reciprocated, these feelings may become normalized and, depending on competitors' motives, hinder long-term development efforts by precluding their entry.* Copyright © 2017 Strategic Management Society.

Around the same time that *Strategic Entrepreneurship Journal* was being formed, Nicholas Negroponte was in the throes of creating One Laptop Per Child (OLPC), a social enterprise (SE) seeking to create and distribute $100 laptops to poor children in least developed countries (LDCs).[1] Backed by the United Nations Development Program, OLPC looked promising enough to attract potential partnerships with Intel in 2007 and Microsoft in 2008. However, tension between OLPC and Intel grew as Negroponte accused Intel of dumping their Classmate PCs, ultimately dissolving the partnership in January 2008 (Kirkpatrick, 2008a). Controversy continued on May 23, 2008, as OLPC entered into an agreement with Microsoft to run Windows instead of XO's open-source operating system (Kirkpatrick, 2008b). This time key personnel resigned in protest, and Negroponte refused to share the stage with Microsoft executives at various public relations events. Journalists asked at the time, "Did Negroponte really expect [Intel and Microsoft] to stand idly by while he introduced a product that would marginalize them" (Mitchell, 2007)? In fact, these journalists appeared to see what Negroponte could or would not: OLPC was already having the transformative effect on the

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[1] At the time, the typical laptop ran about $1,500.

computer industry for which it was ostensibly created. "There's no question," noted one journalist, "OLPC has had a catalytic effect on the industry so far. With its partnership with Microsoft, it could finally start having the effect Negroponte has always wanted it to have on kids" (Kirkpatrick, 2008b). Another pointed out, "One good thing has come of this: The initiative has focused the attention of Intel and Microsoft on low-cost laptops as never before" (Mitchell, 2007).

According to social entrepreneurship theorists, "social entrepreneurs are concerned with correcting perceived market and government failures—their focus is on achieving sustainable solutions instead of achieving sustainable advantage" (Santos, 2012, p. 345); social entrepreneurs are interested "not primarily on achieving a competitive economic advantage, but on spreading the social innovation as widely as possible in order to maximize social change and solve the problems that [the social enterprise] aims to address (Chell, 2007; Drayton, 2002)" (Perrini, Vurro, & Costanzo, 2010, p. 525). Social enterprises like OLPC are the only organizational form that seeks to maximize value creation while satisficing on value capture (Agafonow, 2014), and social entrepreneurs like Negroponte engage in it because of prosocial motives (Miller, Grimes, McMullen, & Vogus, 2012).

Without prosocial motives, development problems, such as the underprovision of so-called public goods, are likely to persist because of a lack of financial incentives caused by institutional voids (Mair & Martí, 2006). That is, few (if any) would offer a $100 laptop to poor children in LDCs because market failure would imply that firms lacked the financial incentives to do so; government failure would imply that government agencies lacked the tax revenue base to pay for them; and charities would lack the sustained source of revenue needed to offer the solution in perpetuity. Hence, there is a need for SEs like OLPC and social entrepreneurs like Negroponte who draw upon their prosocial motives to supplement what would otherwise be insufficient incentive to act.

These prosocial motives encourage entrepreneurial action, effectively creating social value by creating more value than the SE can capture. In addition, some of the value they create is financial; thus, SEs can contribute to institutional development by aiding the formation of a market as well (McMullen, 2011). Such reasoning leads Santos (2012, p. 346) to suggest:

> *"The greatest success for a social entrepreneur would be to tackle a problem with positive externalities in such a way that the externality is internalized for the benefit of society and the work of the social entrepreneur is no longer necessary. Note that this same outcome of redundancy would represent a failure for commercial entrepreneurs seeking to maximize value capture through sustainable advantage for their venture. While true commercial entrepreneurs who care for value capture try to become indispensable, true social entrepreneurs who care for value creation try to make themselves dispensable. Naturally, social entrepreneurs often get emotionally attached to their organization and may focus on sustaining the organization more than solving the problem for society. Yet, true social entrepreneurs should invite competition instead of resisting it, since replication of the innovative solutions will increase the value created to society."*

Therefore, SE is often conceived of as an institutional patch that arguably succeeds by rendering itself no longer necessary, implying that it is temporary (e.g., Mair & Martí, 2009; McMullen, 2011; Santos, 2012). But if this is true, then how do we reconcile it with Negroponte's reaction to Intel's and Microsoft's foray into the LDC market for inexpensive laptops? If the focus of social entrepreneurship is truly on value creation, not value capture, and SE is indeed an institutional patch, then would it not be reasonable to expect Negroponte to jump for joy and declare his mission accomplished upon any announcement that multinational corporations (MNCs) like Intel or Microsoft have taken up his cross to bear?

Reactions like Negroponte's to the threat of market entry by competitors appear not only inconsistent with social value creation and the prosocial motives from which it ostensibly flows, but potentially indicative of the paradoxical effect that prosocial motives play in encouraging social value creation and facilitating institutional development via SE. W. K. Smith and Lewis (2011, p. 382) define a paradox as "contradictory yet interrelated elements that exist simultaneously and

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persist over time." They add, "This definition highlights two components of paradox: (1) underlying tensions—that is, elements that seem logical individually but inconsistent and even absurd when juxtaposed—and (2) responses that embrace tensions simultaneously (Lewis, 2000)" (Smith & Lewis, 2011, p. 382). Social entrepreneurship, and SE in particular, is often presented by the literature as the paragon of paradox, mixing two mutually exclusive views. Agafonow (2015, p. 1046) notes:

> *"A social enterprise must either maximize profits to have a chance to make investments that have an impact, by attracting the capital needed to scale up, or must avoid profit maximization to prevent the mission drift that occurs when it forgoes less profitable opportunities that would benefit disadvantaged people. In other words, a social enterprise either aims at value capture to achieve impact investments or prevents mission drift by avoiding capture."*

Paradox theory is ideally suited for examining precisely the kind of organizational tensions that Agafonow (2015) highlights and that are commonly associated with hybrid identities and multiple institutional logics (Battilana & Lee, 2014; Kraatz & Block, 2008). W. K. Smith and Lewis (2011) note that this is because paradox theory shifts the focus away from inquiries into which motivators are effective under certain conditions (e.g. Ryan & Deci, 2000; Crocker, 2008) to questions of "how individuals engage in these competing drives simultaneously" (p. 397).

In this study, we provide an ethnographic account of how the attitudes of a social enterprise's stakeholders evolved in response to feedback on their prosocially motivated entrepreneurial actions. The study investigates how the Safe Water for Africa (SWA) program sacrificed value capture because of prosocial motivation, enabling entrepreneurial action and output-maximizing behavior. We describe the social enterprise and its stakeholders and provide a detailed account of the dynamics leading to the emergence of a feeling of entitlement to a socio-emotional return on investment in the form of beneficiary gratitude or customer loyalty. Our account depicts how feelings of entitlement can become moral norms that may paradoxically preclude market entry by new competitors offering similar or even superior solutions. Contrary to the functionalistic conception of social enterprise as a temporary patch for institutional voids caused by market and government failure in LDCs, our findings suggest that the feelings of entitlement evoked by prosocial motivation can contribute to the long-term institutionalization of social enterprise, inducing or preventing a suboptimal path of development depending on the motives of new organizational rivals.

Social Enterprise as Temporary Institutional Patch

Institutional Voids, LDCs, and MNCs

Inquiries into how organizations might intentionally address institutional voids have been of significant interest to social entrepreneurship (Mair & Martí, 2009; Mair, Martí, & Ventresca, 2012) and development entrepreneurship scholars (Dorado & Ventresca, 2013; McMullen, 2011). Building on Khanna and Palepu (1997), Webb and colleagues (2011, p. 548) define formal institutional voids as "poorly developed or wholly undeveloped formal institutions and infrastructures that can significantly reduce transaction efficiency." The presence of an institutional void does not mean an absence of institutions in a given context; rather, institutional voids exist "in the presence of plural, often contending, institutional arrangements" (Mair et al., 2012, p. 822), many of which can be characterized as informal or cultural. Thus, formal institutional voids often prevent market development, frustrate their functioning, or prevent certain individuals from participating altogether (Mair & Martí, 2009).

Although institutional voids can occur anywhere, they are perhaps most problematic in LDCs, where they hinder the formation and growth of inclusive markets for private goods and services (McMullen, 2011) and stifle the provision of public goods (Dean & McMullen, 2007). Public goods are non-excludible—open to all individuals regardless of whether an individual has paid for such use (Cowen, 1988)—and non-rivalrous—one person's use does not diminish the amount or quality of the good available to others (Randall, 1993). Common

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examples include knowledge, national security, and common languages. Through the collection and utilization of tax revenue, governments are often expected to provide public goods and to "build and maintain the necessary institutions for the existence and the functioning of markets" (Mair & Martí, 2009, p. 422). When governments are unwilling or unable to fulfill these expectations, "a compensatory social structure is needed to spur market formation and operation" (Mair et al., 2012, p. 821). Business groups (Khanna & Palepu, 2000) often serve as this "compensatory social structure."

Institutional voids have grown in interest to MNCs aiming to sustain their growth through the emerging markets situated within LDCs. These voids, however, often present a number of tensions for MNCs, such as growing demand for critical resources (like water) to which many citizens may lack access. This can trigger an increasing demand for MNC accountability by the public as well as a need for MNCs to ensure their social license to operate in that country. If MNCs are able to overcome these and other tensions, however, they become well positioned to supply the growing demand for their products—demand made possible by economic growth. Further, with the accompanying increase in disposable income often comes an increase in tax revenue such that the government is better equipped to provide utilities through formal institutions (North, 1990). Thus, for some goods, economic growth diminishes the institutional void from both market failure and government failure concurrently. As a result, many MNCs have sought to shift their attention from promoting corporate social responsibility (CSR) to facilitating development initiatives. Perhaps nowhere is this more pronounced than with the most critical natural resource of all—water—in the global region promising the most economic growth over the next 50 years—sub-Saharan Africa—for some of the most influential MNCs on the planet—The Coca-Cola Company and Diageo, PLC (aka Guinness).

Water is Not a Public Good

Despite rampant confusion within the economics (Boudreaux, 2016; Krugman, 2016; Worstall, 2016), management (e.g., Fan & Zietsma, in press), and social entrepreneurship literatures (e.g., Hoogendoorn, 2016), water, like most of the goods and services provided by social enterprises (Agafonow, 2015), is not technically a public good. Not only is water clearly excludible and rivalrous, but also it possesses characteristics similar to private goods, such as clothes, food, cars, books, etc., that are typically traded in markets to ensure they are allocated to their highest value uses.

Unlike these private, marketable goods, however, water has some unique characteristics that can lead to inefficient or inequitable allocations. For example, in 2010, the United Nations declared access to safe drinking water and sanitation to be a "human right." As a human right, water cannot be treated the same way as other private goods because the transfer of water to those who value it most highly may be morally unacceptable if this transfer means that some people who need it to survive no longer have access. After basic water needs have been satisfied, however, additional water use is no longer a basic human right. When water use exceeds around 50-100 liters (13-26 gallons) per persons per day, it becomes a private good and so is most efficiently allocated, like other private goods, through markets.

All life depends on water and because of its dual nature as a human right and a private good, as well as competing demands for its use, debate continues about how finite and increasingly scarce water resources should be allocated and by whom. Therefore, it is not difficult to understand why multinational beverage companies around the world have invested heavily in (a) sustainability initiatives that seek to reduce consumption of this critical resource (Karnani, 2014; Kent & Ignatius, 2011; Raman, 2007) and (b) CSR initiatives that seek to ensure a continuing social license to operate (Dahlsrud, 2008; Ite, 2004; N. C. Smith, 2003). This is especially true in developing countries where a lack of infrastructure often denies large segments of the population access to municipal water supplies or individuals lack the ability to pay for water (Lambooy, 2011). In such contexts, MNCs like Coca-Cola have experienced intense scrutiny and have sought to counter them directly through water-related CSR initiatives and indirectly through the charitable activities of corporate-funded philanthropic foundations (Karnani, 2014; Lambooy, 2011). Despite significant investments, however, even Coca-Cola executives, such as

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Philippe Ayivor, have gradually become aware of the possibility that "there might not be enough money in the entire world to enable universal access to safe water" and, therefore, identification of an operationally sustainable business solution is needed for true, lasting change.

Hybrid Organizations for Hybrid Goods

MNCs like Coca-Cola have begun to take an increasingly collaborative approach to tackling development problems like access to safe water via social entrepreneurship. According to Santos (2012, pp. 345-346), "social entrepreneurship is not specifically about creating market mechanisms or securing government subsidies or creating a social enterprise, it is about crafting effective and sustainable solutions using whatever combination of institutional means is deemed effective." Santos (p. 344) adds,

> *"Economic agents who, due to their motivation to create value without concern for the amount they capture, will enter areas of activity where the more severe market and government failures occur […] these are usually areas with neglected positive externalities affecting disadvantaged populations."*

As Montgomery, Dacin, and Dacin (2012, p. 385) point out, however, the economic agency of which Santos speaks is not necessarily isolated to a particular individual like Nicholas Negroponte; it may also manifest as a collective effort that not only involves a "multitude of external actors that often collaborate to form and support entrepreneurial ventures" but also "happens across levels and between actors, drawing on markets, movements and alliances as templates for success." Thus, we use the term social entrepreneur throughout this article to refer to any of the internal stakeholders whose efforts were intended to advance the partnership's objective of creating value for the disadvantaged.

With its emphasis on innovative approaches to creating social as well as financial value (McMullen & Warnick, 2016), social entrepreneurship would seem ideally suited for the provision of *hybrid goods*—defined as goods that exhibit characteristics of private goods after a certain threshold is met, but until that point, are typically considered human rights. Examples include water, food, shelter, and possibly basic health care. Blending both market-based and social welfare-based institutional logics (Battilana & Lee, 2014), SE appears to be equipped to address both the private and public properties of hybrid goods while offering a natural match of social problem and business solution (Grimes, McMullen, Vogus, & Miller, 2013). Such thinking inspired both the founding of WaterHealth International (WHI) in 1995, an SE created to provide safe water through micro-utilities known as WaterHealth centers, as well as Coca-Cola's belief that these centers might be the vehicle needed to sustainably provide the poor access to safe water. In 2011, the two formed the SWA strategic partnership. This program brought together MNCs, charitable foundations, international aid agencies, municipal governments, local leaders and politicians, and social enterprise to provide the poor access to safe water in Ghana, Nigeria, and Liberia via WaterHealth centers.

The SWA-sponsored centers of West Africa are emblematic of a growing challenge facing MNCs, international aid agencies, and governments regarding hybrid goods, particularly in LDCs. Are hybrid goods primarily human rights to be provided by the public sector once it has the tax revenue needed to do so? Or are they primarily private goods to be provided by the private sector once the market has the ability to pay the offering price that businesses must charge to remain viable? Because of formal institutional voids from a combination of government failure and market failure, social entrepreneurship theorists have argued that the provision of so-called public goods through SEs tends to be a second-best strategy that serves as an institutional patch until the government has the revenue to meet its responsibility (McMullen, 2011; Santos, 2012). In LDCs experiencing rapid economic growth, the potential for institutional change suggests that the institutional patch offered by SE may be temporary. Thus, Agafonow (2014, pp. 710-711) suggests that "social entrepreneurs will be displaced in the long term to domains where the market does not perform well and the potential for value capture is limited."

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Institutionalist Views of SE

If SEs are merely a temporary patch for a long-term solution involving the more traditional organizational forms associated with formal institutions, then theory might suggest that government has the right to displace SEs, forcing them to move or shutdown in the future, and that government may even be obligated to regulate these organizations in the interim. Would social entrepreneurs necessarily endorse this view? If SEs assume responsibility for serving the water needs of their customers and do so successfully, then do SE managers and employees subscribe to the notion that their rights are subservient to a public sector that left these segments of the population without service for years? Conversely, if SEs are merely a patch until economic growth raises disposable incomes enough to create demand, then might market theory imply that new businesses have the right to profit from these individuals as soon as they have the purchasing power to become customers? Would social entrepreneurs agree with this premise? Arguably, these new customers may owe their lives to the social entrepreneurs and SEs that served them when others would not; as a result, might SEs expect something more than gratitude or loyalty from them, such as a statutory monopoly in the same spirit that the public grants a temporary monopoly to patent holders for contributing new knowledge to the public good? Clearly, these questions introduce the potential for conflict between theory and practice, depending upon the motives, expectations, and understandings that stakeholders bring with them to the hybrid goods problem.

Initiation of entrepreneurial action may not require social entrepreneurs to answer these questions, but the decision to invite or resist competitors does. Upon entry of competitors, the social entrepreneur's understanding of SE's institutional role in providing hybrid goods is likely to reveal itself in both stakeholders' attitudes and in the actions the SE takes. Whether these attitudes and actions comply with theorists' expectations likely depends on which view of social entrepreneurship is employed: (a) social entrepreneurship theory of an economic bent emphasizes the institutional role that social enterprise likely plays in development (henceforth the functionalist view); (b) organizational theory explores the possibilities and problems encountered by hybrid organizations given existing institutions (henceforth the interpretivist view); or (c) social entrepreneurship research of a managerial bent emphasizes the motivations, objectives, and experiences of the stakeholders involved in social enterprise (henceforth the behavioralist view). Subject to varying degrees of institutional influence, these three views of social entrepreneurship share a common focus on social enterprise, but they employ a different level of abstraction, conception of the social entrepreneur, and understanding of the importance of *a priori* expectations in the formation of entrepreneurial attitudes and action.

The functionalist view often suggests that all aspects of a society serve a function and are necessary for the survival of that society (Burrell and Morgan, 2017). This view portrays social entrepreneurs as systemic agents involved in institutional change and development. These agents need not create an organization to enact this change and may include policy makers or bureaucrats (e.g., Dorado & Ventresca, 2013). However, social entrepreneurship, as epitomized by SE, is typically considered to be an institution whose purpose is unique and distinctive from the profit-seeking firms of the market, the agencies of government, or the charities of the citizen sector (e.g., Grimes et al., 2013; Santos, 2012). Action, according to this view, requires the promise of external rewards as well as intrinsic or prosocial motivations, such as compassion or empathy (Miller et al., 2012), and, thus, places heavy emphasis on favorable *a priori* expectations, lest entrepreneurial attitude—i.e., how favorable or unfavorable an individual's appraisal of entrepreneurial behavior is (Kautonen, Tornikoski, & Kibler, 2011)—and the entrepreneurial action it encourages suffer.

Scholars of the interpretivist view study the stability of behavior from the individual's viewpoint. Taking a slightly less abstract view of social entrepreneurship and SE than their functionalist counterparts, advocates of this approach tend to conceive of social entrepreneurs as individuals working alone or together to create social enterprise. This social enterprise, in turn, is portrayed as a hybrid organization, which mixes different logics associated with distinct institutions (e.g., Battilana & Lee, 2014). This view seeks to understand how actors reconcile the tensions or paradoxes arising from competing or contradictory institutional logics (e.g., Battilana & Dorado, 2010), defined as the

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"rules of the game" that prescribe and proscribe individual and organizational behavior within specific institutional settings (Thornton, Ocasio, & Lounsbury, 2012). Examining organizational dilemmas like mission drift, members of this school wrestle with the fact that the expectations and motives responsible for enabling entrepreneurial action can change, revealing incentives that actors were either unaware of when they initiated action or which did not exist when action was initiated but now do because of institutional change (Ebrahim, Battilana, & Mair, 2014). Thus, attitudes—entrepreneurial or otherwise—can change as a result of changes in the institutional environment itself or as a result of learning about oneself, one's institutional environment, or oneself in relation to one's institutional environment.

Lastly, the behavioralist view is the least abstract of the three approaches, depicting social entrepreneurs not solely as agents of some social system or organization, but as autonomous individuals (e.g., Austin, Stevenson, & Wei-Skillern, 2006; Hockerts, 2015). It is concerned with institutions only to the degree that they indirectly proscribe or prescribe entrepreneurial action through some more proximate construct—e.g., laws, norms, or beliefs. This view does not deny the influence of institutions, but instead of examining different entrepreneurial responses across different institutional contexts (e.g., Hoogendoorn, 2016; McMullen, Bagby, & Palich, 2008), it tends to examine perceptions of institutions in terms of the payoff structures their proxies present decision makers within a particular institutional context (e.g., Collins, McMullen, & Reutzel, 2016; Zacharakis, McMullen, & Shepherd, 2007). Institutional change is, therefore, a result of entrepreneurial action, but is not always conceived of as a conscious objective of the entrepreneur. Individuals may possess an entrepreneurial attitude in response to the current situation, viewing that situation as permanent while not realizing that through their actions, they may alter the payoff structures associated with it and in so doing, alter the institutions in which those payoff structures are embedded (North, 1990, 2005; Schumpeter, 1934, 1942). Thus, participants and the scholars who study them can know that laws, norms, or beliefs influence attitudes and action without necessarily acknowledging the institutional underpinnings of these concepts.

Emotional Attachment, Increased Awareness, or Dissonant Loyalty?

Despite the functionalist assumption that social entrepreneurial attitudes toward SE are relatively constant, social entrepreneurs can become emotionally attached to the organizations they create (Santos, 2012). Perrini et al. (2010, p. 529) point out that

> *"…anyone interested in initiating an SE process should be aware of the relation between his/her personal attitudes and abilities and the evolution of the process. In this sense, the ability to articulate a clear vision of the project is the necessary antecedent of all subsequent steps, from resource collection to consensus. Personal commitment is a double-edged sword. It can hinder the long-term sustainability of the organization, in that over time it brings about a progressive reification of the organization itself."*

Indeed, a number of functionalist studies turn to emotional attachment as an explanation of behavior that is considered inconsistent with the prosocial developmental purpose that this functionalistic view ascribes to SE. Yet, Fan and Zietsma (in press, p. 8) observe that, "A blind spot affecting both the institutional theory of collective governance and the institutional logics perspective is the emotional attachment that actors feel towards the logic they are embedded within." The emotional attachment to which Fan and Zietsma refer is constancy, not change, as one clings to the institutional logic that encouraged action in the first place. Therefore, even though functionalists tend to conceive of SE as an institutional archetype, the growing emotional attachment described by Santos, Perrini and colleagues and others shifts the conception of SE from archetypical organizational form to an actual organization; in so doing, it unwittingly substitutes an interpretivist view of SE to account for the unexpected discrepancy between social entrepreneurs' theoretically presumed prosocial motivation for engaging in SE and behavioral observations of what appears to be a presumed entitlement to protection from competitors.

There are, however, alternative theoretical mechanisms that can rationally explain reactions

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like Negroponte's attitude toward competitors while enabling reconciliation of the conflicting theoretical expectations associated with emotional attachment described earlier. Hirschman (1958, 1970), for example, identifies two kinds of institutional conditions capable of triggering actors' motivation to engage in developmental initiatives like SEs: increased public awareness and dissonant loyalty (Dorado & Ventresca, 2013). Increased public awareness makes it "socially costly for [people] to disregard the problem," whereas dissonant loyalty "influences engagement by creating unexpectedly a sense of membership into a particular collective increasing their willingness to advance the interests of this collective." Together, increased public awareness and dissonant loyalty could be expected to alter the prosocial cost–benefit calculus of involvement in SE, enticing others to join or improving the payoff structure for those already involved. Dorado and Ventresca (2013, p. 74) add, "Though actors with social aspirations may be more likely than those with economic aspirations to engage in endeavors serving a public instead of a private goal, the presence of Hirschman-informed institutional conditions stirs up actors' motivation redefining the likelihood of their engagement, regardless of initial aspirations." Such Hirschman-informed institutional conditions "organize and promote the 'possibility for' the engagement of any one everyday, reasonably-skilled individual" (Dorado & Ventresca, 2013, p. 73) such that the likelihood of entrepreneurial action is not dependent on heroic social entrepreneurs (e.g., Leadbeater, 1997; Peredo & McLean, 2006; Waddock & Post, 1991; Westley, 1991) but enabled by everyday reflective practitioners (e.g., Evans, 1995; Rodrik, 2008; Schon, 1983, 1987; Tendler, 1997).

A social entrepreneur engaged in SE because of dissonant loyalty may experience distrust and an attitude of skepticism about the motives of competitors. For example, Negroponte could have believed Microsoft and Intel were responding because of increasing awareness resulting from OLPC's entrepreneurial actions. Instead of, or in addition to, feeling the attachment to OLPC that could make his exit emotionally difficult, Negroponte could simply have been skeptical of what Microsoft and Intel's actions would be once OLPC was no longer around. For example, their entry could have been a form of predatory pricing intended to eliminate the demand for OLPC's laptops until OLPC was forced to exit the market, at which time Microsoft and Intel would be at liberty to once again increase their prices. Whether either firm would actually do this would only be hypothetically relevant because the social entrepreneur's assumption that profit-seeking firms operate according to such a logic would be sufficient for him to generate dissonant loyalty to SE as an alternative organizational form and to worry about these firms' entry into the market. In such a scenario, emotional attachment might ensure: (a) an unwavering commitment to SE as an archetypical organizational form and (b) a growing commitment to SE as an actual organization. Both would encourage a reluctance to exit, like that exhibited by Negroponte.

Whether entrepreneurial attitudes toward SE discourage entrepreneurial exit because of emotional attachment to the actual organization or because of emotional attachment to the institutional logic that encouraged entrepreneurial action via SE, the outcome according to functionalism remains the same: SE will render itself unnecessary by temporarily filling and, thus, contributing to the elimination of, institutional voids that will eventually be satisfied by traditional institutional solutions such as firms or government agencies. However, determining whether responses like Negroponte's constitute some paradox or whether they can be explained via social entrepreneurs' understanding of hybrid goods and the future rights and responsibilities they associate with addressing them is essential to theory and practice if we hope to advise social entrepreneurs on how they might exit gracefully and without fear that doing so will leave their beneficiaries, customers, and communities vulnerable to neglect or exploitation by less benevolently motivated competitors.

Considering the value of alternative tools, such as cases, to paradox studies (Andriopoulos & Lewis, 2009), our ethnography of the Safe Water for Africa program examines social enterprise as output-maximizing behavior and, thus, as a potential conduit for development in LDCs. However, given the potential for myriad "understandings" of hybrid goods and the prioritizations of the rights and responsibilities associated with them, our ethnographic account asked three interrelated research questions: *How do social enterprises and their stakeholders make sense of hybrid goods? How do these understandings affect the social*

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entrepreneurs' attitudes and SEs' actions (both initially and over time)? And, how do these attitudes and actions affect both the SE and its stakeholders' understandings of their future rights and responsibilities? In doing so, we offer insight into the nature of the emotional attachment experienced by the internal and external stakeholders of SE and question whether it is necessarily the frivolous obstacle to graceful social entrepreneurial exit that it is often portrayed to be by the functionalist conception of social enterprise.

Methods

The Safe Water for Africa program

According to the WHO/UNICEF Joint Monitoring Program for Water Supply and Sanitation, "the water and sanitation position in West/Central Africa is of particular urgency, as the region has the highest under-five mortality rate of all developing regions" (WHO/UNICEF, 2012) (https://www.unicef.org/wcaro/english/overview_4554.html). Impoverished communities in this region continue to depend on unsafe and unreliable sources, such as unprotected wells or springs, rivers or ponds, vendor-provided water, tanker truck water, or bottled (and sachet) water for all water needs. The United Nations announced the "early" achievement of Millennium Development Goal 7.C: "to halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation," (http://www.un.org/millenniumgoals/environ.shtml) but data across West Africa does not exhibit this trend, challenging the operational sustainability, reliability, and scalability of water improvement efforts to date (The World Bank, 2016). Despite this troublesome situation, West Africa's GDP in recent years has grown more than 45% faster than the global average (African Economic Outlook, 2016), making the region as economically promising as it is socially challenging.

This dynamic made West African countries an attractive environment for a water-focused strategic partnership, anchored by two MNCs with a commercial history and growing interests in the region. As such, in 2011, The Coca-Cola Company along with Diageo PLC (Guinness) announced the SWA program. The partnership would bring together The Coca-Cola Company (TCCC), The Coca-Cola Company Africa Foundation (TCCAF), Equatorial Coca-Cola Bottling Company (ECCBC), Diageo PLC, Guinness Ghana Breweries Limited (GGBL), Nigerian Bottling Company (NBC), the International Finance Corporation (IFC), WaterHealth International (WHI), and WaterHealth Ghana (WHG), an extension of WHI founded in 2008. Global Environment & Technology Foundation (GETF), a nonprofit organization with expertise in multilateral management, was tasked with governing the complex partnership and ensuring representation of each party's interests.

Ultimately, WHG would be responsible for installing WaterHealth centers funded and publicly sponsored by SWA. These small modular structures, which operate as privately financed micro-utilities, house purification equipment to treat locally available water and produce WHO-quality water that is available on site or pumped to additional distribution points, depending on the size of the community. WHG selects communities of least 5,000 members based on need (defined as a lack of water within a half-kilometer radius), economic potential, and other technical considerations. The organization then works alongside selected communities to: identify a center location (community-donated land that is centrally located and near a source of both surface water and electricity); install the center; determine appropriate usage fees; and hire local station operators. Following installation, WHG provides ongoing technical support and regular water quality monitoring for at least 10 years before transferring ownership of the $50,000 center to the community.

Overall, the participants, objective, and context of the SWA partnership make it an ideal case for examining the research questions presented earlier. The partnership consists of an emerging local SE and an array of stakeholders working to advance the provision of a hybrid good (water) in LDCs where market and government failures are commonplace.

Data Collection and Analysis

The lead author (henceforth I) was first introduced to the SWA program through a colleague in 2012. At this time, my colleague and Curtis (Curt) A. Ferguson, an Indiana University alumnus and TCCC's President of North African and Middle East (MENA) Business Unit, were working to create a program at Indiana University on behalf of

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TCCC for students from the Middle East and North Africa. Following Curt's description of TCCC's various initiatives and inquiry of whether anyone would be willing to write a case about SWA for TCCC, my colleague connected TCCC's efforts to discussions about social entrepreneurship and development that she and I had engaged in over several years. She introduced me to Curt in the Spring of 2012. After recording a video interview of Curt describing SWA, he and I discussed the project for a couple of hours, and Curt invited me to study what was happening at SWA.

Fieldwork occurred in August and November 2012 in Ghana and Nigeria. First, I spent 3 days interviewing executives and employees from The Coca-Cola Africa Foundation (TCCAF), Guinness Ghana Breweries Limited (GGBL), The Diageo Foundation, WaterHealth Ghana (WHG), public water utilities, and municipal government officials regarding the partnership. I then spent 4 days accompanying the WHG team in the field as a participant-observer as they investigated potential sites for their next locations. Four team members then joined me in Accra, Ghana, for an additional week of inquiry, during which we visited six WaterHealth centers around Accra, observed WHG's monthly meeting with the community, and then interviewed chiefs, assemblymen, members of the water board, customers of the centers, and members of the community who were not customers at the time. In addition, the team interviewed nurses and patients in local clinics and children in schools where WHG had conducted educational campaigns about the health benefits of "Dr. Water" as well as employees of Equatorial Coca-Cola Bottling Company (ECCBC) about their water sustainability practices.

In November 2012, I returned to Accra with a new assistant. The two of us interviewed executives from Coca-Cola, Diageo, and USAID and revisited a number of the centers. After 3 days, we then departed to Lagos, Nigeria, where we accompanied, Denish Samanta, assistant manager of business feasibility for WaterHealth International, who had been brought in from India to establish WaterHealth centers in Nigeria on behalf of the Safe Water for Africa program. We shadowed him for 4 days as he visited five communities and met with chiefs, assemblymen, market mothers, public officials, and other decision makers (with formal and informal power) to solicit their participation, donation of land for the centers, and signatures in a legal agreement that would allow ground to be broken for WaterHealth centers in their communities. After business was conducted, we interviewed everyone involved concerning the process. This was an all-day affair, and each day the two of us rode with the WHI employee in the same pickup truck, discussing the experience with him for hours while commonly stuck in traffic. Afterward, we met with Diageo and Coca-Cola executives in Lagos, Nigeria, as well as with a number of local politicians. In addition to observations and interviews, numerous documents and video were provided by Coca-Cola, Diageo, WHG, and GETF concerning all aspects of the SWA partnership.

Together, the team and I interviewed a total of 152 individuals from every identifiable stakeholder group involved in some degree with the SWA partnership. These included 25 executives from the MNCs, their foundations, and their related bottling companies, seven managers and employees of the SE, 31 "power brokers" (including chiefs, assemblymen, market mothers, and other members of the water boards) from various communities in which the centers were located, 65 customer-beneficiaries of the centers, eight non-users of the centers, four government officials, five managers of municipal water providers, and two employees of NGOs and agencies such as USAID, WADA, etc. Together, this fieldwork yielded more than 200 hr of interviews that produced 102 pages of interview transcripts, field notes, and/or summaries of individual findings. These individual findings, along with 87 archival documents and 314 min of video, were then compiled to yield a 48-page, single-spaced collective case summary detailing our findings. Neither the team nor I experienced any restriction whatsoever regarding the stakeholders we could approach, nor did we receive any oversight or editorial pressure regarding the content of the case.

As lead author, I engaged in an ongoing process of data analysis, facilitated by reviewing: (a) my own field notes and memos from field observations summarized at the end of each day; (b) the field notes, memos, and summaries of each team member documented each day and at the end of each researcher's visit; and (c) the many documents provided by members of the SWA partnership before, during, and after fieldwork was conducted (Emerson, Fretz, & Shaw, 2001). These materials, along with interviews, were then used to develop a

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descriptive case on the program. I sought feedback concerning its reliability and validity, first from various stakeholders interviewed and/or involved in the SWA partnership and then from individual team members involved in the primary data collection via fieldwork. All the researchers and key partnership stakeholders reviewed the case independently, verifying facts and identifying major phenomenological themes (e.g., case-specific dilemmas, issues, or concerns). These themes were used to begin the process of toggling back and forth between relevant theory and the data typical of qualitative and ethnographic research (Barker, 1993; Hammersley & Atkinson, 2007).

From this analysis, I developed an analytical description of the general character of social entrepreneurship as it became manifest during SWA's experience with WHG, which we present later in this article. To help ensure the validity of this analytical conceptualization and its attendant claims, I cross-checked interview data with field notes and observations, interviews with direct and indirect stakeholders, and relevant hard data (TCCC press releases, WHG center site reports, community land agreements, GETF partnership documents, etc.). Finally, I reviewed the analysis, claims, and conceptualizations with the second author, a colleague familiar with social entrepreneurship in LDC contexts but not familiar with or participating in the setting (Adler & Adler, 1987), as much of ethnographic data "remains underexplored" and secondary analysis may yield new insights and interpretations (Bryman, 2008).

Findings

The result of our analysis is a process model of the development paradox of prosocial motivation at SWA (Figure 1). We find that: (a) different dimensions of hybrid goods are salient to different stakeholders depending on whether their interests align primarily with those of donors or "investors;" (b) this saliency encourages the marketing mix of the SE to favor value creation over value capture; (c) a marketing mix favoring value creation requires some sacrifice (e.g., land, capital, revenue) of value capture by the social entrepreneurs and other stakeholders; (d) the sacrifice of value capture elicits a psychological state of entitlement such that internal stakeholders expect their right to compete to be protected as a matter of gratitude from beneficiaries, loyalty from customers, or goodwill from stakeholders for having served the community when no one else would; (e) these feelings of entitlement prompt social entrepreneurs to encourage others to share them in accordance with the norm of reciprocity; (f) if enough external stakeholders share these feelings, they then become *social* expectations institutionalized in the form of moral norms (notions of fairness); (g) if institutionalized, then the same prosocial motivation that encouraged the noble creation of social value may ironically be used to justify the preclusion of new competitors offering similar or even superior solutions; and (h) such preclusion, depending on the motives of those competitors, could induce or prevent the institutionalization of a suboptimal path of development.

Together, these links produce a possible paradox in which the same prosocial motivation used to initiate social enterprise and, thus, institutional development via value creation (Phase I) eventually serves to frustrate institutional development via value capture (Phase III) because of a shift in the SE and its stakeholders' attention away from correcting an injustice happening to others and toward preventing a perceived injustice about to happen to them (Phase II). Before and after Phase II, prosocial motives are concerned with fairness, but the focus of this plight slowly shifts from what the SE is providing its beneficiaries to what it is getting from them in return.

The Development Paradox of Prosocial Motivation

Our research revealed that beliefs about what the SE's strategies and actions should be varied considerably depending on stakeholder motives for participation, expectations of the venture, and understandings of the underlying nature of the hybrid goods problem. Conflict along these three dimensions was socially negotiated among the stakeholders involved to reach temporary compromises via the four "P"s of marketing: product, price, placement, and promotion. Contrary to expectations, however, partners' motives were often the very antithesis of the objectives that drive their own organizations. For instance, MNCs often wanted greater emphasis on value creation at the

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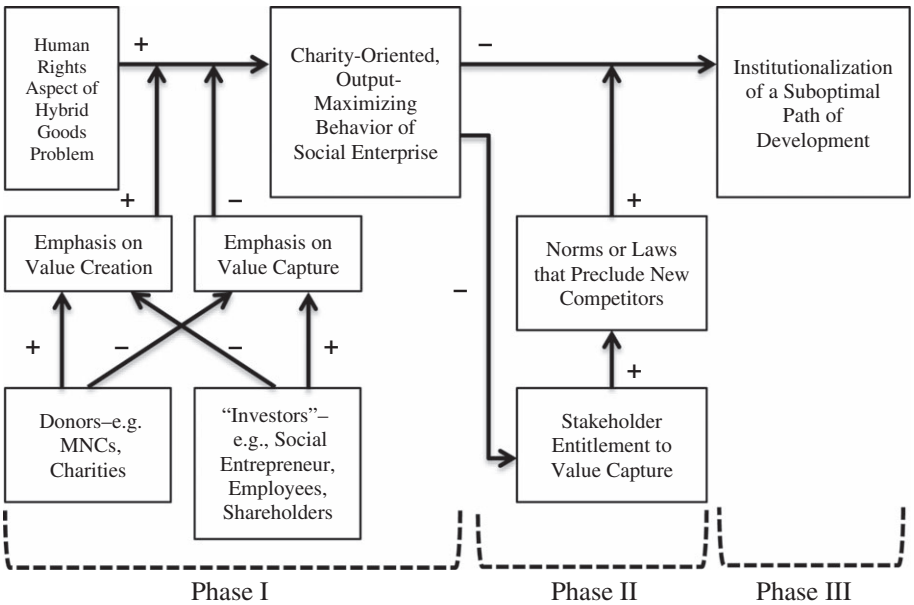

Figure 1. The development paradox of prosocial motivation.

expense of value capture and advocated for an emphasis of the health benefits of safe water, lower prices, and location in more rural settings where larger segments of the underserved reside. Thus, both Coca-Cola and Diageo favored penetration pricing, charging a low price to generate large sales volume and maximum market share (Saaty & Vargas, 2012). Hamish Banks, director of public affairs and communication for the Middle East & North Africa division of TCCC notes, "We are not out to maximize profits with this. It is our goal to grant as many people access to safe water as possible. We want them using it for all their water needs: drinking, cooking, bathing…everything."

SEs, by contrast, often wanted greater emphasis on value capture, even at the expense of value creation, and tended to advocate for emphasis of the "Dr. Water" brand, higher prices, and location in suburban locales promising more potential customers. They favored a pricing strategy that was closer to skimming—setting the highest possible price to maximize profit in the shortest possible time—while still remaining cognizant of their social objective. As Denish Samanta, WaterHealth International's assistant manager of business feasibility, pointed out, "SWA wants to charge the same in Nigeria as Ghana. That is just unreasonable. The costs are much higher here. For this to be feasible, the price of the water will have to be higher. These land agreements are for 10 to 15 years. We need to reach payback by then, preferably *much* sooner."

In addition, we found that donors had some difficulty accepting their new role and the potential agency problems arising from it. Before SWA, the MNCs had enjoyed full managerial control as direct providers of charitable services, namely free water. For example, in 2009, TCCAF had introduced the Replenish Africa Initiative (RAIN) in response to the severe water challenges faced by the nearly 300 million Africans living without access to clean water. Similarly, in Nigeria, Diageo PLC had made especially significant strides with its "Water of Life" program, which completed 22 mini-water works projects costing approximately $2 million each and serving more than 1 million people in households across the country. Unlike WaterHealth centers, however, these structures were permanent and sustained entirely by Diageo, which charges nothing for the water it produces.

With their participation in SWA, TCCC and Diageo PLC were now donors in a third-party SE that provided hybrid goods with a nominal fee. They had influence, but not full control. Conversely, the SE now managed both sponsored and unsponsored WaterHealth centers, such that resource dependency issues with donors had to be considered in Ghana, a country where WHI had

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already been operating as WHG prior to SWA. Additionally, SWA was fully backing WHI's entry into Nigeria, a situation likely to further increase the partnership's influence over WHI's efforts in both Ghana and Nigeria.

In this article, we unpack these findings and discuss their implications for theory development in social entrepreneurship.

Phase I: Stakeholders' Objectives and the Charitable Orientation of the SE's Marketing Mix

As a social enterprise, WHG was organized to focus on addressing social needs by engaging in entrepreneurial processes (Mair & Noboa, 2006; Meyskens et al. 2010; Perrini & Vurro, 2006; Shaw et al., 2002) to achieve its primary purpose of creating social value (Austin et al., 2006; Short, Moss, & Lumpkin, 2009; Zahra, Gedajlovic, Neubaum, & Shulman, 2009; Zahra, Rawhouser, Bhawe, Neubaum, & Hayton, 2008). In other words, WHG was seeking to bring an operationally sustainable business solution to a social problem (Grimes et al., 2013). Nonetheless, the hybrid nature of water meant that numerous organizations from different sectors were offering solutions of varying quality. For example, municipal government agencies around Accra were always seeking to catch up with the growing demand for tap water; profit-seeking firms and individuals were charging market prices for water of varying quality, ranging from plastic sachets to raw water from the aquifer that was accessed via borewells; nonprofit organizations were providing it through structures that were haphazardly located and sporadically maintained; nature even provided it for free during rainy season; and of course, SEs, such as WHG, were seeking to offer safe water at "cost plus" (Neck, Brush, & Allen, 2009; Townsend & Hart, 2008).

Value creation, value capture, and output maximizing behavior. Early in our research (August 2012), SWA had introduced six Water-Health centers in Ghana and was struggling with what, if anything, to do about the underutilization of production capacity at each site. None were operating anywhere near the 65,000 L production capacity of which they were capable. This suggested that the marginal cost of producing additional liters of water could be relatively low and that there may be potential to lower prices, increase demand, and serve more beneficiaries without necessarily harming the operational viability of the center, especially if storage capacity could be increased inexpensively.

TCCC was hoping to increase demand for the water (and, thus, use of the facilities) by advocating a reduction in price. As Hamish Banks put it, "What good is access to safe water if no one can afford it?" It was clear that TCCC saw demand for *safe* water as highly elastic, pointing out that access, not revenue, was their primary motive for involvement. Therefore, value capture was seen as necessary, but subservient to the non-negotiable value-creating activity of providing the poor access to affordable safe water.

For its part, WHG was resistant to lowering prices for fear that doing so would not increase demand, merely delay breakeven and exert downward price pressure on their non-SWA-sponsored sites (which did not enjoy the same degree of donor support and, thus, potential for subsidization). As noted by Mawunyo Puplampu, general manager of WHG, "Convenience, not safety, drives many of the purchasing decisions we see around Accra. That's why we have to get the message out that clear water is not necessarily safe water and that hygiene helps prevent disease."

Indeed, cost consciousness was not the customer concern WHG originally anticipated it to be. Customers appeared to have a perceptual map in place such that water from plastic sachet bags was classified in the beverage category, which commanded higher premiums (approximately 20 pesewas per 0.5 L unit), whereas water from WHG was classified in the commodity category, along with water from boreholes, which commanded much lower prices (approximately 5 pesewas per 20 L container). Safety appeared to command little, if any, premium in the communities around Accra. Knowing this, WHG was skeptical whether lower prices would truly have the effect on demand that TCCC believed they would. WHG was in this for the long haul and knew that value capture was necessary to ensure viability. As Puplampu noted, "We do more harm than good if the community becomes dependent on us, and we end up having to relocate because we cannot afford to keep the facility open."

An ongoing question of where to locate new facilities both within and outside of Ghana was

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bringing the underutilization of production capacity to a head. Was the fact that the water was safe and prevented waterborne illness the primary value of the product, or was it simply the fact that it was a source of water? Whereas the former understanding favored categorization of the hybrid good as a private good, the latter favored categorization of it as a human right. As a private good, water is best rationed by markets (Agafonow, 2015), assuming there are enough customers with the willingness and ability to pay the SE's offering price (McMullen, 2011). As a human right, however, water might lend itself better to distribution through government agency, charity, SE with highly subsidized prices, or other organizational forms capable of meeting people's needs regardless of disposable income. Thus, an understanding of water as a private good favored a marketing mix in which the key product differentiator was safety and promoted through educational campaigns about the health benefits of the "Dr. Water" brand. In addition, prices were set higher, which encouraged the preference for locations near Accra, where disposable income was higher but the threat of new competitors was ever-present. In contrast, an understanding of water as a human right favored a marketing mix in which the key product differentiator was simply the absence of affordable alternatives. As a result, prices were set lower, which encouraged the preference for more rural locations where disposable incomes were lower, alternatives were few or nonexistent, and the threat of new competitors was minimal.

Clearly, this marketing mix had implications for the value that each site could create and capture and that SWA, as a whole, could provide over time. The more charitably minded the stakeholders involved in SWA, the more they tended to favor a marketing mix that sought value creation at the expense of value capture. Such sacrifice of value capture, however, adversely affects the SE's ability to create value over the long term. This introduces an unresolved tension between the productive and distributive roles of social enterprise (Agafonow, 2015). Assuming that WHG was right and reduced prices were indeed unlikely to increase demand, then reducing prices in the name of water's perceived social utility would effectively distribute dividends to customers, whereas maintaining higher prices would allow the SE to retain those dividends for its own productive purposes. Agafonow (2015, p. 1048) elaborates:

> *"In the multi-stakeholder approach developed by EMES, an unresolved tension persists between productive and distributive roles, along with the possibility of dividend distribution. Although Borzaga and Solari (2004) admit that social enterprises produce private goods, the perceived social utility that they nonetheless bear seems to weaken the market's rationing function. In the same vein, Borzaga and Tortia (2007) admit a move toward a productive role at the expense of advocacy and redistribution, but they also claim that social enterprises allocate resources on the basis of solidarity and reciprocity excluding the exchange of equivalents, which paradoxically characterizes the redistributive role that they concede is being left behind. Finally, Campi et al. (2006) admit a move toward the market, but they also encourage the production of public goods, which fails to meet the rationing criteria required to achieve marketability and value creation. However, social enterprises can produce public goods, thanks to quasi-markets that render non-excludable goods marketable. This is a policy option that, although considered by Aiken (2006) and Bode, Evers, and Schulz (2006) may render quasi-markets unworkable in the case of public procurement with the state constituting a monopsony. In any event, quasi-markets for social enterprises need more research."*

As Agafonow (2015, p. 1050) notes, "early research on social enterprises reveals that business affairs can aim to keep prices as low as possible to foster consumption by a target disadvantaged population. At the same time prices are set high enough to protect the financial sustainability of the enterprise, such that it can comply with budgetary constraints. Thus, social enterprises set prices lower than their for-profit peers to maximize output rather than profit." Both TCCC and SWA endorsed this notion of producing "more output than would competitive firms at the given market price" (Gassler, 1986, p. 78). Indeed, most of SWA's stakeholders

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agreed that WHG should "price their output lower than their for-profit counterparts and use surpluses to expand production beyond what for-profits would deem profitable, reducing profit margins for the sake of vulnerable consumers, even as they remain cognizant of a break-even point" (Agafonow, 2015, p. 1049). Disagreement, however, revolved around how aggressively WHG should be pursuing this behavior. While all social entrepreneurs were unified in their desire to create social value, the degree to which each was willing to sacrifice value capture to achieve this end appeared to vary according to the saliency of the human rights aspect of the hybrid good.

Donor or "investor?" Two camps of social entrepreneurs had emerged in SWA, which we have designated as donor or "investor," depending on their primary motive for involvement in the partnership. Donors, such as TCCC, Diageo PLC, TCCAF, and ECCBC, were participating in SWA primarily out of charitable motives. Their focus was on value creation. SWA promised to leverage the MNCs' charitable reach by capturing some of the value it created, thereby facilitating the potential for sustainable solutions and rapid expansion. As Philippe Ayivor, public affairs and communications director, Equatorial Coca-Cola Franchise, noted, "I grew up witnessing development projects come into Ghana, introduce an expensive solution, and leave only to have that solution break down a few years later, with no budget to repair it. Ghana is full of abandoned boreholes in need of service."

Perhaps just as troubling to him had been "good enough" solutions, such as pit latrines that "people from developed countries might scoff at using while recommending them without hesitation to Ghanaians because of the idea that they were a gift and an improvement over what was already there." Ayivor did not know what the ideal solution to West Africa's water problems would be, but he had some sense of what it would look like if he saw it: it would consist of a self-sustaining business model using world-class technology that was careful to respect the dignity of the people it served. With its focus on charity supported by a sustainable business model, WaterHealth centers appeared to fit the bill.

Donors viewed value capture as a means to the end of sustainable value creation, such that value capture was considered subservient to value creation. Each donor was approaching SWA as though it were an expense for his/her respective organization, not an investment. Goodwill from the community was certainly desired, but the donors expressed awareness of the indirect nature of this feedback loop and the potential that social returns—no matter how good for the community—may not lead to financial returns for the donors involved. As Hamish Banks from TCCC articulated, "Feel good stories about how our centers have enabled little girls to go to school instead of fetching water all day are nice, but what [TCCC] is hoping to get from this partnership is some way to determine whether our charitable efforts are truly making a difference and to what extent. Can we point to these facilities and show that thousands of people who did not have safe water before, now do? Can we quantify the number of waterborne illnesses that were prevented as a result? If so, maybe we can move beyond hoping that we are helping and actually know that we are."

Thus, value capture was important to donors, but primarily as a means of measuring and facilitating the value these MNCs had traditionally provided through charity. Return on this charity in the form of community goodwill was hoped for, but it remained a loose expectation at best. Social value creation as opposed to financial value creation had been their focus. Hence, water was conceived primarily as a human right to be provided by SWA via charity. If revenue from nominal fees supported this objective, even better, but commitment was to the problem (e.g., lack of access to safe water), not the method used to solve it (e.g., viability of the centers).

In contrast, "investors" included managers, employees, and customers of the social enterprise because each of these stakeholders expected a direct return on their investment in WHG. Social entrepreneurs received the credit for the profit realized by the SE, even if, owing to the non-dividend-granting nature of SE, they were not entitled to the profit itself (Yunus, 2010). SE managers and employees received wages and promotion opportunities in a growing venture, whereas customers received water at less than market prices because of the output-maximizing behavior of the SE. Each of these "investors" was seeking some return on the investment of their time, talent, and treasure. As a result, they exhibited a greater emphasis on value capture than donors, who viewed their involvement primarily as an expense, albeit a necessary one.

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Like donors, these SE "investors" were committed to social value creation. Because of their expectations, however, they favored long-term over short-term value creation should trade-offs between the two become necessary. For example, Nathaniel Kwesi Somuah, responsible for site feasibility analysis at WHG, noted that, "If we lower our prices, we significantly increase the time until payback. We also run the risk of angering neighboring communities. We charged 15 pesewas for 20 L of water in Pakro and only 10 pesewas for 20 L of water in Nsakina because of the material costs associated with inflation. Nsakina was built before Pakro. Both sites charge well below market, but still there were grumblings in Pakro about the difference. These communities talk. Our SWA donors are always pushing us to lower our prices, but that would impact our other sites as well, and most are not as well supported as the SWA sites."

Pressure for price reductions also came from assemblymen and chiefs on behalf of themselves and the customer-beneficiaries they represented, but there were exceptions. The village chief of Pakro acknowledged, "WaterHealth has to pay its costs, like electricity and building costs." Similarly, the Water Board Chairman of the Asukawan community in the Volta Region clearly understood and communicated the need for the site to cover its operating costs, noting, "This is our center, which we will eventually own, but it cannot be maintained unless we charge for the water. People understand, but they still complain that it's too much. At the same time, I see them pay as much for a sachet bag as they would for an entire bin [of WHG water] just because the bag is cold and easy to carry."

Phase I concluded with WHG and SWA setting the product price in a manner more consistent with a market penetration strategy than a market skimming strategy, choosing to peg the price of "Dr. Water" closer to the raw water from boreholes than to the premium prices associated with beverages. Still, the price was nowhere near low enough to maximize the unused capacity of the 65,000 L/day, suggesting that considerable potential for more output-maximizing behavior existed. The selected price and location also revealed that negotiation between parties had arrived at an understanding of water as neither purely a human right nor purely as a private good. As with price and production, SWA donors had advocated a view of water as a human right and pushed for locating sites in rural settings, but the SE had held fast to its site criteria. Price, placement of facilities, and promotion, however, were not fully indicative of an understanding of water as a private good either. Price was set on the lower end of the spectrum and, despite significant opportunity for both vertical and horizontal integration, WHG had declined. They were not willing to pipe water to individual homes nor package and deliver water in plastic sachets. Moreover, they had continued to promote the health benefits of safe water through education awareness programs in schools and at monthly water board meetings. Thus, despite the fact that: (a) different dimensions of hybrid goods were salient to different stakeholders depending on whether their interests aligned primarily with those of donors or "investors;" and (b) this saliency encouraged the degree to which the marketing mix of the SE favored value creation over value capture, SWA had arrived at a hybrid venture model that existed somewhere between a dual objective social venture boasting equal concern for its social and financial missions at one end and an output-maximizing social enterprise at the other.

Phase II: Self-Sacrifice of Value Capture and Its Corresponding Sense of Entitlement

As the marketing mix became more charitable, it became more reliant on stakeholders sacrificing their selfish interests in the name of helping others. Debate exists over whether such sacrifices are an act of altruism (Batson, 1990; Batson et al., 1997; Miller et al., 2012; A. Smith, 1976) or enlightened self-interest (Chiles, Tuggle, McMullen, Bierman, & Greening, 2010; Cialdini, Brown, Lewis, Luce, & Neuberg, 1997; Maner et al., 2002; McMullen, 2010, 2015), but a marketing mix favoring value creation over value capture requires some sacrifice of land, capital, or revenue and, thus, some form of prosocial motivation, which Grant (2008, p. 49) defines as "the desire to expend effort to benefit other people."

Customer-beneficiaries were required by WHI to donate the land on which the center would be located. As the proximity of the community became more urban, informal property rights gave way to formal property rights, and power shifted from chiefs to individual members of the

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community, intensifying the negotiation process. This process had gone relatively smoothly in Accra, Ghana, where the informal power of chiefs still held sway, but it was proving arduous in the more densely populated Lagos, Nigeria, where the process sometimes took months. My assistant and I shadowed Denish Semanta, assistant manager of business feasibility at WaterHealth International, through half a dozen communities throughout Lagos as he met with assemblymen, chiefs, market mothers, and various officials of municipalities to identify potential site locations and to explain repeatedly what the individuals were being asked to donate and, more importantly, what they were being asked to sign—the land agreement. Typically, the land identified as ideal for a site location was practically worthless and, owing to its centrality within the community, was often being used as a dump. Yet, individuals would occasionally try to hold the community hostage in hope of receiving compensation or personal privilege—e.g., free water—in exchange for signing the agreement, only to find their efforts thwarted by the charitable nature of the centers and its policy against such side deals.

When land was donated reasonably quickly (as was the case in Ghana), with it came a sense of entitlement to lower prices, even when those prices were well below those of local businesses selling the same product. As one customer-beneficiary put it, "We donated the land and still the prices are so high." When asked whether the 3% of disposable income he was now spending on water from the WaterHealth center was not a dramatic improvement over the 40% of disposable income that he had previously spent on water trucked into the community, he added, "Yeah, but those were businesses." Clearly, WHI's requirement that the community donate the land had triggered categorization of the center as a charity, not a business, and with that categorization had come a sense of entitlement to free or heavily subsidized goods.

"Entitle," according to Meyer (1991, p. 223), is defined as "to qualify a person to do something; to give a claim to; to give a right to demand or receive; as, his labor *entitles* him to his wages." Though the term can have negative connotations, there is nothing inherently negative about entitlement. Meyer (p. 223) notes: "A sense of entitlement pertains to a set of attitudes about what a person feels he or she has a right to, and about what that person feels he or she can expect from others. One's sense of entitlement is intimately linked with one's narcissism; like narcissism, it can be healthy or pathological, exaggerated or underdeveloped. Kriegman (1983) and Levin (1970) suggest that an individual's attitude of entitlement falls into one of three global categories: (1) excessive entitlement; (2) normal or healthy entitlement; and (3) restricted entitlement."

As Bishop and Lane (2002) note, individuals high in entitlement insist—be it through some form of amends or revenge—on being given the repayment they see as deserved. Thus, psychological entitlement might best be described as "those rights which one feels justified in bestowing upon one's self" (Meyer, 1991, p. 223).

A sense of entitlement was not limited to the customer-beneficiaries; donors as well as managers and employees of the SE expressed an expectation of reciprocity for their sacrifice as well, though it was often subtle among donors. An annoyance or irritation with complaints over product pricing, coupled with the inconsistencies in water preferences (i.e., complaining about 15 pesewas for 20 L of WHG water while paying similar prices for a 0.5 L of cold tap water in a sachet bag), led to repeated comments among donors and SE employees that customers had unreasonable expectations about product pricing and delivery. Many customer-beneficiaries would complain that the product was inconvenient and too costly (despite being significantly lower than treated alternatives), pointing to neighboring communities who enjoyed lower prices and suggesting that they were being exploited in comparison. This was particularly frustrating to donors, who expected gratitude in the form of goodwill for their subsidies, as opposed to grumblings of exploitation. After all, financial records demonstrating subsidization were made available to anyone interested and in attendance during monthly water board meetings.

Finally, there was evidence that SE managers and employees harbored a sense of entitlement as well. Relatively wealthier customers were pestering WHG to make their product more convenient with perpetual inquiries about when they might expect piping to individual homes or delivery services. Such requests were not consistent with either the "investors'" or donors' understandings of water as a human right. In fact, these requests

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painted a picture of water not only as a private good, but as a private good governed by the dictates of luxury, not necessity. This customer-beneficiary entitlement to perpetual improvement, despite an unwillingness or inability to pay market prices, was frustrating to SEs already sacrificing value capture for value creation. One WHG employee, a native Ghanaian who will remain nameless, whispered a variant of "beggars cannot be choosers" while travelling in a van with the lead author from one site to the next. He was clearly irritated by a somewhat aggressive, middle-aged woman whom the lead author had just finished interviewing. She had been complaining rather loudly about the lines that form in front of the centers in the mornings and evenings and how WaterHealth had ignored her repeated requests for more vantage points. The WHG employee pointed out that every one of those vantage points cost about $15,000 and somewhat dismissively noted that if not for WaterHealth, she would be spending all day walking back and forth to the river to fetch untreated water. It was clear from his inflection that he thought she should consider herself lucky that WaterHealth had selected a site as close to her home as it had. He felt that WHG deserved her gratitude, not her contempt. When I pointed out that customers always want more for less, he immediately responded, "She should know that the center is charging the least it can to operate and still cover its costs, but people see Coca-Cola or Guinness on the sign [as a sponsor of the site] and expect everything to be free."

The sentiments expressed by customer-beneficiaries, donors, and "investors" all communicated a sense of entitlement. Ideas about entitlement typically involve judgments about fairness. According to the social psychology of justice, "people may be legally or morally entitled to certain outcomes based on who they are and what they have done" (Exline, Baumeister, Bushman, Campbell, & Finkel, 2004, p. 895). Justice, in turn, is typically defined in comparison with a prevailing philosophical system (Colquitt, Conlon, Wesson, Porter, & Ng, 2001) and socially constructed in the sense that an act is considered to be just if most individuals perceive it as such (Cropanzano & Greenberg, 1997). Thus, justice in organizational settings often focuses on the antecedents and consequences of two types of subjective perceptions: (a) distributive justice and (b) procedural justice (Colquitt et al., 2001). Distributive justice involves the fairness of outcome distributions or allocations as determined using an equity rule where people calculate the ratio of one's contribution or "inputs" (education, intelligence, experience) to one's outcome and then compare that ratio with that of a referent other (Adams, 1965)—i.e., did one get their just deserts? In contrast, procedural justice involves the fairness of the procedures used to determine outcome distributions or allocations (Colquitt et al., 2001)—i.e., was one treated justly?

Violations of fairness as understood through a human rights lens prompted stakeholders to act either (a) because of personal conviction that beneficiaries were not receiving equal access to the water they needed to survive and to which they were entitled according to natural law and/or (b) because of an unarticulated fear that society may blame them as an MNC for depriving others of their human rights. Though neither the donors nor the "investors" believed they were responsible for the conditions of the beneficiaries they were seeking to help, they were nonetheless aware of the possibility that others might not share that perception and seek to hold them accountable. Accountability, according to fairness theory (Folger & Cropanzano, 2001), has three interrelated components: (a) existence of an unfavorable condition; (b) an event that must be due to the volitional, discretionary actions of the target person whose accountability is assessed; and (c) harmful actions that are responsible for negative conditions that violate a normative standard of justice, such as equality, need, or distributive justice (Adams, 1965; Leventhal, 1976).

The less intimately familiar the stakeholder was with the customer-beneficiaries of SWA, the more they focused on the violation of their human rights, advocated for the beneficiaries' entitlement to safe water in the name of equality, and expressed concern over whether it was procedurally just that "little girls should have to spend their entire day fetching water from the river" rather than going to school.

Remediation of any perceived injustice required SEs and their stakeholders to make sacrifices that could enable entrepreneurial action under conditions that did not justify action based on financial incentives alone. For donors, these prosocial motives were a form of organizational altruism, which can exist financially at the organizational

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level in the form of CSR (Clarkson, 1995) or social value creation (Miller et al., 2012). Cropanzano and Mitchell (2005, p. 279) note, "Altruism is a rule whereby we seek to benefit another person even at an absolute cost to ourselves. Over the years, much debate has been held in social psychology as to whether such a phenomenon is even possible (e.g., Batson, 1991). However, contemporary research seems to support Meeker's (1971) contention that altruistic motives share a place beside other exchange rules (for reviews, see Batson, 1995)."

As interactions with customer-beneficiaries increased, however, social entrepreneurs tended to become more aware of the criticism they were receiving from these customer-beneficiaries. As a result, both "investors" and donors exhibited a shift in their focus from altruistic advocacy of beneficiaries in the name of compassion or equality to justifying their own choices and actions on behalf of WaterHealth and SWA in the name of procedural justice. Moreover, as the level of a social entrepreneur's investment increased, so did his/her expectation of reciprocity in the name of distributive justice—i.e., sacrifice on another's behalf should be acknowledged and repaid in kind, be it with gratitude, loyalty, etc.

Reciprocity is an exchange rule that takes three forms. The first is as a transaction pattern of interdependent exchanges. As such, reciprocity is understood as an exchange that does not include explicit bargaining. The second and third forms of reciprocity—a folk belief and a moral norm—are often confused. As a folk belief, reciprocity is considered a cultural mandate, in which those who do not comply are punished. In contrast, as a moral norm, reciprocity is a standard that describes how one *should* behave, and those who follow these norms are obligated to behave reciprocally. The key difference between a norm and a folk belief is that norms involve what philosophers refer to as an "ought" quality. Even though the norm of reciprocity is a universally accepted principle (Gouldner, 1960), the degree to which people and cultures apply the principles varies (Cropanzano & Mitchell, 2005). It appears that the same may be said of SEs and their stakeholders.

Unlike donors, "investors" make a personal sacrifice with the intent of capturing some of the financial value they create (Hockerts, 2015; Mair & Noboa, 2006; Miller et al., 2012). Donors are also interested in value capture, but this value capture appears to be more social than financial in nature (Miller et al., 2012) and, thus, likely to elicit a strong sense of reciprocity. That is, SE donors simply seek more credit or social approval than SE "investors" for their actions on behalf of others. For the social entrepreneur, this can be tied closely to ego and even "drive them to follow unethicalpractices." Zahra et al. (2009, p. 528) add, "This egoistic streak, therefore, may lead some social entrepreneurs to believe that any actions taken to fulfill their ambitions are ethically justified (Longnecker et al., 1988)."

Such egoistic entitlement appeared to be emerging among the employees of WHG in the form of a perceived right to protectionism in the name of distributive justice. As one employee of WHG noted, "We've barely demonstrated that the model works, and now we have to fight off competition on every front. Everyone wants a piece of the action, but if we fail, where will everyone be? I'll tell you where: worse off than before." This statement was delivered with the same normative vehemence that a grandmother might tell her granddaughter that she should, "Dance with the one who brought ya!" Thus, we found that a marketing mix favoring value creation required some sacrifice (e.g., land capital, revenue) by the SE and its stakeholders and that this sacrifice of value capture elicited a psychological state of entitlement such that stakeholders expected their right to compete to be protected as a matter of gratitude from beneficiaries, loyalty from customers, or goodwill from external stakeholders for having served the community when no one else would.

Phase III: Mission Accomplished or Suboptimal Path of Development

As of November 2012, the demand for convenience was increasing rapidly around Accra thanks to economic growth and rapidly rising living standards in Ghana. Combined with the growing population of Accra, this fueled a demand for the piping of water directly to individual households. The willingness and ability to pay for this service, however, greatly outpaced the public utilities' ability to provide these services. As a result, managers of public water utilities were feeling pressure to provide services before receiving the tax revenues needed to expand current water treatment facilities. This pressure facilitated a willingness among

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managers of public utilities to collaborate with WHG in meeting some of this demand. Because of this willingness, WHG was able to successfully approach Ghana Water Company, Ltd. (GWC) as an urban partner and Community Water and Sanitation Agency (CWSA) as a rural partner.

Although WHG, GWC, and CWSA all served the same need, availability of and access to clean water, Jonas Kakariba Jabulo, manager of GWC, pointed out that GWC could provide access only to 64% of the people within its jurisdiction who needed it. Additionally, while GWC was charged with providing water to urban centers of 5,000 people or more, there were communities as large as 8,000 that were simply beyond its capacity. Thus, GWC saw WHG as a complementary provider, but Jabulo believed that GWC would eventually have to regulate WHG to assure the public that the water met the standard of the municipality. Moreover, because WHG's micro-production facilities were at a substantial cost disadvantage relative to the large-scale facilities of public water utilities, WHG was unlikely to be perceived as a competitive threat by the public utilities, no matter how many centers WHG might introduce. Bordering on condescension, Jabulo concluded: "People don't want to fetch water. They want to turn the tap and have it available on demand. Besides, the centers only complete half the loop. People want the wastewater to be whisked away as well. The centers don't do that."

Managers from both the SWA donor partners and WHG did not take Jonas Jabulo's comments about future regulation or the centers' shortcomings lightly. All parties involved in the SWA partnership had a long history of taking strong stances against bribery, and each had encountered instances in the past where public officials sought to use regulation as an instrument of extortion. Because the WaterHealth centers were still relatively few in number, WHG had remained below the radar of corrupt and opportunistic public officials. Unfortunately, the increased public attention that created opportunities also had a tendency to generate threats as well. Consequently, as its presence and profile rose, WHG feared an increase in ostensibly benevolent concern for the public's welfare and the need for greater discernment in discriminating between legitimate concern for the public, such as Jonas Jabulo's, and harassment for private gain from corrupt officials.

To date, however, communication between WHG and the public water utilities has been positive, productive, and essential to WHG's site selection process. Given the demand for individual piping, the operational viability of the centers would be greatly undermined if GWC expanded into a community in which WHG already had a presence. Although modularity of the centers reduced this exposure, relocation was not costless, nor were the assessment and community negotiations required to select a location in the first place. For these reasons, WHG confronted a dilemma when selecting sites around Accra. Whenever the community was large enough to meet WHG's density criteria (approximately 5,000 people within a kilometer of the center), it was also large enough to expect eventual service from GWC. This left WHG in a dilemma of either continually relocating their sites to the suburban "frontier" of the city where large populations lack access to safe water or responding to the demands of customers and the urging of public utility managers to provide piping to individual homes.

The kind of detached, objective decision making needed to arrive at a decision to relocate upon market entry by GWC was simply incongruent with the sense of entitlement evoked by the sacrifices needed for SEs and their stakeholders to create social value. Instead, this entitlement was more likely to evoke reactions like that exhibited by Nicholas Negroponte in response to Intel and Microsoft's foray into the inexpensive laptop market. For example, when first hearing of Jonas Jabulo's comments, Richard Kweku Ahiagble, corporate citizenship manager for Guinness Ghana Breweries, Ltd. (a subsidiary of Diageo, PLC) was clearly agitated, stating: "These municipalities always welcome us because they know we will take some of the heat off of them for not providing services to these communities, but they do not always give us the courtesy of informing us of their plans even when we explicitly seek their counsel about where best to locate to avoid redundancies. Their assumption that we will simply relocate once they decide to offer service to a community is irritating and, quite frankly, arrogant."

Similarly, Hamish Banks of TCCC, expressed concern at Jabulo's comments recalling another project involving a public official's attempt at extortion once TCCC had committed to building a school for girls. Indeed, potential for extortion under the guise of the public interest was what had partly motivated WHI's decision to design the centers as modular as opposed to permanent structures.

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Entitlement attitudes were even stronger among SE employees, who viewed new organizational entrants such as business competitors with the same disdain that donors exhibited toward "arrogant" municipal water supplies. The question of "Where were they when we began all of this?" was not uncommon. Such logic was regularly expressed as justification for the belief that the community should boycott such alternative water sources and rally around "their" center. In fact, in some instances, WHG was encouraging members of the water board to employ this rhetoric when explaining to the community why beneficiaries should use water from the centers.

While the rhetoric rang true for business competitors, especially in Lagos, Nigeria, where an armed guard accompanying the lead author explained that up to 40% of his family's disposable income went to bottled water trucked into his community, the same could not be said of municipal water supplies. Public providers were not only more convenient, but truly less expensive than WaterHealth, owing to the economies of scale they enjoyed. To the extent the community embraced this rhetoric, they could indeed preserve a community-owned sustainable source of safe water from being undermined by fly-by-night competitors from the private sector or thieves who might plunder it. However, they also ran the risk of precluding truly superior alternatives to WaterHealth in favor of a suboptimal path of development. Moreover, this path could become institutionalized as municipalities seeking the path of least resistance simply skipped over communities being placated by WHG to provide services to the squeaky wheels lacking such suboptimal services.

Thus, we found that these feelings of entitlement prompted social entrepreneurs to encourage others to share them in the name of reciprocity. For example, one customer-beneficiary of WHG noted, "I tell my family and friends to use Dr. Water for everything. Not only will it keep them from getting sick, but we need to keep the center here. Coca-Cola helped build [the center], but the community donated the land. Eventually we will own [the center]. The more that people use it, the faster that will happen."

This customer-beneficiary statement is almost verbatim from the pitch that WaterHealth International gives to countless communities in LDCs as they do site analyses and preparatory work to secure land agreements.

As more and more people began to share these feelings, they showed signs of becoming *social* expectations institutionalized in the form of moral norms (notions of fairness). As one of the assemblymen from Asukawan put it: "CWSA has been promising us service forever. They are supposed to provide [tap water] once a community has 5,000 people, but this area has to be at 7 or 8,000 people now. Coca-Cola and WaterHealth have stepped in to help, but all CWSA does is drop by occasionally to act like any day now they might finally deliver on their promise. If they did, the center would probably go out of business and have to move. Where would that leave us? Not everyone can afford tap water, but I do not know if the center would have enough customers if some people got service from CWSA. I know that frustrates people on the board. WaterHealth is trying to help, but the government is not helping."

Such "us" verses "them" rhetoric was only beginning to emerge, but it was clear that the annoyance and irritation that WHG and the stakeholders of SWA were feeling toward the government was beginning to be adopted by the power brokers in the local communities. Much to WHG's chagrin, however, it had yet to permeate the community. Consequently the customer-beneficiaries were not yet willing to sacrifice much in the way of price at the low-end or convenience at the high-end in the name of supporting a community-owned source of safe water. Few customer-beneficiaries were zealous users of the water, with many still using it only for drinking or cooking, but not bathing.

Therefore, despite WHG's emerging and somewhat ironic efforts to prevent new competitors from entering, results had been mixed, with power brokers more on board than customers. Momentum was growing, however. If WHG were to succeed in persuading the public that new providers of water should be precluded from entering the market in the name of some misguided sense of distributive justice, then customer loyalty had the potential to become a moral norm that, if institutionalized, could encourage a suboptimal path of development. It is this possibility to which we turn our final thoughts.

Conclusion

Social entrepreneurship theorists typically justify the need for social entrepreneurship as a solution to

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a public goods problem that is caused by a combination of market failure and government failure. They propose that social entrepreneurship is a temporary patch to an institutional void. Because of their prosocial motivation, social entrepreneurs intervene to introduce solutions that enable institutional, social, and economic development that would not occur based on financial incentives alone. These social entrepreneurs remove the barriers that have prevented others from entering the market. Thus, through their actions (made possible by prosocial motivation), social entrepreneurs reveal to others, who may lack any prosocial motivation whatsoever, how they might profit by serving the needs and wants of previously marginalized and forgotten customers.

Social entrepreneurs do not have to be aware of the role they play for this functional theory to be valid. Quite the contrary: if the theoretical predictions we have outlined unfold unbeknownst to social entrepreneurs, then the emotional attachment of Nicholas Negroponte or the frustrations communicated by the stakeholders of SWA would be commonplace. Anecdotal evidence from science and the arts suggests that this may indeed be the case. Pioneers who work in obscurity for years advancing a cause often express frustration as less nobly motivated competitors enter the market to reap the spoils or claim the glory. Evidence of frustration, however, does not negate the validity of a functionalist understanding of SE. SEs can still serve the function of filling institutional voids, thereby eliminating the need for its function, without social entrepreneurs ever being aware that the consequence of doing so is obsolescence. In time, the social entrepreneur might abandon his/her SE as no longer viable or he/she may allow mission drift in order to adapt to the changing wants and needs of customer-beneficiaries. In the latter case, the SE evolves into either a business or a charity in response to the dissipation of the institutional void that it was originally created to fill. In such scenarios, social entrepreneurs would not declare their efforts "mission accomplished." Instead, they would choose to adapt—reluctantly if not enthusiastically—to the constraints of an evolving entrepreneurial ecosystem in hopes of organizational survival.

Though plausible, the functionalist understanding of SE suffers a major inconsistency in its explanation. It treats the prosocial motivation, considered so essential to addressing an otherwise unfilled institutional void, as little more than an aberration. It is as though only a handful of social entrepreneurs have been afflicted with a case of altruism, socially beneficial but personally detrimental. Any expectations of reciprocity that this prosocial motivation may trigger in the social entrepreneur are dismissed as irrational expectations that are of no concern to no-nonsense customers and stakeholders. Instead, prosocial motivation is considered an anomalous concern for others that enables, at best, a temporary reward for the social entrepreneur until the overwhelming majority of selfish actors realize the potential for value capture and descend like locusts to consume this propitious niche.

But what if the prosocial motivation believed to enable social entrepreneurship—whether in the name of compassion, justice, fairness, "dissonant loyalty" (Dorado & Ventresca, 2013), or a similar notion of social solidarity—is not treated as an aberration unique to social entrepreneurs? What if it is instead considered a characteristic of the human condition? Given the documented ubiquity and power of the norm of reciprocity (Cialdini, 2007), it seems highly unlikely that the norm's effects would govern only the actions and expectations of social entrepreneurs. If other-regarding preferences are the rule and not the exception, then we might expect that other stakeholders will share the social entrepreneur's frustration with "Johnny-come-latelies," "Carpetbaggers," or "Fly-by-night" competitors who enter the market only when "the getting is good." If stakeholders return the favor and do indeed respond in kind to meet the social entrepreneur's expectations of reciprocity, then prosocial motivation has the potential to do much more than simply enable SE; it also has the potential to preclude the entry of competitors—for good or bad—by eliciting customer loyalty or beneficiary gratitude to the SE. In some cases, preclusion may even rest on moral justifications of fairness according to the equity rule such that stakeholders share the social entrepreneur's belief that he/she should be entitled to reap at least some of what he/she has helped sow.

Such mutual sacrifice has been heralded by the popular press as both the key to the good life (Colson, 2005) and the cause of its demise (Rand, 1964). In the social sciences, Ostrom (1999, 2014) has pointed out that such mutual sacrifice can

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enable an escape from tragedy of the commons scenarios, while others have shown that, under alternative circumstances, it can create an "Abilene Paradox" (Harvey, 1988)—a "Gift of the Magi"-like scenario in which a suboptimal outcome is caused by a mutually misguided sacrifice of one's own interests based on erroneous assumptions of others' interests.

To date, social entrepreneurship theory has underestimated the power of the norm of reciprocity. By doing so, researchers are left to interpret the social entrepreneur's desire for gratitude as an irrational desire that will fall by the wayside as customer-beneficiaries pursue their own selfish interests for more convenient or less expensive sources of water, even at the community's expense. Under this scenario, we might expect WaterHealth to experience a fate similar to the "mom and pop" shops made extinct by Wal-Mart's entry into rural communities. Wal-Mart has been accused of predatory pricing wherein, after running the competition out of business, they close their local store and consolidate into a single megastore serving a 100-mile radius (Greenwald, 2005). Even customer loyalty could not compete with lower prices as individuals shopped themselves and members of their community out of jobs in a retailing tragedy of the commons scenario.

There are, however, two major differences between the customer-beneficiaries of WaterHealth and the patrons of the local "mom and pop" shops in downtown rural America. The WaterHealth customer-beneficiary is part owner of the center and part of a tight-knit community that is highly subject to social norms. Such tight-knit communities amplify the effects of social norms, like the norm of reciprocity, and the grip these norms have on constituents' actions. If the norm of reciprocity is strong enough, it could help prevent the type of predatory scenarios of which Wal-Mart has been accused and which Negroponte likely feared was Microsoft's and Intel's ulterior motive for their newfound interest in the inexpensive laptop market.

Customer-beneficiaries must feel gratitude for the norm of reciprocity to apply, but deeper reflection suggests that assumptions of gratitude may not only be unrealistic; they maybe downright ridiculous. As we pointed out earlier, most of the goods provided by social entrepreneurs are not technically public goods, but instead "hybrid goods"—human rights that become private goods after a minimal threshold is provided. Should any person be expected to feel—much less demonstrate—gratitude for being granted access to something that is rightfully his/hers? What if the party granting him/her access is also the one responsible for denying him/her access in the first place? Communist philosopher Slavoj Žižek (2009) suggests that this is one of the great ironies of our capitalist system. We praise entrepreneurs for philanthropy when the wealth they have accumulated required the use of factors that the less fortunate should have had first claim on anyway. Thus, the poor are expected not only to support a system in which burglary is endorsed, but they are encouraged to praise the burglar for the benevolence of returning some of the treasure he/she has stolen from them.

Declarations of water as a human right give some credence to the spirit of Žižek's overstated critique of entrepreneurial capitalism. In doing so, they should also encourage MNCs to pause to consider some hidden dangers associated with trading in their long-standing charitable approach to CSR for more recent developmental forays into sustainability, especially in LDCs. For instance, to what extent does involvement in solving the water challenges of Ghana signal culpability in creating those problems? Do customer-beneficiaries see Coca-Cola as part of the solution or part of the problem? To what extent does Diageo's involvement in SWA communicate that the MNC is somehow responsible for a lack of service that should have been provided by, and otherwise would have been expected from, municipal water utilities? As WHG provides the solution, they become increasingly responsible for the discontent consumers feel about water as evidenced by the insatiable demands that WHG was fielding for more and more convenience.

Thus, future research may benefit by examining whether the norm of reciprocity among customer-beneficiaries applies only to parties that these customer-beneficiaries do not deem responsible for the problem they are solving. How effective is this norm at precluding entry by would-be competitors? Is there a point where the price of loyalty or distributive justice is simply considered to be too high? Does this vary by income? Does it vary by the heterogeneity of the community? Does the mostly symbolic ownership of the center have the same effect on stakeholder loyalty as the more tangible

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shares or dividends that say, a cooperative, might enjoy? If an SE is charging for the products they provide, is it even reasonable to expect gratitude or loyalty? Are customer-beneficiaries of SEs ever grateful or does the fact that they are paying something for the product automatically put them in a value-seeking mind-set? If they are grateful, how long does that last? Is there a point at which the SE is simply taken for granted as part of the competitive landscape, regardless of whether it is subsidizing prices or not? In other words, does goodwill from programs like SWA have a shelf life that accrues mostly to the excitement of start-up, with the benefits-to-costs ratio associated with the SE inverting over time? If so, does this affect strategic decisions concerning the marketing mix?

SE may indeed be consistent with Santos' (2012) positive theory of social entrepreneurship and other functionalist accounts of social enterprise, offering the temporary patch so desperately needed to help society transcend the institutional void created by a combination of market failure and government failure. Tracey, Phillips, and Jarvis (2011) tell the story of Aspire, a social enterprise that targeted the underlying causes of homelessness, such as basic skills for employment, but shut down after 6 years. Although the organization operationally failed, their social enterprise model "constituted a distinct strategy for tackling homelessness" (Tracey et al., 2011, p. 69) and was subsequently adopted by hundreds of organizations, successfully altering and improving how this issue was addressed in the United Kingdom. In many ways, this is the ideal "SE as temporary institutional patch" scenario. However, our findings suggest that social entrepreneurs may be unlikely to go quietly into the night. In other words, social entrepreneurs may fill this void, making themselves obsolete in the process, but that does not mean they will exit gracefully nor necessarily that they should. Most have invested much of themselves into their SEs and, like their employees, may be dependent on it for income, purpose, and status. If the March of Dimes continued even after finding the cure for polio, the sole purpose for which it was created, why should we expect social entrepreneurs to magnanimously exit the field upon proving that enough value can be captured to establish a market for hybrid goods? Moreover, if their continued involvement could prevent predatory pricing scenarios like those discussed earlier, the emotional attachment of social entrepreneurs to their social enterprises may be all that stands between consumer-beneficiaries and the high long-term cost of low short-term prices.

If one goal of a "true social entrepreneur" is to "invite competition instead of resisting it" (Santos, 2012, p. 346), exploitive scenarios like predatory pricing also raise a number of concerns and questions pertaining to life after the social entrepreneur has filled the void. For instance, should social entrepreneurs merely invite competition or should they strive to invite the *right* competition? What are the scenarios in which social entrepreneurs should, for the betterment of their customer-beneficiaries, actively resist competition? More specifically, what role should they play in vetting or preventing those from the private and public sector that follow their lead but do not maintain an emphasis on value creation or share the same dissonant loyalty? What vetting or preventative strategies do they utilize and how do they synergize or balance these efforts with the day-to-day, operational demands of their organization?

In conclusion, our research suggests that prosocial motivation plays a role in encouraging SE, but that its role is unlikely to stop there. Instead, we find that prosocial motivation could paradoxically contribute to the potential for suboptimal development under certain conditions, such as those in which social entrepreneurs sacrifice much to help others, especially if those others are grateful to the social entrepreneur for his/her help because they know he/she was neither responsible for their predicament nor obligated to help them escape it. Thus, it is our hope that by making social entrepreneurs aware that their prosocially motivated actions can generate a sense of entitlement in themselves and a sense of obligation in others, research may help social entrepreneurs avoid suboptimal development traps, whether it is encouraging the preclusion of competitors who offer superior long-term solutions from entering the market on one hand or it is exposing a community to predatory pricing by exiting too quickly on the other hand.

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Entrepreneurial Behavior: A Reconceptualization and Extension Based on Identity Theory

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Research summary: *Entrepreneurial behavior is core to our understanding of entrepreneurship. Yet, research progress is hindered because most studies adopt a traditional perspective of the construct that is embedded in economic rationality and focused on for-profit ventures. Drawing on identity theory, we propose a reconceptualization that emphasizes the "identity relevance" of entrepreneurial behaviors, allows for different meanings that founders associate with entrepreneurship, and views founders as behaving in ways that they deem appropriate. Importantly, this perspective accounts for the behaviors not only of entrepreneurs who start ventures strictly out of economic self-interest, but also those who launch ventures because of concern for others—either in their community or in society at large. We elaborate on this argument and discuss ideas for future research.*

Managerial summary: *We suggest that a concept of entrepreneurial behavior predicated on the purely rent-seeking entrepreneur ignores the increasing, and increasingly important, number of entrepreneurs who start enterprises for more than pure economic rent generation. Using identity theory permits us to parse modern entrepreneurs into three major types, namely the traditional seeker of rent, the entrepreneur who seeks to aid the community, and the entrepreneur who seeks to aid society at large. We show that using an identity perspective on entrepreneurial behavior allows us to explain very different economic and social outcomes by entrepreneur social identity type and posit the influence of entrepreneurial types in society on the evolution of a macroeconomic cycle.*

'Ever more people today have the means to live, but no meaning to live for.'
–Victor Frankl, *The Unheard Cry for Meaning* (Frankl, 2011: 12)

Few constructs in the history of entrepreneurial thought have enjoyed similar length and level of scholarly attention as the "entrepreneurial behavior" construct. Going back to the earliest contributions by Richard Cantillon in the eighteenth century, numerous studies have sought to advance understanding of what characterizes entrepreneurial behavior and, in particular, how it is different from the behaviors of other actors in the business world—such as the behaviors of managers in established organizations (Gartner, Bird, & Starr, 1992; Gartner & Carter, 2003). Much of the received literature on entrepreneurial behavior defines the construct as comprising those behaviors and actions that are required to start and grow a new organization (Bird, Schjoedt, & Baum, 2012), thereby adopting a perspective of entrepreneurship that is embedded in economic rationality and focused on the creation of for-profit ventures—an observation

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that may not be so surprising given the field's roots in economic thought.

Yet, despite significant advances in our understanding of the construct and of the important micro- and macro-level outcomes that are associated with entrepreneurial behavior (Casson, 2005), research on the topic has reached an impasse. This is because entrepreneurial behaviors are often conflated with *any* commercial behavior performed by entrepreneurs when launching and growing their ventures (such as performing market studies or conducting internet searches), which makes it more difficult to grasp the essence of the phenomenon. Furthermore, these developments are exacerbated by the fact that the field of entrepreneurship has, over the course of the past two decades, extended in its scope and now encompasses "nontraditional" firm-creation activities that the founders engage in and that are not solely for self-reward, but also couple economic rent generation with the generation of benefits for *others*–in other words via social entrepreneurship activities that "address a social problem and generate revenues in so doing…preferably net revenues" (MacMillan & Thompson, 2013: xiv). Given that the behaviors of these social entrepreneurs blend behaviors from different institutions (Katre & Salipante, 2012) and, in particular, connote logics that reach beyond traditional cost-benefit calculus and economic rationality (Battilana, Sengul, Pache, & Model, 2015; Fauchart & Gruber, 2011; Miller, Grimes, McMullen, & Vogus, 2012), it has become more difficult to clearly articulate what are and what are not entrepreneurial behaviors and, more fundamentally, to explain when and why entrepreneurs engage in behaviors that are primarily "other oriented."

We, thus, believe revisiting the construct and the very basis on which it has been founded is required. In this article, we propose that an identity perspective—in particular, insights offered by social identity theory and role identity theory (cf. Stets & Burke, 2000)—can help scholars in their quest to better understand entrepreneurial behavior. An identity perspective allows one to move beyond traditional views embedded in economic rationality when seeking to understand entrepreneurial behavior because it emphasizes that people behave and act in ways that they deem *appropriate* for themselves in a particular context (such as new firm creation). Notably, because an individual's identity or sense of self is crucial to his/her values, feelings, and beliefs and because individuals strive to behave and act in ways that are consistent with the meanings inherent in their identity (Hogg & Terry, 2000), identity theory is able to establish a key theoretical link between the entrepreneur's identity and his/her behaviors in new firm creation. In other words, an identity perspective views behaviors as being "identity relevant" and related to the self-worth people seek to obtain from becoming firm founders. A set of recent publications (Fauchart & Gruber, 2011; Murnieks & Mosakowski, 2007; Powell & Baker, 2014, 2017; Wry & York, 2017) has applied an identity perspective to shed light on different entrepreneurial phenomena. This emerging body of work offers important initial evidence on how founder identities are linked to behaviors, actions, and decisions in new firm creation.

In the following, we briefly review the traditional view on entrepreneurial behavior that has dominated research on the topic. We then discuss how an identity perspective can advance research on entrepreneurial behavior and present several promising avenues for future research. We conclude by showing how an identity perspective not only complements, but can also (on occasion) substitute for traditional perspectives on entrepreneurial behavior. From a broader perspective, our work contributes to a rising movement to adopt a wider view of value creation via entrepreneurial action, one that encompasses other types of values such as personal satisfaction, contentment, social welfare, or sustainability (e.g., Amit, MacCrimmon, Zietsma, & Oesch, 2001; Cooper & Artz, 1995; Dean & McMullen, 2007; Patzelt & Shepherd, 2011). This movement is also evident in the management literature, where social outcomes have received increased attention in recent years (e.g., Grant, 2007, 2012; Grant, Dutton, & Rosso, 2008).

Traditional Perspectives on Entrepreneurial Behavior

Behavior is a broad concept. According to the Merriam-Webster dictionary, behavior is defined as "anything that an organism does involving action and response to stimulation" (Merriam-Webster, 2017). This broad understanding is also evident in existing definitions of the "entrepreneurial behavior"

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construct. For instance, Gartner et al. (1992) define entrepreneurial behavior as the various behaviors and activities that individuals engage in when creating new organizations—and contrast them to the behaviors and activities of individuals involved in established organizations. In much the same way, Bird, Schjoedt, and Baum (2012: 890) view entrepreneurial behavior "as the concrete enactment by individuals (or teams) of tasks or activities such as those named by Carter, Gartner, and Reynolds (1996) (e.g., prepare a business plan, look for facilities, organize a team, hire employees, form a legal entity, and enter a market), which are required in some combination to start and grow most new organizations." What remains more implicit in these definitions, yet is at their base, is a view of entrepreneurship that is embedded in economic rationality and geared toward the creation of *for-profit* ventures—which may be expected given the field's origins in economics.

A Synopsis of Prior Research on Entrepreneurial Behavior

The idea that entrepreneurial behavior is distinct from other types of economic behaviors can be traced back to the very beginnings of the field of entrepreneurship. Specifically, Irish-French economist Richard Cantillon, who is widely considered as being the first to have used the term "entrepreneur" in the early eighteenth century when studying the nature of trade, described entrepreneurs as the undertakers of great business adventures (*entreprendre*: to take in hand, to undertake). By observing the buying and selling behavior of merchants, who pay a certain price for their goods yet do not know for which price these goods can be sold, Cantillon argued that entrepreneurial behavior is primarily *risk-bearing behavior*: whereas workers receive a fixed and assured return for their activities, entrepreneurs are unable to know *ex ante* what the return to their organizing efforts will be, as these returns will be determined by the marketplace (Cantillon, Higgs, & Jevons, 1931).

More than any other economist, Joseph Schumpeter advanced these early considerations by pointing out that entrepreneurial behavior is about "'doing things differently' in the realm of economic life" (Schumpeter, 1939: 59) and coined the term *Unternehmergeist* (German for "entrepreneurial spirit") to emphasize the distinct attitude, determination, and vision required for engaging in and accomplishing entrepreneurial endeavors. Owing to his interest in innovation, Schumpeter distinguished entrepreneurial behaviors from those of other actors who are engaged in the production of invention. While the inventor is seeking a new outcome, the entrepreneur is seeking a new profit stream. Schumpeter noted: "It is particularly important to distinguish the entrepreneur from the 'inventor' (…) there is no necessary connection between the two functions. The inventor produces ideas, the entrepreneur 'gets things done,' which may but need not embody anything that is scientifically new. Moreover, an idea or scientific principle is not, by itself, of any importance for economic practice (…) 'getting new things done' is not only a distinct process but it is a process that produces consequences that are an essential part of capitalist reality. (…) It is in most cases only one man or a few men who see the new possibility and are able to cope with the resistance and difficulties with which action always meets outside of the ruts of established practice" (Schumpeter, 1947: 152).

In the wake of these pioneering contributions, three main approaches have been adopted by scholars to advance our understanding of entrepreneurial behavior: (a) analyses of the behaviors of entrepreneurs (e.g., Baker & Nelson, 2005; Gartner & Carter, 2003; Gatewood, Shaver, & Gartner, 1995; Mueller, Volery, & Von Siemens, 2012; Zott & Huy, 2007); (b) comparative analyses of the behaviors of serial (habitual) entrepreneurs vis-à-vis those of novice entrepreneurs (e.g., Baron & Ensley, 2006; Gruber, MacMillan, & Thompson, 2008; MacMillan, 1986; McGrath & MacMillan, 2000; Read & Sarasvathy, 2005; Sarasvathy, 2001; Ucbasaran, Westhead, & Wright, 2009; Westhead, Ucbasaran, & Wright, 2005; Westhead & Wright, 1998); and (c) comparative analyses of the behaviors of entrepreneurs vis-à-vis those of other economic actors such as managers and technologists (e.g., Busenitz & Barney, 1997; Gruber, Kim, & Brinckmann, 2015; Gruber, MacMillan, & Thompson, 2012; McGrath, MacMillan, & Scheinberg, 1992).

Studies following approach (a) are interested in elucidating the behaviors founders engage in throughout the venture-creation process; as mentioned, however, these behaviors may not be unique to entrepreneurship. For instance, some of the behaviors and activities suggested by Bird et al. (2012), such as performing an internet search,

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can hardly be considered unique to entrepreneurship, although they play a vital role in the new firm-creation setting. In contrast, other studies in this vein have examined behaviors that are tightly coupled to idiosyncratic features of the new firm-creation process and, thus, are likely to be unique to entrepreneurship. As an illustration, consider the work by Zott and Huy (2007) that shows how entrepreneurs engage in symbolic management behaviors that aim at establishing much-needed legitimacy for their emerging ventures.

Studies following approaches (b) and (c) seek to advance understanding of entrepreneurial behaviors by either comparing experienced entrepreneurs to novice entrepreneurs or entrepreneurs to other actors. For instance, in one of the most encompassing descriptions of entrepreneurial behavior that was derived from a study of habitual entrepreneurs, McGrath and MacMillan (2000: 2) suggest that they "capitalize on uncertainty rather than avoid it, they create simplicity where others see complexity, and they embrace the learning that comes from taking calculated risk. They recognize that when opportunities are fleeting, it is sometimes more expensive to be slow than to be wrong. As a consequence, they will find solutions that are 'roughly right' rather than consume time developing an analytically correct, but slow, answer." In her influential study of experienced entrepreneurs, Sarasvathy (2001) has identified several key behaviors and actions that are guided by these entrepreneurs' effectual logic (starting with one's means (who am I, what do I know, whom do I know), leveraging contingencies, forming partnerships, and gathering stakeholder commitments). Furthermore, scholars have also begun to examine the behaviors of serial or habitual entrepreneurs in distinct phases of the entrepreneurial process, primary among which is opportunity identification. For instance, studies in this vein show that experienced entrepreneurs have refined abilities in opportunity identification that shape their behavior in entrepreneurship (Baron & Ensley, 2006), as they identify and choose among a greater number of opportunities than others (Gruber et al., 2008; Ucbasaran et al., 2009).

Preliminary Conclusions

Looking at the status quo of research, it is evident that the existing literature on entrepreneurial behavior offers fundamental insights into the phenomenon. However, it is also evident that studies often view entrepreneurial behaviors as being equivalent with any commercial behaviors performed by entrepreneurs when launching and growing their ventures, which makes it more difficult to grasp the true essence of the phenomenon. These developments are exacerbated by the fact that research on entrepreneurial behavior is focused largely on behaviors and actions that are based on rational economic thought and geared toward the creation of for-profit ventures. As a consequence, we possess few insights on entrepreneurial behaviors that founders engage in because of concern for others—a key shortcoming of the existing literature given the rising importance of such ventures over the past two decades and given their importance for addressing some of the world's most pressing problems. Because the entrepreneurial behaviors of these founders blend the behaviors from different institutions (Dacin, Dacin & Matear, 2010; Katre & Salipante, 2012; Zahra, Gedajlovic, Neubaum, & Shulman, 2009), investigating their behaviors and learning why they engage in activities that primarily benefit others is both intellectually intriguing and an endeavor that can push the current literature on entrepreneurial behavior to a new frontier.

In the following, we advance a moderate theory-based reconceptualization of the entrepreneurial behavior construct that emphasizes that behaviors are, to a significant extent, the expression of one's identity. In particular, we suggest that an identity perspective can help scholars in advancing our knowledge of entrepreneurial behavior; it allows us to move beyond traditional views embedded in economic rationality when seeking to understand entrepreneurial behavior because it emphasizes that people behave in ways that they deem appropriate for themselves in new firm creation. As we will argue, this perspective on entrepreneurial behavior not only helps scholars delineate entrepreneurial behaviors from other types of behaviors in the business world or in the broader society, but also offers an important theoretical explanation as to why different individuals behave in different ways in new firm creation and why their entrepreneurial behaviors may focus on others in the social space.

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An Identity Perspective on Entrepreneurial Behavior

Based on the observation that human beings have a fundamental need for self-definition and for finding their own place in society (Mead, 1934; Tajfel, 1972), scholars have defined identity as "a general, if individualized, framework for understanding oneself that is formed and sustained *via* social interaction" (Gioia, 1998: 19). Identity theory offers the possibility of establishing a theoretical link between the entrepreneur's identity and his/her behaviors in new firm creation because individuals strive to behave in ways that are consistent with the meanings inherent in their identity: if one can achieve congruence between one's identity and one's behavior, then this behavior can serve as a major source of psychological benefit and self-worth (Hogg, Terry, & White, 1995; Stets & Burke, 2000; Tajfel & Turner, 1979).

Over time, a number of different identity theories have been developed, with *social* identity theory and *role* identity theory being the most prominent theories of the human self (Stets & Burke, 2000).[1] Although both theories have been developed independently in the psychology and sociology disciplines, more recent writings have integrated these theories in an attempt to obtain complementary insights and to establish a view of the self that is more fully integrated (Stets & Burke, 2000), including work in entrepreneurship (Powell & Baker, 2014, 2017). In the present article, we build on both theories given their strong potential to advance our understanding of entrepreneurial behavior.[2]

Social identity theory (Tajfel, 1972; Tajfel & Turner, 1979) originates in the literature on social psychology. Entrepreneurship research that applies the lens offered by social identity theory is still young (Alsos, Clausen, Hytti, & Solvoll, 2016; Fauchart & Gruber, 2011; Obschonka, Goethner, Silbereisen, & Cantner, 2012; Powell & Baker, 2014, 2017; Sieger, Gruber, Fauchart, & Zellweger, 2016). As we will explain in greater detail later, social identity theory has the unique advantage that it allows extending the scope of research on entrepreneurial behavior to include behaviors that are focused on advancing the life of others in the social space. It does so in a systematic manner, extending the scope of coverage of entrepreneurial behavior from the traditional types of founders who start ventures because of their *economic self-interest* to those founders who engage in entrepreneurship because of their *concern for known others* or *unknown others.* Put differently, the application of social identity theory to entrepreneurship can provide a home for existing research on entrepreneurial behavior, while also allowing for a contemporary, extended conceptualization of entrepreneurial behavior that reaches out to major phenomena in entrepreneurship (e.g., social entrepreneurship, sustainable entrepreneurship, cultural entrepreneurship).

Role identity theory takes on a more sociological perspective on identity and focuses on role-related behaviors of individuals (Stryker, 1980). This theory, thus, can shed light on what drives behavior of people with different roles in new firm creation (Cardon, Wincent, Singh, & Drnovsek, 2009). A person's understanding of his/her role and role-related behaviors originates in his/her observations of others performing the role as well as the expectations and meanings linked to the role (Stryker, 1980). These expectations and meanings establish a set of standards that guide a person's behaviors (Stets & Burke, 2000). For example, drawing on a taxonomy of entrepreneurial activities established by Gartner, Starr, and Bhat (1999), Cardon et al. (2009) distinguished three role identities in entrepreneurship: an *inventor* role identity, a *founder* role identity, and a *developer* role identity. These role identities are often deeply ingrained in individuals, even if they transition to another set of activities such as new venture creation. For instance, looking at the identities of university faculty members, Jain, George, and Maltarich (2009) show how these individuals stuck to their identities as researchers even when engaging in the commercialization of their technologies. In other words,

[1] Although motivational theories offer insights on the nonfinancial interests of entrepreneurs (such as Herzberg's two-factor theory of motivation, self-determination theory, and Maslow's hierarchy of needs), these theories take a different approach to understanding behavior. For instance, they often place less emphasis on the social dimension and frequently apply situation-specific logics. In contrast, a person's social identity—the "who am I" in the social space—is a core, defining feature of an individual that shapes his/her behavior and actions in encompassing ways. Moreover, note that the "basic social motivation" of an individual forms part of the social identity construct (cf. Brewer & Gardner, 1996).

[2] Note that we employ the term "role" identity theory for clarity of exposition, although role identity theory is frequently referred to as "identity theory" (cf. Stets & Burke, 2000).

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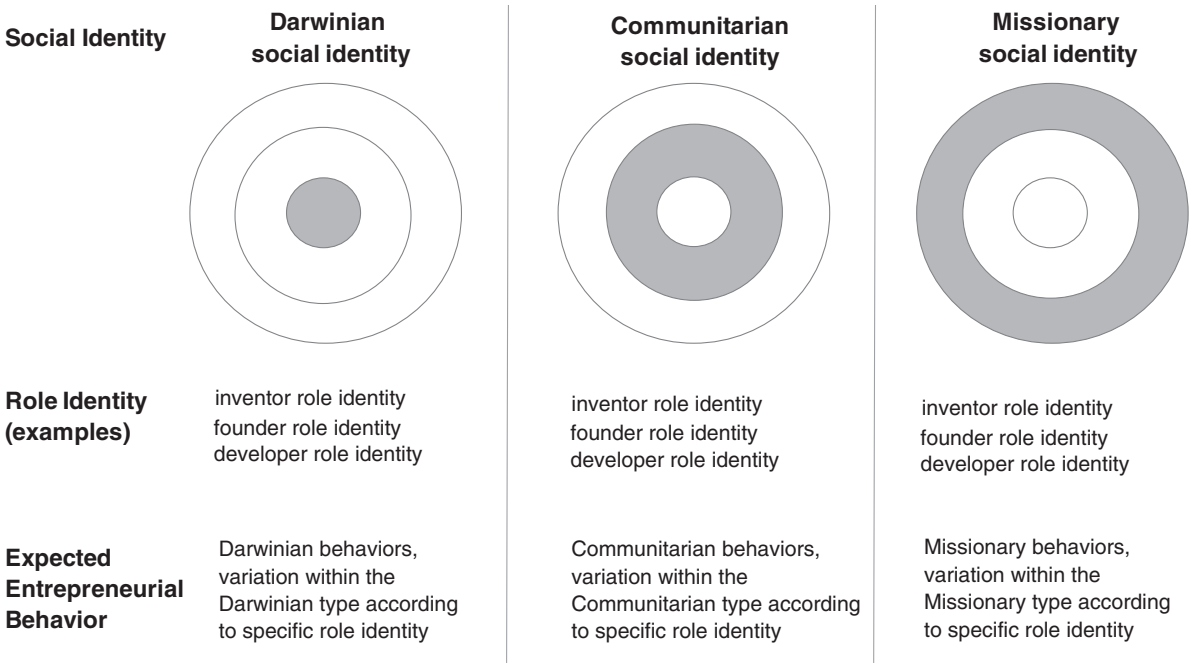

Figure 1. An identity perspective on entrepreneurial behavior: The interplay between the founder's social identity and role identity.

understanding the salient role identity of a person can help scholars predict his/her behaviors in new firm creation.

Given the complementary nature of founders' social and role identities (Fauchart & Gruber, 2011; Powell & Baker, 2014, 2017), both lenses offer insights on entrepreneurial behavior that can serve to advance our knowledge of the phenomenon: on the one hand, prior entrepreneurship research tells us that a social identity perspective allows us to illuminate the core differences that exist between entrepreneurs who launch ventures with their economic self-interest in mind and those who engage in entrepreneurship because of concern for known others and for unknown others—in Fauchart and Gruber's (2011) typology, Darwinian, Communitarian, and Missionary founders, respectively. Role identity theory, on the other hand, permits us to improve understanding as to why we would see differences in the behaviors of Darwinian, Communitarian, and Missionary founders. For instance, one would expect that founders with an inventor role identity would behave differently in the creation of Missionary ventures than founders with a developer identity. In fact, recent research by Powell and Baker (2017) provides evidence on how different role identities play out within the social group categorizations of founders with Communitarian or Missionary identities.

Given that social and role identities are simultaneously and at all times relevant to, and influential on, a person's perceptions, affect, and behavior (Stets & Burke, 2000), the application of both lenses allows scholars to obtain a more complete understanding of entrepreneurial behavior. Figure 1 summarizes these considerations in a conceptual overview.[3] Note that while prior empirical research is able to tell us which primary types of social identities exist among firm founders (Darwinian, Communitarian, Missionary), we do not yet possess an empirically grounded, systematic understanding of the most important role identities in entrepreneurship. Hence, we employ Cardon et al.'s (2009) distinction between inventor, founder, and developer

[3] The argument that a person's role identity shapes behavioral variation *within* the social group categorization established by his/her social identity is not only discussed in the contemporary literature, but is evident in early sociological writings as well. Referring to the work of Emile Durkheim (1893/1984), Stets and Burke (2000: 228) indicate that people "are tied organically to their groups through social identities; they are tied mechanically through their role identities within groups."

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role identities to illustrate behavioral variation in the creation of Darwinian, Communitarian, or Missionary types of ventures.

Promising Avenues for Future Research

The fresh perspective on entrepreneurial behavior offered by identity theory allows scholars to understand entrepreneurial behavior in a way that is clearly different from the rational, economic perspective that has been dominating much of the existing literature on the subject. It allows us to embrace entrepreneurship that is primarily other-oriented as founders engage in behaviors and actions that they view as appropriate for themselves.[4] Specifically, this section presents ideas on how social identity theory will help researchers in advancing our knowledge of the entrepreneurial behavior construct, how we think about the venture-creation process, and how this perspective can improve our understanding of outcomes on different levels of analysis. We then turn to role identity theory and discuss role-based variations in entrepreneurial behavior among founders with Darwinian, Communitarian, or Missionary social identities.

As discussed, in order to shed light on how the social identity of founders shapes their entrepreneurial behaviors, we draw on work by Fauchart and Gruber (2011), who applied social identity theory to investigate the heterogeneity of founders' social identities, and examine how such differences manifest themselves in new firm creation. Their typology of founder social identities seems to offer a particularly promising point of departure for research on entrepreneurial behavior, as also evidenced by recent studies that have adopted this typology (e.g., Alsos et al., 2016; Powell & Baker, 2017; Sieger et al., 2016). Furthermore, it is interesting to note that their way of viewing the self in the social space shows key parallels to the long-standing discourse on human nature that can be found in political philosophy: philosophers frequently distinguish among three main conceptions of human nature, i.e., the atomistic self, the communitarian self, and the cosmopolitan self (cf. Beitz, 1979; Taylor, 1989).

Specifically, Fauchart and Gruber's (2011) typology of founder social identities distinguishes three primary (pure) types—the "Darwinian," the "Communitarian," and the "Missionary" social identities—and hybrid forms that entail features of the primary types. Invoking a metaphor, one can think of all actual entrepreneurship as having larger or smaller concentrations of the three primary identities, just like all palette colors are combinations of the three basic, primary colors red, yellow, and blue.

It is important to recognize that the three primary social identity types represent distinct loci of founders' self-definitions and span the full range of logical possibilities for self-definition in the social space: the "I" (*self*), the "personal We" (*personal others*), and the "impersonal We" (*impersonal others*). Darwinian founders adopt the lowest level of self-categorization in the social space, as they consider themselves as a unique entity that is distinct from other individuals, put the self at the core of their interest, pursue private economic goals, and adhere to conventional business logics. Communitarian founders focus their behaviors and actions on the "personal We" in the social space, that is, people who form a proximal social group (the community). Missionary founders pursue the most inclusive self-categorization, as they put the "impersonal We" at the locus of their self-definition and are concerned with goals of society at large (cf. Table 1). Viewed from this perspective, the examples cited earlier—social, ecological, and cultural entrepreneurship—are characterized by concern for others and, thus, comprise founders with both a Communitarian identity and with a Missionary identity.

Approaches to Studying Entrepreneurial Behavior from a Social Identity Perspective

As our brief review of the literature on entrepreneurial behavior has shown, research has adopted three main approaches to studying such behaviors, that is: (a) focused analysis of the behaviors of entrepreneurs; (b) comparative analysis of the behaviors of experienced entrepreneurs *vis-à-vis* those of novice

[4] Note that although such other-oriented entrepreneurial behaviors have overtones of morality (which is also evident in writings on social or ecological entrepreneurship), the choice of *appropriate* behavior and action by an entrepreneur is based on the very meanings that his/her identity connotes and what he/she considers to be "right" or "good." In this regard, March and Olsen (2011: 479) point out that "rules of appropriateness [may also] underlie atrocities of action, such as ethnic cleansing and blood feuds, as well as moral heroism. The fact that a rule of action is defined as appropriate by an individual or a collectivity may reflect learning of some sort from history, but it does not guarantee technical efficiency or moral acceptability."

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Table 1
Social Identities of Entrepreneurs

Social identity	Key characteristics	Level of inclusiveness of the entrepreneur's self-concept
Darwinian entrepreneurs (traditional business logic)	• Want to pursue their private, economic self-interest • Pursue traditional business logics and derive self-worth by behaving and acting in ways that are congruent with a professional "business school" approach to management • View the competition as their primary frame reference in the social space	**Focus: the "self"** 
Communitarian entrepreneurs (community-driven logic)	• Want to support and be supported by their social community • Pursue a community logic that embodies common (shared) norms, beliefs, and trust and derive self-worth primarily from being able to offer products/services that help to advance their social community • View the community as their primary frame of reference in the social space	**Focus: "personal" others (community)** 
Missionary entrepreneurs (mission-driven logic)	• Want to advance a cause • Pursue a missionary logic that embodies a strong sense of responsibility for the world and derive self-worth from being able to behave and act in a manner that allows them to pursue their political vision and establish a better world • View society at large as their primary frame of reference in the social space	**Focus: "impersonal" others (society at large)** 

Note. cf. Fauchart and Gruber (2011).

entrepreneurs; and (c) comparative analysis of the behaviors of entrepreneurs *vis-à-vis* those of other economic actors, such as managers and technologists. Analogous to these main approaches employed in prior work, scholars will be able to employ a social identity-based perspective on entrepreneurial behavior for numerous interesting questions by performing:

1. Focused analyses of the behaviors of entrepreneurs with (a) Darwinian identity, (b) Communitarian identity, or (c) Missionary identity, as well as *hybrid* types of identities (e.g., Darwinian/Communitarian).
2. Comparative analyses of the behaviors of experienced entrepreneurs *vis-à-vis* novice entrepreneurs within the three primary social identity types, and of hybrid types.
3. Comparative analyses of the entrepreneurial behaviors across founders possessing the three primary social identities.
4. Comparative analyses of the behaviors of founders possessing one of the primary social identities *vis-à-vis* other actors (e.g., Missionary entrepreneurs and managers of NGOs, Communitarian entrepreneurs and community project managers, etc.).

Figure 2 provides an illustration of these four individual-level perspectives on researching entrepreneurial behavior. In particular, comparative analyses will allow scholars to get to the "core" of *entrepreneurial* behavior and to cleanly delineate this behavior from other types of behavior in the social or business world.

In order to investigate entrepreneurial behavior from a social identity perspective, scholars will need to capture first the social identities of founders. Sieger and his colleagues (2016) have recently offered a validated, 15-item scale that allows scholars to measure the social identities of founders (i.e., the pure and the hybrid types). These authors also offer insights on other methodological approaches to study identity employed in the primary disciplines.

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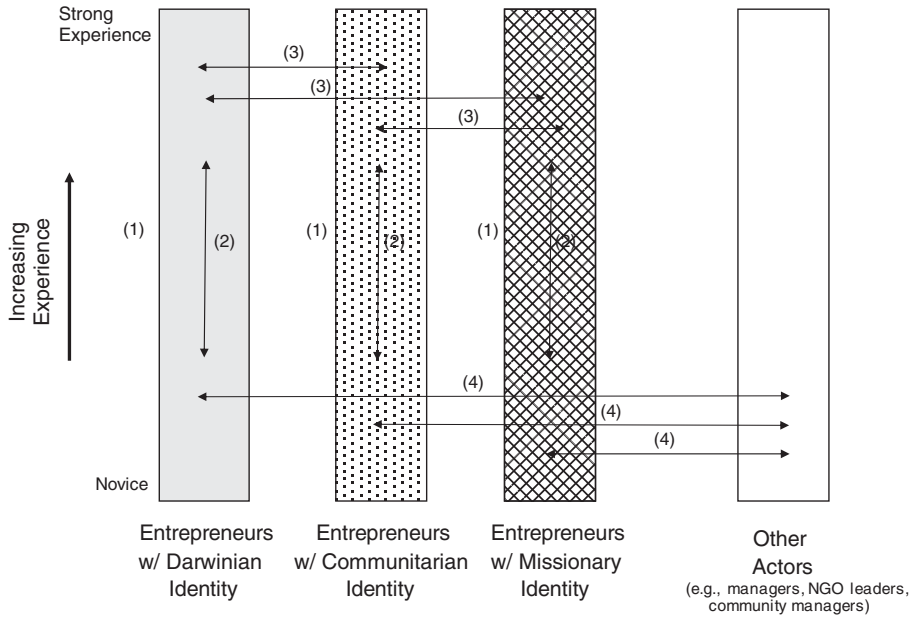

Figure 2. Research approaches on entrepreneurial behavior from a social identity perspective.

Obtaining New Individual-level Insights on Entrepreneurial Behavior

The lens offered by social identity theory can help in developing a new understanding of how founders behave and act in new firm creation and, ultimately, how new firms emerge, given that this perspective emphasizes the relationship of the founder with the social world around him/her—a world that is instrumental for almost all activities that the founder engages in given that the social world provides access to resources and capabilities (ideas, people, relationships, know-how, assets, etc.) that founders require to set up their ventures. Importantly, what is the "relevant" social world depends in key ways on the founder's social identity type. Looking at the few studies that have begun to investigate such processes, we have reason to believe that this line of inquiry is promising. For instance, in line with the notion that individuals seek to behave and act in ways that match their own identities, Fauchart and Gruber (2011) find that the social identities of entrepreneurs are systematically related to distinct entrepreneurial behaviors and actions. Whereas Darwinian founders follow the traditional pattern of engaging in behaviors that will, in the end, maximize their private returns, Communitarian and Missionary founders behave in ways that reflect their concern for others. Consider the case of Communitarian founders, whose behaviors and actions are oriented toward the community, that is, the group of people they seek to support, help to advance, and deeply care about. Their behaviors are manifested in decisions to openly reveal their inventions so that other community members can join in the production, offer greater supply to the community, and further its progress. In contrast, Darwinian founders behave and act in ways that allow them to protect their inventions from the competition (e.g., by registering IP) and secure economic returns.

These brief examples illustrate how entrepreneurial behaviors can differ in fundamental ways depending on the founder's social identity. It is equally important to note that once we move beyond the realm of the *homo economicus* into worlds of (prosocial) meanings, notions of appropriate behavior, and other-orientation in entrepreneurship, a more complete perspective on enterprising individuals as human beings and a particularly rich and deep understanding of entrepreneurial behaviors can be developed. Because other-orientation and meanings are often related to emotions, these ideas also highlight the importance of conducting research on the role of emotions and emotion-related behaviors of founders when setting up their firms (Huy & Zott, 2015; Miller et al., 2012; Shepherd, 2016; Zott & Huy, 2012).

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Scholars may also want to examine entrepreneurial behaviors in distinct phases of the process of setting up a venture—in opportunity identification (cf. findings discussed in Sieger et al., 2016) and in later stages of new firm development (cf. findings discussed in Alsos et al., 2016; Sieger et al., 2016; Powell & Baker, 2017). Here, it is likely that Darwinians, Communitarians, Missionaries, and Hybrids will see different opportunities for "value" creation in a given industry context—not just due to the distinct knowledge settings in which they are embedded, but also due to the different meanings they associate with new firm creation. For instance, Darwinians will search for market gaps and design a profit-oriented venture, whereas the context in which Communitarians are embedded may actually push them toward new firm creation (Shah & Tripsas, 2007) as they seek to help members of their specific community.

In this regard, also consider the dedicated work on social entrepreneurship (e.g., Katre & Salipante, 2012; MacMillan & Thompson, 2013; Mair & Martí, 2006), where scholars may want to obtain new insights on social entrepreneurs and their firm-related behaviors and actions by distinguishing between those with a Communitarian identity and those with a Missionary identity. Because the behaviors of these types of entrepreneurs are guided by different logics and worlds of meaning, they also derive self-worth in fundamentally different ways (see Table 1). In other words, social entrepreneurs who pursue a community logic differ from those following a missionary logic, and not recognizing such differences will lead to insights on social entrepreneurship that may be misleading.

Beyond enabling new insights on the venture-creation process, a social identity perspective on entrepreneurial behavior also opens up the opportunity to better understand performance in entrepreneurship. As a starting point, Fauchart and Gruber's (2011) findings show how founders with different social identities have fairly different conceptions of firm performance. Whereas Darwinian founders consider the financial performance of their ventures as their focal success measure, founders with a Communitarian identity derive personal satisfaction from being able to support their community and by receiving support from it. Missionaries, for their part, see firm performance through the eyes of their political vision. They strive for its support and implementation by as many followers as possible; only then will the world become the "better place" they envision. The significantly extended conception of new firm performance that is suggested by these observations has major consequences for how scholars should think about defining and measuring performance outcomes in entrepreneurship. In essence, because a nontrivial share of ventures have founders with a Communitarian or Missionary social identity (cf. Sieger et al., 2016), we need to be careful in our choice of performance measures and, in particular, when applying financial performance measures in our assessment of outcomes in entrepreneurship. New types of dependent variables (such as the number of supporters in a community or number of followers in society at large) should find their way into studies on entrepreneurship, as only then will we be able to obtain performance results that match the founders' own ambitions. These new performance variables will also be necessary to obtain a better understanding of other key outcomes such as personal satisfaction or happiness (Clark, Frijters, & Shields, 2008; Cooper & Artz, 1995). Along these lines, a social identity perspective on entrepreneurship also opens up a new perspective on failure. For instance, Missionary entrepreneurs may fail in a financial sense, but succeed in realizing their political vision and inducing their desired societal change if they manage to produce and sell their product. More generally, ventures that underperform on a financial dimension may stay operational, as their founders derive significant benefits in other performance dimensions.

Moving from the Individual Level to the Industry and Societal Levels

Another interesting set of questions arises when one moves from the individual level to the industry or societal level. In particular, at a macro level, one can examine the influence of behaviors of different types of founders and founder groups on industry outcomes. Furthermore, by adopting a temporal perspective, one can empirically investigate and develop new theory regarding the changes brought about by behaviors of different types of founders on industrial outcomes.

Industry-level implications. The plurality of founder identities allows for new theorizing along the lines of Schumpeter because the allocation of entrepreneurship between the different types of

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entrepreneurial agents and the ensuing behaviors and actions can have a profound effect on the development of an economy, its innovativeness, and the development and cohesion of society. Let's consider Schumpeter's classical view of the entrepreneur and how he views the entrepreneur's contribution to the economy. By taking into account behaviors of entrepreneurs with Communitarian and Missionary identities, one can significantly extend his depiction of entrepreneurs as individuals who creatively destroy existing solutions in order to achieve economic benefits and develop new theories on how entrepreneurial behaviors individually (e.g., Communitarian or Missionary) and jointly (Darwinian, Communitarian, and Missionary) shape phenomena on other levels of analysis. As a result, we will obtain a more complete picture of how various kinds of entrepreneurship affect processes and outcomes and arrive at a more encompassing understanding of the potential role of the entrepreneur in the twenty-first century.

As prior empirical research indicates, entrepreneurs with Darwinian, Communitarian, and Missionary identities can coexist within the same industry setting (Fauchart & Gruber, 2011), although the relative share of each type of entrepreneur will evidently vary across different industry settings (Sieger et al., 2016) and, as we will show, may shift in proportions of each type as the cycle of social wealth creation unfolds. This observation entails two notions: the identities of the entrepreneurs have an important effect on intraindustry heterogeneity, with their behaviors and actions being a driving force in establishing such heterogeneity. The perspective on entrepreneurial behavior we have laid out can, thus, offer a novel and compelling set of explanations on how firm heterogeneity arises in an industry (cf. Zott, 2003). In terms of interindustry heterogeneity of the aforementioned entrepreneurial types, a recent empirical study (Sieger et al., 2016) shows that these types are attracted by different opportunities (industries). For instance, Darwinians are much less likely to found companies in the education and training industry than Communitarians or Missionaries. In turn, Communitarians are more likely to start ventures in the health services industry than Darwinians. These findings indicate that different sectors are affected and shaped by different kinds of entrepreneurial behaviors (as a reflection of the three types) and that a considerable amount of research will have to be accomplished to understand these fundamental issues.

Society-level implications. By aggregating individual-level social identities of entrepreneurs and viewing them from a societal perspective, highly interesting research opportunities emerge, which creates the opportunity to advance theories on the economic development of countries. Although the interest in entrepreneurship that serves social causes such as helping a community or the broader public has emerged only fairly recently in the form of social entrepreneurship research, the underlying question regarding the purposes a business should serve has been subject of scholarly discussion for nearly a century (e.g., Donham, 1927; Friedman, 1970). In line with these long-standing scholarly analyses, it would be interesting to develop theories and examine empirically via historical research approaches *why* and *how* the share of each three types of entrepreneurs has evolved over the years and how their distinct behaviors affected societal-level outcomes.

First, it seems that socioeconomic environmental sparseness at certain points in the history of a nation are likely to affect the proportion of the population of ventures in each of the three types. For instance, while there may always be Missionary entrepreneurs who seek to advance the world with their distinct entrepreneurial behaviors, their proportion depends on the socioeconomic milieu encountered at that time. More concretely, let us, for example, look at the immediate post-World-War II world. Most European and East Asian founders were focused on recovery and primarily sought to build personal financial wealth. There were simply not enough social slack resources available for extensive commitment to Missionary or even Communitarian enterprises. With the successes of the *homo economicus*, entrepreneurs spilled over into a small but growing population of community builders, then missionary players were able to benefit from the growing surpluses. In other words, hardly any slack for work activities that could entail more noble causes existed in society, but later on, when the recovery phase was well underway, people could begin to attend to more humanitarian causes (as evidenced, for instance, by the hippie movement) and, thus—as we propose—also to an increased activity in entrepreneurship geared to causes other than the sole pursuit of economic self-interest. These developments are also evident in

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today's prosocial aspirations, especially among Millennials (Grant, 2007, 2012). In particular, the strong interest in social entrepreneurship that we observe today mirrors the interests of "Generation Y"—as well as the relative wealth upon which this generation can draw. More than half of this generation (58%) is willing to take a 15% pay cut to work for a firm that mirrors their values, and almost half of it (45%) is willing to take a 15% pay cut to work for a firms that makes a social or environmental difference (Net Impact, 2012). More generally, it seems that once there is some level of slack in the socioeconomic system, the urge to deploy resources to do good emerges in some part of the population.

Second, when longer time spans are taken into account, dynamic theories about socioeconomic progress could be developed, given that the socioeconomic conditions established at an earlier point in time tee up a socioeconomic milieu for subsequent points in time. Intriguingly, this dynamic process may well be cyclical—waves of creative destruction partition the population into two broad segments with the following dynamic: in the wake of major market, demographic, or technology change, a small but growing population of "haves" emerges that benefits greatly from the change, and it is the much larger group of "have-nots" who bear the brunt of the social adjustment cost. Early on in this wave, outcomes are characterized by significant uncertainties, so the frontline, early "haves" tend to seek to accumulate wealth as a cushion against the disruptive forces underpinning the change. As the innovative wave develops and outcomes become less unstable, the budding then burgeoning generations of "haves" face much more certain and stable accumulations of wealth. A growing subset of these "post-wave crest" haves develop a concern for the plight of the have-nots and, buffered by the accumulation of entrepreneurial wealth of the frontline entrepreneurs, begin in growing numbers to look for ways of assuaging the privations of the have-nots. In the beginning, these people tend to be dominantly Communitarian, but from this subset, there emerges a growing proportion of Missionary entrepreneurs with a broader societal vision. This is not to say that there are zero Communitarians or Missionaries at any stage, only that their proportional representation is very low in the disruptive stage of the cycle and that their death rates tend to be higher. The three forms of entrepreneurial behavior may stabilize, then persist until the next wave of creative destruction is unleashed. More generally, such a cyclical process could mean that societies and countries exhibit "red of fang and claw" behavior when resources are sparse, but that substantive social progress is made at the macro level when a larger proportion of entrepreneurs manifest Communitarian and Missionary entrepreneurial behavior. In other words, social progress, while initiated by Darwinian behavior, progresses to Communitarian and Missionary behaviors. However, if Missionary behaviors begin to increasingly prevail and founders with a Missionary identity seek to generate wealth for the greater good of all, for all, and by all, then for as long as the conveyance of resources can be accomplished without absorbing all the slack resources, this will be stable. Yet, this philosophy of sharing by, and distribution to, all can result in general resource depletion, with attendant economic depletion after which self-interested, *homo economicus* behavior reemerges in response to rent-generating opportunities created by technical or other advances. In sum, we speculate that the relative *proportions* of the three classes of entrepreneurs wax and wane cyclically in the long-run economic cycles characterized by Schumpeterian creative destruction.

Overall, the aforementioned ideas and observations shed new light on a number of key topics and offer fresh ways of thinking about what entrepreneurial behavior means and what consequences it may have on different levels of analysis. So, by adopting a social identity lens on entrepreneurial behavior, scholars may also be able to advance social identity theory as such. Because the creation of a new organization is an activity that is strongly rooted in the social world, entrepreneurship researchers will be in a position to advance understanding of the role of social identity in the creation of artifacts, how social identity interacts with knowledge and experience to shape outcomes (cf. Figure 2), and, in particular, how heterogeneity in social identities shapes outcomes on different levels of analysis—perhaps most intriguingly on the societal level, as outlined earlier.

Variation Within the Social Identity Types: Role Identity Theory and Entrepreneurial Behavior

Figure 1 indicates that the role identities possessed by entrepreneurs may give rise to interesting variation in entrepreneurial behaviors within the three primary social identity types that allow us to move

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beyond the traditional, profit-oriented and self-centered conception of entrepreneurial behavior. As mentioned, because we still lack an empirically grounded, systematic understanding of the most important role identities in entrepreneurship, we decided to employ Cardon et al.'s (2009) distinction between *inventor*, *founder*, and *developer* role identities to illustrate the behavioral variation that may exist when founders with Darwinian, Communitarian, or Missionary types of social identities create new ventures. Each role identity carries meanings that individuals have learned by observing other people performing the role and by having been exposed to the norms associated with a role and expectations that are tied to it. However, as Powell and Baker (2017) show, roles may also be learned or shaped during the firm-creation process, as entrepreneurs seek to better understand their role and discuss it with others (most notably, team members). Thus, an important element to consider is the salience or strength of a particular role identity and the openness of an individual to adapt his/her role identity to the requirements of new firm creation. For instance, the aforementioned study by Jain and colleagues (2009) shows how university researchers stuck to their role identities while commercializing their inventions.

In light of these observations, let's consider the case of an individual with a salient Missionary social identity and a deeply ingrained *inventor* role identity. Relative to individuals with other types of role identities, this person will likely emphasize the importance of science and scientific novelty in the creation of his/her Missionary venture. Hence, within the broader scheme of entrepreneurial behaviors established by being a Missionary, his/her behaviors in new firm creation will be more focused on technological aspects, and more effort and dedication will be devoted to such aspects relative to market-related aspects—for instance, bringing the new invention successfully to customers and inducing positive societal change. On the contrary, within the broader scheme of a Missionary social identity, an individual with a *developer* role identity in entrepreneurship will likely engage more strongly in behaviors that aim to achieve social impact and that will transform the nascent venture into a more stable organizational entity.

The role identities suggested by Cardon and her colleagues (2009) are linked strongly to the entrepreneurial process. Evidently, more complex cases exist. For instance, if a priest decides to create a venture to help the poor, his *role* identity as a priest already contains elements of prosocial motivation. Yet, for the sake of conceptual clarity and in order to be able to obtain a deeper understanding of his entrepreneurial behavior and its effects in new firm creation, one also has to take into account whether his *social* identity is of a Communitarian or a Missionary type (or both, in the case of a hybrid social identity). In effect, the priest's entrepreneurial behavior will differ in major ways if he seeks to help the poor in his own community or seeks to fight poverty on a societal level. In other words, without consideration of his social identity, scholars will not only be blind to major heterogeneity in identity and entrepreneurial behavior, but will also run the risk of misinterpreting role identity-related behaviors in new firm creation.

Overall, this discussion suggests the strong potential inherent in research on entrepreneurial behavior that examines individuals' role identities on a fine-grained level and investigates how different role identities cause variation in entrepreneurial behaviors within the three primary social identity types (cf. -Figure 1).[5] Furthermore, these considerations also open up identity-related questions that are tied to notions that have been discussed in the literature on venture teams: that is, what kind of roles (and associated competences) does a new venture need and at what point in its developmental trajectory (Klotz, Hmieleski, Bradley, & Busenitz, 2014)?

Conclusion

The identity perspective on entrepreneurial behavior suggested in this article opens up a "new way of seeing" entrepreneurial behavior, one that is based on the notion that entrepreneurial behaviors are driven to a significant extent by the meanings that founders associate with their new firm-creation activities: entrepreneurial behaviors are considered to be identity relevant. An identity-based perspective can help prior research move beyond traditional economic views, embedded in economic rationality, when seeking to understand entrepreneurial behavior and include entrepreneurial activities that are not primarily self-oriented, but also

[5] Powell and Baker (2017) employ a coding process for role identities in entrepreneurship that can serve as an example for other studies.

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other-oriented. Overall, identity theory admits a much broader perspective on entrepreneurial behavior—one that not only complements, but on occasion also permits an alternative perspective to the traditional *homo economicus* interpretation. This opens the door for broader, deeper, richer, and substantially more insightful understanding of entrepreneurship as a phenomenon.

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Athena's Birth: Triggers, Actors, and Actions Preceding Industry Inception

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Research summary: *Industry evolution scholars define industry inception as the first instance of product commercialization, focusing on subsequent time periods of growth and maturity. Left understudied are the triggers, actors, and actions preceding industry inception. We integrate recent research in a preliminary framework, conceptualizing the incubation stage as activated by a "trigger" event—a scientific discovery, unmet user need, or mission-oriented grand challenges—and continuing through the first instances of product commercialization. We focus on illuminating actions of multiple and heterogeneous actors that help reduce high technological and demand uncertainty, thereby shaping industry structure and strategic action post-commercialization. To point, although the actors may be different, their actions follow a similar theme. We hope this framework spurs future research investigating the understudied incubation stage of new industries.*

Managerial summary: *Numerous visionaries—inventors, entrepreneurs, scientists, users, managers, policy makers, and others—spend decades laying the groundwork that leads to the creation of new industries. Their contributions are critical, yet have received little systematic attention. Here, we illuminate their actions during the understudied "incubation" stage sparked by a trigger event and culminating in the first instance of product commercialization. We begin by documenting three triggers: scientific and technological discoveries, unmet user needs, and mission-oriented grand challenges. We show that following a trigger event, visionaries solve the technological problems required to transform an innovative idea into a viable commercial product and engage potential adopters and stakeholders; they do this by both applying their existing knowledge base and engaging in experimentation. Their efforts set the stage for subsequent commercialization efforts.*

A rich literature spanning economics, strategy, marketing, sociology, and science and technology studies has examined industry evolution, focusing on how entrepreneurial activity following the first instance of commercialization reduces technological and demand uncertainty, shapes industry structure, and impacts firm strategy and performance (Abernathy & Utterback, 1978; Agarwal & Bayus, 2002; Bijker, Hughes, & Pinch, 1987; Gort & Klepper, 1982; Hannan & Freeman, 1977). In contrast to the extensive study of the takeoff and growth stages, less systematic attention has been paid to the time period *preceding* the first product commercialization, although scholars note industries incubate over an average duration lasting from

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26 to 28 years (Agarwal & Bayus, 2002; Golder, Shacham, & Mitra, 2009). Recent work has started to examine the "incubation stage" (Moeen & Agarwal, 2017; Shah & Mody, 2014), defined here as the period between an initial *trigger* event and the first instance of product commercialization. Building on our review of this work, we ask: "What are the triggers of, and what types of actors and actions lead to, industry inception?"

Our integrative review of empirical work provides several insights into the incubation stage. First, we elaborate on the nature of the initial event activating the emergence of an industry, showing that industries can be initiated by several triggers, including scientific and technological discoveries (Moeen & Agarwal, 2017), unmet user needs (Shah & Tripsas, 2007), and mission-oriented grand challenges (Mowery, 2010). Second, we show each trigger systematically results in myriad actors engaging in innovative and entrepreneurial actions, bringing to bear diverse knowledge bases and experimental pathways to incubate the industry. Third, their actions relate to sensemaking and proactive investment in the presence of technological and demand uncertainty. It appears that although the triggers and actors may be different, the actions are similar: these efforts typically center around solving many technological problems to transform an innovative idea into a viable commercial product, as well as engaging potential adopters and stakeholders to gauge demand potential.

These insights set the stage for fruitful avenues for future research on the entrepreneurial actions that characterize the incubation stage of industries. We highlight several questions pertaining to a deeper study of this stage, the answers to which should help us understand how the "pre-life" of an industry may determine the structure, strategy, and performance consequences during its more traditional life cycle stages post-commercialization.

Research Gap

The Emergence and Growth Stages of the Industries: A Brief Review

In Greek mythology, Athena, the goddess of intelligence and reason, sprang out of Zeus' forehead fully grown and in a full set of armor. She soon evolved to become the patron of city and civilization, promoting the arts and agriculture and defending the city from outside enemies. Similarly, the literature on industry evolution marks the inception of the new industries at the time of first commercialization and studies subsequent growth and evolution due to innovation and entrepreneurship. The generic industry life cycle model documented across numerous industries illustrates an early quasi-monopoly period, followed by accelerated market entry of firms during the emergence or growth stage, sharp decline in the number of firms during the shakeout stage, and an eventual mature stage with low levels of firm entry and exit (Abernathy & Utterback, 1978; Gort & Klepper, 1982; Hannan & Freeman, 1977).

The early quasi-monopoly and growth stages are particularly relevant for understanding industry emergence processes. The early quasi-monopoly stage occurs immediately after the first product commercialization. This stage is often characterized by the narrative of lone inventors such as Edison or the Wright Brothers toiling away in isolation as they transform their ideas into reality. Accordingly, most industry evolution models assume industries emerge from a monopoly on the innovation process (Gort & Klepper, 1982; Jovanovic & Macdonald, 1994) or take the innovation to be a given/exogenous (Rao, 1994; Sine, Haveman, & Tolbert, 2005).

During the emergence or growth stage of industry evolution, there is a steep rise in the number of firms. Scholars of economics, organizations, and technology have extensively examined factors leading to firm entry during this stage (Agarwal & Tripsas, 2008). Evolutionary economics scholars note information sources, accumulated stock of knowledge, and rates of interfirm knowledge diffusion as key factors influencing firm entry (Agarwal & Gort, 2001; Gort & Klepper, 1982), and they link takeoff in firms to takeoff in industry sales (Agarwal & Bayus, 2002). Science and technology studies scholars have examined evolution of technologies through technological design improvements by social groups (Bijker, 1997; Bijker et al., 1987; Oudshoorn & Pinch, 2003), and creation/prototyping of innovative new features by individual users (Franz, 2000; Kline & Pinch, 1996). Organizational theorists highlight how firm density is shaped by forces of legitimization and competition (Aldrich & Fiol, 1994; Hannan & Freeman, 1977) and note the role of social

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movements (Hiatt, Sine, & Tolbert, 2009; Pacheco, York, & Hargrave, 2014; Rao, 1994; Sine et al., 2005; Weber, Heinze, & DeSoucey, 2008) and socio-cognitive categories (Santos & Eisenhardt, 2009; Wry, Lounsbury, & Glynn, 2011) in influencing entrepreneurial entry and legitimizing industries. Technology management scholars attribute the rise in the number of firms to the need for experimentation prior to dominant design (Abernathy & Utterback, 1978; Tushman & Anderson, 1986), and they link experimentation paths to heterogeneity in firms' prior knowledge (Kapoor & Furr, 2015) or cognitive frames (Anthony, Nelson, & Tripsas, 2016; Benner & Tripsas, 2012; Garud & Rappa, 1994).

The Understudied Incubation Stage

Lesser-known features about Athena's birth are the events occurring *prior* to her springing forth from Zeus' head. Zeus, the god of war, and Metis, the goddess of thought, procreated. Zeus later swallowed the unborn child and her mother, providing the time and opportunity for Athena to gain knowledge and warrior skills before emerging to the public eye as a fully armed and grown goddess of intelligence and reason.

Similarly, understudied features of new industries relate to the set of actors and actions prior to an industry's inception. Two implicit assumptions may have limited our understanding of these precursors of industry inception. First, most of the industry evolution literature has characterized the starting point of an industry as the first instance of product commercialization, thereby leading to a lack of attention to the incubation stage that precedes the first product commercialization (Moeen & Agarwal, 2017). In part, because the available data sources often lacked richness of information on actors and their actions during industry incubation stage, studies have been limited to a few historical narratives (Cortada, 1993; Greenstein, 2015; Mody, 2006; Rosenbloom & Cusumano, 1987) or comparison between invention and commercialization times of new products (Agarwal & Bayus, 2002; Enos, 1962; Golder et al., 2009). However, recent research points to the need to question this implicit assumption. During the incubation stage, with an average duration of 28 years across numerous industries (Agarwal & Bayus, 2002), heterogeneous actors seem to shape industry architecture and underlying knowledge bases through investments that transform opportunities into commercial products (Moeen, 2017; Moeen & Agarwal, 2017; Shah & Mody, 2014). Concurrently, actors seem to benefit from the formative incubation stage to construct the socio-cognitive category and collective identity of an industry (Bingham & Kahl, 2013; Navis & Glynn, 2010).

Second, most industry evolution scholars have focused on high-technology industries as empirical contexts, leading to a disproportionate attention on scientific discoveries as triggers that initiate the industry incubation stage (Dosi, 1988). This is an appropriate characterization of biotechnology, nanotechnology, and information technology discoveries, each of which led to the emergence of multiple industries (Rothaermel & Thursby, 2007). However, recent research highlights unmet needs of users (Shah & Mody, 2014; Shah & Tripsas, 2007) and mission-oriented grand challenges (Klepper, 2016; Mowery, 2010) as other important triggers leading to industry emergence. For example, user needs initiated the investments preceding probe microscopy (Mody, 2006) and the windsurfing, skateboarding, and snowboarding equipment industries (Shah, 2003). Similarly, mission-oriented grand challenges to address national security or public health needs were critical to the emergence of the penicillin industry (Klepper, 2016).

Relaxing these two assumptions provides valuable research opportunities for extending the industry emergence literature by not only inquiring about the variety of actors and actions during the industry incubation stage, but also understanding different triggers that initiate the incubation stage. Figure 1 visually depicts the incubation stage in the context of the industry life cycle.

Conceptual Framework

We begin with a review of the studies of industry incubation stage in the current literature. We bring together empirical documentation of triggers, actors, and actions preceding industry inception, and we then identify themes characterizing the incubation stage following individual triggers. Based on our integrative literature review, we identify and discuss three *trigger* events that initiate the incubation stage of industries—scientific discoveries, unmet user

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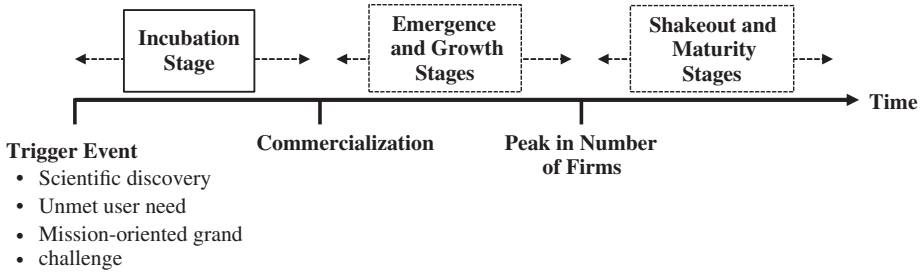

Figure 1. Incubation stage in the industry timeline.

needs, and mission-oriented grand challenges. Each type of trigger engages a relatively distinct set of heterogeneous *actors* who explore the new opportunity. The actors engage in a wide-variety of *actions*, which collectively help identify and build the potential for industry inception by resolving critical technological and demand uncertainties associated with transforming the opportunity to a commercialized innovation.

Industries Triggered by Scientific Discoveries

In 1908, George Shull at the Cold Spring Harbor Laboratory and Edward East at the Connecticut State College detected lack of deterioration in yield and vigor of inbred corn, a scientific discovery that would underpin the emergence of the hybrid corn industry (Griliches, 1957). Similarly, scientific discoveries are an initial trigger event of the incubation stage of many industries, including flat panel displays (Eggers, 2014), biopharmaceuticals (Zucker, Darby, & Brewer, 1998), nano-technology based (Rothaermel & Thursby, 2007), service robotics (Lechevalier, Nishimura, & Storz, 2014), solid-state lighting (Min & Sarkar, 2015; Sanderson & Simons, 2014), synthetic diamonds (Phaal, O'Sullivan, Routley, Ford, & Probert, 2011), CCD image sensors (Roy & Sarkar, 2017), and agricultural biotechnology (Moeen & Agarwal, 2017).

Such scientific discoveries overwhelmingly occur in universities or corporate research units, and these knowledge contexts privilege academic and industry scientists as actors who explore transformation of the scientific or technological opportunity into a commercial product. Much of the early stage work occurring in these contexts constitutes a noncommercial period emphasizing scientific advancement, motivated in part by the quest for new knowledge and incentivized by the norms of science (Merton, 1973). However, at some transition point, Agarwal, Audretsch, and Sarkar (2007) note that individuals face the choice of whether to pursue entrepreneurial action within existing organizations or to form a new venture. Depending on the route taken, the actors engage in university technology transfer, technology or academic entrepreneurship, or intrapreneurship within existing firms. In the case of hybrid corn, scientists in land-grant universities and agricultural experiment stations were at the forefront of early scientific exploration and basic research. However, starting in 1920, entrepreneurial founding of Pioneer Hi-Bred, Funk Seeds, Pfister Hybrids, and DeKalb marked a shift toward harvesting the commercial value. In biopharmaceuticals, 3 years after he discovered recombinant DNA discovery in 1973, Herbert Boyer bonded with venture capitalist Robert Swanson over their love of science and desire to apply biotechnology for human health benefits to found Genentech as the first university biotechnology spinoff (Weintraub, 2004). This set forth a stream of academic entrepreneurship, ultimately comprising 50% of biotechnology IPO activity (Audretsch & Stephan, 1996). In agricultural biotechnology, heterogeneity of actors is exemplified by the different pathways pursued by the three sets of scientists involved in the 1977 scientific discovery of Agrobacterium-mediated plant gene transfer. Jeff Schell and Marc van Montagu at the University of Ghent founded a university spinoff named Advanced Genetic Sciences in 1979. Monsanto scientists, Erin Jaworski, Rob Horsch, and Steve Rogers established a dedicated biotechnology unit within Monsanto in 1980. Mary-Dell Chilton from Washington University joined a diversifying entrant named Ciba-Geigy in 1983 (Charles, 2001). The heterogeneity of actors responding to the initial agricultural biotechnology trigger holds more generally, as Moeen and Agarwal (2017) show that

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entrepreneurial start-ups, incumbents from the obsolescing seed breeding industry, and diversifying entrants each represented 26, 48, and 26% respectively, of firms making technological investments.

What did these actors focus on during the incubation stage, given there was no production of goods and services? The actions undertaken focused on addressing the substantial technological and demand uncertainty surrounding the idea. Importantly, both the nature of the uncertainty and the actions undertaken seem to be qualitatively different from what scholars have highlighted in the post-commercialization stages of the industry. In terms of technological uncertainty, the actions involved transforming basic scientific discoveries into usable applications. Further, there was a concomitant need to scout for advancements in complementary domains and integrate across diverse knowledge bases for viable prototypes. For example, the initial scientific discovery about the attributes of inbred corn was not by itself commercially useful. Even the follow-on procedure for corn breeding outlined by George Shull in 1909 yielded very small quantities of seed to create commercial value. Subsequent research programs at multiple universities motivated by knowledge-seeking aspirations or commercial opportunities helped resolve the technological challenges. After a decade of research, Donald Jones at Harvard University finally solved the problem by introducing four-way or double-cross hybrids in 1918, and this technical feasibility of producing abundant seeds spurred the development of several strains of hybrid corn by the early 1920s (Crow, 1998; Nelson, 1993). Likewise, in the flat panel display industry, an initial technical design became possible due to concurrent experimentation with liquid crystal and gas plasma displays within research units of IBM, Sony, Canon, Siemens, and Seiko-Epson, while benefiting from university advances related to amorphous silicon (Eggers, 2014). A similar case holds for the CCD image sensor and solid-state lighting industries, in which both firms and universities contributed to the gradual evolution of science in multiple competing paths (Roy & Sarkar, 2017; Sanderson & Simons, 2014).

In addition to the competing internal research experimentations, the extent of interaction with multiple external stakeholders for resolving technological uncertainty is remarkable, as firms typically engage in joint problem solving and collaborations to advance technical trajectories toward a commercial product. For example, the incubation stages of the biopharmaceutical and solid-state lighting industries were characterized by numerous alliances (Rothaermel & Thursby, 2007; Sanderson & Simons, 2014). Similarly, internal firm research in agricultural biotechnology was complemented by informal interfirm or university-firm information exchange processes, as well as by leveraging formal markets for technology and corporate control. In this context, the frequency of alliances and acquisitions in the 10 years preceding industry inception was 75 and 45% of the 10-year period following industry inception, respectively (Moeen & Agarwal, 2017). Further, firms' interactions with a broader set of stakeholders may help develop a better understanding of the emerging socio-cognitive categories and labels, which can prompt and inspire new technological variations (Grodal, Gotsopoulos, & Suarez, 2015).

To resolve demand uncertainty, the lack of even a viable prototype implied an investment in actions to proactively create or verify demand conditions through either shaping social and economic perceptions of future customers or securing lead users who may *ex ante* commit to product sales. For hybrid corn, while the general desired features of corn seed were known, firms sought to assess demand and understand what factors underpinned reluctance by farmers in future adoption of hybrid corn. To enhance public knowledge and alleviate farmers' concerns, not only did entrepreneurs organize several demonstration plantings and field observations, but the founder of Pioneer Hi-Bred became the editor of an agricultural magazine named *Wallaces' Farmer* and wrote frequent and persuasive editorials about hybrid corn (Brown, 1983). A similar focus on shaping customers' perceptions is observed in firms and other stakeholders' efforts to build legitimacy and carve out socio-cognitive categories echoing specifications of future products (Grodal et al., 2015). For example, during the incubation stage, investing radio satellite firms used consistent linguistic framing and storytelling to shape the collective industry identity (Navis & Glynn, 2010), whereas stakeholders in the business computer industry relied on familiar analogies for new product descriptions (Bingham & Kahl, 2013). In the wind energy industry, entrepreneurs joined efforts with

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environmental movements such as the Sierra Club to promote demand for the industry (Sine & Lee, 2009). An alternative path in alleviating demand uncertainty focused on securing sales contracts with institutional buyers such as the military in the semiconductor and radar industries (Mowery, 2010). As these examples indicate, besides technological investments, actions undertaken during the incubation stage were strategically targeted to gauge and reduce demand uncertainty.

As the first bushels of hybrid corn were sold by Pioneer Hi-Bred in 1926, the birth of the hybrid corn industry rested on internal development and information exchange between actors stemming from heterogeneous knowledge bases and cognitive frames. More generally, and across science-triggered industries, although the starting point of the incubation stage is a scientific discovery, the eventual industry inception entails actions focused on both technical advancements and demand conditions. In turn, significant experimentation, competition, and collaboration by actors in the incubation stage critically shape the ensuing industry structure.

Industries Triggered by Unmet User Needs

In the 1870s, Josephine Cochrane grew tired of servants chipping her heirloom china and began designing a machine that could clean dirty dishes, thereby identifying an unmet user need that would underpin the emergence of the dishwashing machine industry (Fenster, 1999). Similarly, users' drive to find a solution to their unmet needs triggered the incubation stage of industries such as sports equipment (Baldwin, Hienerth, & Von Hippel, 2006; Shah, 2003), probe microscopy (Mody, 2006; Shah & Mody, 2014), and photo typesetters (Tripsas, 2008).

Unique understanding of needs unfulfilled by existing products or services often provides the knowledge context for end-users or professional users as actors who invent to fulfill that need (Von Hippel, 1988). User-inventors typically design an initial prototype for their private use and may share it with other users, either individually or within a community (Franke & Shah, 2003). Some users, due to their own experiences with the invention and/or positive community feedback, subsequently perceive a commercial opportunity and found firms to commercialize the invention (Shah & Tripsas, 2007). In dishwashing machines, for example, after several years of personal use and display to neighbors in her kitchen, Josephine Cochrane received her first patent in 1886 and set about founding Cochran's Crescent Washing Machine Company. Similarly, in the rodeo kayaking industry, although Walt Blackader, an enthusiast kayaker, introduced rodeo kayaking techniques and specialized sport equipment in 1968, it was only in the early 1970s that users in the rodeo kayaking community founded new firms to address unsolicited requests from others wishing to own equipment similar to theirs (Baldwin et al., 2006). In the photo typesetter industry, while in charge of publishing a French patent gazette for International Telephone & Telegraph, professional users Louis Moyroud and Rene Higonnet invented the first mechanical photo typesetter in 1944, and they later commercialized it with a firm named Lithomat in 1949 (Tripsas, 2008).

Similar to industries triggered by scientific discoveries, actors focused their efforts on resolving technological and demand uncertainties during the incubation stage. The resolution of technological uncertainty often entailed designing a prototype that could address the unmet need. Therefore, key actions consisted of identifying and integrating relevant knowledge and technology bases, which were often redeployed from other industry contexts or cocreated for the focal industry. For example, in order to build the first dishwashing machine, Josephine Cochrane hired a mechanic named George Butters as a collaborator. While they were able to draw on the available mechanical technologies, the first few attempts showed poor results. However, several design revisions resulted in an operational prototype, which was later improved with a motor pumping the water and movable dish rack. In designing the photo typesetter prototype, Rene Higonnet relied on available photography technologies of the time (Tripsas, 2008). Similarly, user entrepreneurs in the rodeo kayaking industry designed the first prototypes by leveraging the existing manufacturing technique of hand lay-up molding of fiberglass (Baldwin et al., 2006).

When prototype design entailed access and integration of novel areas of expertise not easily redeployable from other contexts, collective design and knowledge development by engaging the user community became pertinent. Participants within these communities exchanged information freely through discussions and presentation of artifacts and

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invested time and effort to address others' needs, thereby facilitating improvements and new feature development (Franke & Shah, 2003). In the probe microscopy industry, academics who wanted to use the probe microscope for their research formed user communities to share knowledge on how to build copies of the probe microscope, extend its functionality, share tips and component parts, and provide data in support of the image's scientific value. They also worked jointly in labs through visits, sabbaticals, and graduate student and postdoc exchanges (Mody, 2006). These efforts led to the gradual development of explicit knowledge for the microscope to be reliably replicated. Within windsurfing, skateboarding, and snowboarding equipment industries, higher novelty was achieved as users freely exchanged information on their designs and received feedback from the user community (Shah, 2003).

In terms of demand uncertainty, even though the commercial opportunity for user entrepreneurship is based on realization of a personal unmet need, the extent to which a set of potential consumers faces a similar need and is willing to adopt the product is unknown. Therefore, there is a need for proactive assessment and shaping of demand conditions by engaging other users through direct product experience and community feedback. For dishwashing machines, while the need for dishwashers as a replacement for handwashing was well understood by Cochrane, that a machine could do the task had yet to be established for wider customer groups. Indeed, in contrast to her own experiences, housewives were initially not interested. Instead, Cochrane had to personally visit restaurants and hotels to not only display the machine to a wide audience, but also provide the direct product experience for users, which enabled resolution of demand uncertainty. The role of community feedback was salient within industry contexts such as sport equipment and probe microscopy, as wider adoption required incorporation of the voices of multiple actors into the technological artifact (Baldwin et al., 2006; Mody, 2006; Shah, 2003). In these contexts, word of mouth diffusion of prototype attributes as well as obtaining input from the user community about desired features and applications turned critical (Shah & Tripsas, 2007).

As Josephine Cochrane sold the first dishwashing machine to Palmer House hotel in Chicago in the late 1880s, the birth of the dishwashing machine industry rested on her entrepreneurial drive to satisfy her own unmet need and the needs her invention satisfied for others. More broadly, when industries are initiated from unmet user needs, users engage in rich information exchanges with broader communities, and their development of prototypes that address their own needs fuels new industry emergence. Despite differences in triggers and actors between science- and user-triggered industries, they nonetheless follow similar patterns in that actions are focused on reducing technological and demand uncertainties, thereby helping shape an industry's future structure.

Industries Triggered by Mission-Oriented Grand Challenges

In 1941, the U.S. government appointed a committee at the Office of Scientific Research and Development (OSRD) to overcome the excessive needs of the military to treat infection during World War II, a mission-oriented grand challenge that would underpin the emergence of the penicillin industry (Klepper, 2016). Mission-oriented grand challenges in response to national security, public health, or social issues have initiated public-private partnerships, which have led to the emergence of industries such as bionic prosthetics (Kim, 2016) and mobile money platforms (Shah et al., 2017).

Challenges related to national security or public health drive government agencies or not-for-profit foundations to define and support specific missions and coordinated actions for achieving a solution with immense social and global impact (Foray, Mowery, & Nelson, 2012; George, Howard-Grenville, Joshi, & Tihanyi, 2016). These missions typically involve extensive partnerships between private sector (e.g., firms) and public sector (e.g., universities, government labs) actors and are coordinated by the original government agency or foundation defining the mission (these actors may or may not be local to the area where the industry develops. See, for example, Shah et al., 2017). The immediate beneficiaries of the missions may not necessarily be the general public, particularly in the case of military and defense-related challenges. However, some technological achievements spill over to the public/civilian domain and provide the basis for private entrepreneurial activity (Mowery, 2010). In the case of penicillin, OSRD served as the

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coordinator of research efforts between pharmaceutical firms such as Merck, Squibb, and Pfizer, government labs, and multiple universities. In parallel, the War Production Board funded relevant research of more than 175 firms and several hundred university scientists. Although the primary objective was to provide the military with antibiotics, penicillin later became available for commercial sales (Klepper, 2016). Within several Central American countries, the Swiss Agency for Development and Cooperation (SDC) facilitated the creation of metal silos markets to reduce post-harvest loss by engaging stakeholders in both public and private sectors (Shah, Agarwal, & Sonka, 2017; Sonka, Cheng, & Kenney, 2014). These cases note heterogeneous roles of university scientists and firms as key actors, with government agencies and foundations serving as coordinators.

Resolution of technological and demand uncertainty is also the focus of actions during the incubation stage. For technological uncertainty, while some missions need to extend available knowledge and technology bases, others require development of entire knowledge bases from scratch. These efforts typically involve coordinated research by firms and universities and extensive information exchange. For the case of penicillin, Fleming's original discovery of penicillin in 1928 and the subsequent research by Howard Florey at the University of Oxford with the financial support of the Rockefeller Foundation provided an initial scientific base (Kingston, 2000). However, the treatment efficacy needed to be scientifically confirmed, and there were no production processes available for mass production. Collectively and through interactive experimentation, government agencies, universities, and firm collaborators found a solution. An important feature was that the firms involved received regular progress reports and agreed to freely exchange information about their findings (Klepper, 2016). In metal silos, with easily sourced technology from the developed countries, the creation of a well-functioning ecosystem within the Central American countries required attention to local needs. The SDC coordinated technology experimentation by tinsmiths and farmers during the incubation stage to address problems in the development of a viable supply chain and in optimal storage features that reduced harvest spoilage and pest control (Shah et al., 2017; Sonka et al., 2014). Within Sub-Saharan Africa, mission-driven coordination between nonprofit agencies such as the U.K. Department for International Development, diversifying entrants such as Vodafone, and entrepreneurial start-ups such as Safaricom and various independent agents addressed the technological and supply chain challenges for successful launch of M-Pesa as a mobile money platform. In contrast, within the same context, the inability to create win-win outcomes around the NFC (near field communication) chip standard for secure financial transactions between banks, credit card companies, and other intermediaries stifled inception of this industry (Ozcan & Santos, 2015). Similarly, in the absence of coordinated and collective efforts in the context of drugs for neglected diseases in poor countries, despite scattered basic scientific progress, a translation to clinical and commercial knowledge was largely unfruitful (Vakili & McGahan, 2016).

While it may seem demand uncertainties are typically less salient in these industries given their mission-oriented nature, the assessment of potential commercial value and its actualization are far from a certain undertaking. The initial sustenance of mission-oriented efforts are often assured by procurement and purchasing agreements. For example, the military committed to purchase penicillin (Kingston, 2000; Klepper, 2016), and the SDC program helped support the initial purchases of metal silos in Central America (Shah et al., 2017; Sonka et al., 2014). However, in other cases, reaching commercialization involved convincing other actors of the merits of the technology, often through information provision. For penicillin, despite promising clinical trial evidence, additional medical demonstrations and direct advocacy of Howard Florey in battlefields became essential for assessing and shaping its adoption, even by military doctors (Kingston, 2000). Further, to gauge general commercial demand, there was ongoing publicity about the prospective miracle drug for human infection and animal farming (Achilladelis, 1993). For metal silos, extensive information exchange—ranging from posters and street boards to radio programs to agricultural exhibitions as well as partnerships with governments and locally respected stakeholders such as NGOs, religious institutions, and women leaders—helped engender trust and overcome demand resistance. Even when rural farmers were convinced of benefits, the prohibitively expensive costs of metal silos required public-private partnerships to create financial solutions for sustainable demand (Shah et al., 2017; Sonka et al., 2014).

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As Merck and Pfizer addressed military penicillin needs and subsequently commercialized penicillin in 1945, the birth of the antibiotics industry rested on complex yet coordinated responses by multiple private and public actors to a mission challenge. Today, commercial space travel may be an industry in the incubation stage initially triggered by a mission-oriented grand challenge. More broadly, industries triggered by mission-oriented grand challenges depict concerted channeling of efforts across diverse communities and organizations, with rich information exchange to create new institutional and industry structures and facilitate solving thorny technical and demand problems.

Integrative Themes from the Conceptual Framework

We now synthesize overarching themes based on the aforementioned empirical observations of the incubation stage. Table 1 provides a summary.

Theme 1: The incubation stage can have one of several triggers and is motivated by different incentives. We begin by underscoring the premise of the work reviewed earlier. Prior to industry inception, there is an incubation stage activated by a trigger event (Table 1, Column 1). Although trigger events differ, the subsequent incubation stage is a dynamic time period lasting several years and even decades. In science-triggered industries, the incubation stage leverages university and industry inventors. A focus on basic science, within academic norms and reward structures, privileges non-pecuniary motives spanning the joy of discovery, publications, and the resulting reputational awards due to recognition of merit (Feynman & Leighton, 2010; Merton, 1973). The commercial potential of scientific discoveries thereafter motivates for-profit application, often through the creation of new firms in the process. In industries triggered by unmet user needs, the incubation stage leverages lead or niche users solving problems for their own purposes and, in the process, they discover the potential for commercialization. Mission-oriented grand challenges initiated by the government or not-for-profit foundations also represent a distinct trigger, for which the incubation stage involves individual and organizational efforts rising to the challenge of social needs left underaddressed by existing markets. Perhaps more than any other stage, the actors and actions undertaken during incubation are most characteristic of "creative destruction" (Schumpeter, 1942). However, given high and endogenous uncertainty, the motivations for the fundamental breakthroughs occurring during this stage represent expected, rather than actual, monetary returns. Though economic models (Aghion & Howitt, 1992) emphasize "prizes offered by capitalist society to the successful innovator" (Schumpeter, 1942, p. 102), the incubation stage points to additional non-pecuniary motives, such as solving problems of individual or societal import and "the joy of creating, of getting things done, or simply of exercising one's energy and ingenuity" (Schumpeter, 1934, pp. 93–94).

Theme 2: The incubation stage is characterized by heterogeneous actors drawing from diverse knowledge bases, even within each type of trigger. While Theme 1 highlighted differences in actors across different triggers for industry incubation, a second theme relates to within-industry numerosity and heterogeneity of actors and the diversity of knowledge bases that ultimately need to be integrated for industry emergence (Table 1, Column 2). Contrary to the images invoked by lone inventors in scientific labs or garages, each trigger event unleashes the creative energies of multiple actors who engage in problem solving and development of the industry's knowledge base. These actors represent diversity in experiments and pathways undertaken to sensemake of the opportunities presented by the triggers and diversity in knowledge bases drawn upon. Also, and in contradiction to received transactions costs predictions that high uncertainty and asset specificity may preclude operational markets for technology, the incubation stage seems to be characterized by rich interaction of the actors in formal and informal exchange of ideas, knowledge bases, and assets—all designed to integrate relevant information to further enhance viability of the industry.

Theme 3: The incubation stage represents simultaneous and recursive (rather than linear) actions intended to reduce technological and demand uncertainty. Linear pathways for science-push emphasize scientific discovery resulting in invention, manufacturing, and marketing, and for demand-pull, emphasize customer suggestions resulting in invention and manufacturing (Schilling,

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Table 1
Triggers, Actors, and Actions in the Incubation Stage

Trigger event	Key actors	Actions reducing technological uncertainty in the incubation stage	Actions reducing demand uncertainty in the incubation stage
Scientific Discovery	• University and industry scientists • Technology and academic entrepreneurs • Established and diversifying firms	• *Concurrent experimentation and development* undertaken by university scientists and firms • *Knowledge exchange* through formal and informal scientific collaborations • *Leveraging and development* of both core and enabling technologies	• *Identification of potential uses and users* through experimental search across consumer groups • *Development of a communicable identity* for the technology's use and function • *Interest in the technology assessed, shaped, and built* through trade associations, foundations, newspapers, social movements, and exhibitions
Unmet User Needs	• User inventors • User entrepreneurs • User communities	• *Concurrent experimentation and development* undertaken by individual users; users working within user communities (as well as firms and labs); firms; and/or university scientists • *Open information exchange* through participation in user communities makes knowledge widely available • *Diverse knowledge accessed* and integrated through participation in user communities or hires	• *Identification of additional uses* through encouragement of diverse users to build and/or use the technology and exhibitions/ demonstrations • *Interest in the technology assessed and built* through word-of-mouth, participation in user communities, and technical demonstrations
Mission-Oriented Grand Challenges	• Government agencies • Foundations • University and industry scientists • For-profit firms	• *Concurrent experimentation and development* undertaken by scientists and administrators in universities, government and nonprofit agencies • *Knowledge exchange* through formal and open collaborations between government scientists, university scientists, and foundations (made possible by extensive funding provided by institutionalized actors (e.g., governments, foundations) • *Rules/standards development* to support complex system development	• *Identification of commercial uses* by encouragement of involved individuals' usage of technology • *Interest in the technology assessed and built* through exhibits, demonstrations, and support from key stakeholders • *Demand initiated* through government procurement and purchasing agreements

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2016). In contrast, a third theme emerging from the above observations is that regardless of the type of trigger, the actions undertaken during the incubation stage represent simultaneous and recursive attention to *both* technological and demand uncertainty (Table 1, Columns 3 & 4). Rather than linear pathways, "the Marshallian scissors cuts with both blades" (Cohen, 2010, p. 169) when viewing actions undertaken to reduce uncertainty.

Further, the nature of technological/demand uncertainty during the incubation stage seems qualitatively different than for later stages. Subsequent to product commercialization and within the context of an operating market, scholars have conceptualized technological uncertainty as either partial knowledge about cost, features, and performance of a nontrivial set of product designs (Abernathy & Utterback, 1978; Clark, 1985; Tushman & Anderson, 1986) or partial knowledge about the timing and extent of obsolescence of technology-specific investments in assets and capabilities (Balakrishnan & Wernerfelt, 1986). However, prior to first product commercialization, technological uncertainties include additional dimensions, characteristic of the large differences between the amount of information required to develop the innovation and the amount of information already possessed (Galbraith, 1977). Qualitatively then, technological uncertainty during the incubation stage arises due to partial knowledge about whether and how adequate advancements in core and complementary knowledge domains can be integrated into introducing a viable product.

Similarly, demand uncertainty subsequent to commercialization takes the forms of partial knowledge about customers understanding of a product, their evaluation of various design features (Abernathy & Utterback, 1978; Clark, 1985; Tushman & Anderson, 1986), and unanticipated volatility in demand size (Walker & Weber, 1984). During the incubation stage, however, demand uncertainty is qualitatively different, resulting from partial knowledge about customers' preferences about a product concept that may or may not even be available as a prototype for them to experience. Even in user- and mission-triggered contexts, the needs experienced by lead users serve as a guidepost around which further actions are undertaken to assess the technology's commercial potential and resolve demand uncertainties through outreach and development.

Theme 4: The incubation stage is characterized by experimentation directed at resolving technological and demand uncertainty. Experimentation is a consistent and recurring feature of the incubation stage. Actors start out with limited information on the technology and its potential, as well as its intended or unintended applications. Building off the preceding two themes, the incubation stage is well characterized by the notion of "human agents [who] differ in their skills, capabilities, and orientations…enlisted into the realm of potentially useful experimentation" (Rosenberg, 1992, pp. 188–189). Only through experimentation is information uncovered to reduce the technological and demand uncertainties described earlier. The results of experimentation appear to manifold: the characteristics of the technology (e.g., its design, features, and functionality) and the market the technology serves evolve and often proliferate. That is, a trigger event sets in motion panoply of experiments by myriad actors drawing on heterogeneous sets of resources (Table 1, Column 3). In science-triggered industries, university and industry inventors engage in sequential efforts and trial and error to transform basic research into commercial applications. In industries propelled by unmet user needs, the incubation stage depends upon similar efforts by users who bricolage relevant knowledge from various sources. Mission-oriented grand challenges initiated by the government or not-for-profit foundations coalesce individual and organizational efforts, also engaging in trial and error process. Simultaneously, across all three triggers, experimental search and discovery about potential use and users during the incubation stage relate to sensemaking about desirable features, incorporating knowledge from lead users into the prototype products and services and experimental teaching and learning loops with potential consumers about desirability of design features (Table 1, Column 4).

Theme 5: The incubation stage is characterized by significant sharing of knowledge through formal and informal channels. A second hallmark of the actions designed to resolve "partial knowledge" is the iteration between internal development experiments and integration of external knowledge and resources. The incubation stage is characterized by rich information exchanges within relevant communities to address uncertainties (Table 1, Columns 3 and 4). For industries triggered by

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scientific discoveries or mission-oriented challenges, these communities are within universities and firms and for unmet user needs, the actors engage with user communities—individuals who unite together based on similarities in use. Further, the motivations discussed in Theme 1 imply that knowledge exchange occurs not only through formal channels (alliances and/or acquisitions for resource reconfiguration) governed by monetary incentives, but also through informal (open) and social channels. Nonmonetary motivations for use of informal channels relate to norms of science in science-based and mission-driven triggers and the desire of users to share ideas with like-minded others for the purpose of enjoyment and creativity in unmet user need triggers.

Together, experimentation and knowledge sharing imply that multiple actors, possessing a wide-variety of knowledge, apply their insights and expertise to guide efforts in problem search and discovery of solutions. As knowledge is shared through various mechanisms and for various reasons, deliberate and vicarious learning across actors informs and guides future experiments, potentially reducing duplication of effort, but surely building the knowledge base for the industry during the incubation stage.

Theme 6: The incubation stage shapes industry structure and firm strategy in the stages post-commercialization. The earlier themes underscore an important overarching theme regarding the incubation stage: notwithstanding that some industries stem from lone inventors toiling in isolation of others resulting in a monopoly, the work reviewed here points to an alternative pathway wherein the incubation stage is characterized by vibrant actions undertaken by numerous and heterogeneous actors. Importantly, most of the industries we have featured depict a quasi-monopoly period after the first commercialization, but the one or, at most, few firms that initially commercialize a product belie the significant number of actors who invest in incubating the industry. The strategies undertaken by investing firms, in the form of both competitive and collaborative decision making, determine who takes on the commercialization role and who takes on supplementary roles in the developing ecosystem. Thus, whether industries evolve to become oligopolies or monopolistically competitive may well be traced to seeds sown during the incubation stage.

A Research Agenda

Our brief review and preliminary conceptual framework underscoring our understanding of the incubation stage of new industries are themselves in an incubation stage and deserving of effort from numerous and heterogeneous scholars with diverse disciplinary lenses and research expertise. We next provide a few potential pathways for experimentation, knowledge sharing, and exploration.

Theoretical Areas of Inquiry

Initial triggers. The review of the current industry incubation literature revealed three sets of initial triggers that activate the emergence trajectory of nascent industries. While informed by the current state of the literature, these three sets of triggers may not fully cover the variety of incubation paths experienced in different industries. Future research drawing on novel and heterogeneous industry contexts may uncover other important triggers. For example, scholars have noted how social movements shape industry demand and channel resources to industry producers after industry inception (Lounsbury, Ventresca, & Hirsch, 2003; Pacheco et al., 2014; Wry et al., 2011), and new empirical evidence may identify industries with social movements as the initial trigger of the incubation stage. Further, although we focused on the role of government in triggering new industries via mission-oriented grand challenges, other triggers may be regulatory or public policy.

Our conceptual framework incorporated a sharp distinction between the three sets of triggers. However, we acknowledge the presence of hybrid triggers. Particularly in high-technology industries, scientific discoveries may result from both core expertise and from unmet needs encountered through use. The same holds for scientific discoveries that are in response to mission-driven research. The internet is a salient example of such a hybrid trigger (Greenstein, 2015). It was partly triggered by a mission-oriented grand challenge by DARPA,[1] which not only funded but also coordinated efforts

[1] DARPA refers to the Defense Advanced Research Projects Agency, an agency responsible for developing emerging technologies for use in the military. The internet project was initially funded and coordinated by the agency under its first name, Advanced Research Projects Agency (ARPA).

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of several university scientists and firms to develop packet switching data network. Concurrently, though, it was also built on the discoveries shifting the scientific frontier such as routing algorithms as well as private firms' need for communication (Greenstein, 2015). Research examining pure and hybrid trigger industries will provide useful insights regarding similarities and differences.

Finally, while the conceptualization of a distinct, recognizable trigger event may be an appropriate characterization for many industries, future research needs to explore the incubation paths of industry contexts with no evident trigger. In particular, new industries and organizational forms emerging due to convergence or disintegration in existing industry architectures (David, Sine, & Haveman, 2013; Jacobides & Winter, 2005) may prove insightful.

Characteristics of the incubation stage. Additional research may focus on documenting and providing theoretical explanations about the attributes of the incubation stage. Our review alluded to the presence of a noncommercial period, starting with an initial trigger event until actors engage in for-profit commercial investigation of the opportunity. Future studies may identify other subperiods within which actors undertake actions targeted at resolution of technological or demand uncertainties. The duration of these subperiods, their temporal sequence, their potential overlap, and their structural differences in number and types of firms may not only enable a more systematic analysis of the incubation stage, but also reveal important contingency factors.

By inquiring about the patterns and underlying reasons for entry, exit, and investments made by heterogeneous actors during the incubation stage, future research may provide a more complete picture of investing firm demography, the knowledge bases they draw on, and the performance consequences of their strategy. Our review shows industries triggered by a scientific discovery may initially comprise academic entrepreneurs, employee spinouts from related industries, or diversifying firms, whereas industries triggered by unmet user needs may initially comprise user entrepreneurs. A fruitful avenue of research lies in examining the extent to which this initial firm demography persists over time and what type of new entrants at what time junctures may change this demography.

Further, examining contributions and motives of non-firm actors such as regulators, analysts, tastemakers, intermediaries, and nonprofit organizations will open new avenues into the factors leading to industry creation. During the incubation stage, regulators (Dobbin & Dowd, 1997) and nonprofit organizations (Shah et al., 2017) may play a fundamental role in influencing the future industry's knowledge base and shaping investment incentives. Further, while industry and professional associations focal to an industry may channel new resources toward the industry (Sine & Lee, 2009) and impact the regulatory landscape (Hiatt et al., 2009; Hiatt & Park, 2013) after industry inception, their role during incubation stage is also deserving of attention. Likewise, given that the standard-setting organizations may help the emergence of an industry's collective identity by helping firms and customers unite around a converging theme after inception (Lee, Hiatt, & Lounsbury, 2017), future research may focus on understanding their role during industry incubation. The dual role of social movements during industry incubation also deserves attention, given that they can both propel and delegitimize industry growth (Weber, Rao, & Thomas, 2009).

Factors leading to successful (or unsuccessful) incubation of industries. Although triggers may be followed by the actions of various and multiple actors, not all such investments may result in the emergence of new industries. For example, among multiple industry applications of plant biotechnology science such as bioremediations and food nutritional enhancements, only enhanced agricultural productivity applications have proceeded beyond the incubation stage into the agricultural biotechnology industry (Kirsch, Moeen, & Wadhwani, 2014). Similarly, electric cars were a viable alternative to internal combustion engine dating back to the late 1890s, but failed to emerge as a viable industry for much of the twentieth century (Kirsch, 2000). More recently, the mobile money industry has emerged in some countries (Shah et al., 2017), but not in others (Ozcan & Santos, 2015). The incubation stages of these might-have-been-industries may serve as counterfactual examples, thereby enabling comparison of inception versus non-inception instances. Rosenberg (1974, p. 106) noted that "our understanding of inventive activity (and perhaps of social change generally) is excessively rooted in success stories…yet it is highly relevant to ask why it took so long to do

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certain things, and why inventors failed for so long at some inventive efforts while they succeeded quickly in others."

Industry emergence and concomitant firm investment in new industries may also hinge on successful resolution of various uncertainties during incubation. Regarding technological and demand uncertainties, additional empirical contexts and systematic theoretical focus may shed light on the mechanisms leading to their resolution. Moreover, under conditions of institutional voids, entrepreneurial attempts during the incubation stage may focus on shaping and navigating the uncertain institutional environment (Shah et al., 2017). Integrating insights from institutional economic theory (North, 1990) into industry evolution may advance our understanding of how entrepreneurs overcome such challenges and, in turn, influence industry emergence. Analysis of socio-cognitive uncertainty is another area of interest. With at most a commercial prototype available during incubation, the confusion around its label, collective identity of producers, and customers' perceptions of its functionality may turn challenging (Bingham & Kahl, 2013; Grodal et al., 2015).

Resource and capability investment and reconfiguration. The incubation stage is by definition a pre-production period, wherein actors leverage resources and capabilities that are not self-sustained by revenue. Future research may examine the financing needs during the incubation stage for start-ups and established firms. High levels of uncertainty pose challenges for start-ups seeking financial capital, under conditions that make the nature of the product unclear and difficult to articulate, but also preclude financial investors from having necessary benchmarks and data points to evaluate start-ups. An area of future inquiry, thus, relates to how entrepreneurs address their financial needs by attracting investment from angels, public loans, crowdfunding, venture capital, and other sources of financial capital (Goldfarb, Kirsch, & Shen, 2012; Kerr & Nanda, 2015) as well as relying on alternative modes of economic value capture (Moeen & Agarwal, 2017; Teece, 1986). A parallel set of questions pertains to diversifying entrants, as these firms need to convince their shareholders and stock market analysts of the virtues of investing in an industry that is not yet in existence (Benner & Ranganathan, 2013).

It may also be the case that while access to resources are necessary, actors rely on mechanisms other than monetary incentives and the profit motive to attract resources. Triggers associated with unmet user needs and mission-driven research underscore that resources can be bricolaged and that public and nonprofit institutions can service the resource needs of a nascent industry. However, these resources are not free, and how they are assembled and funded remains a critical question. Together, the breadth of actors participating in and actions undertaken during the incubation stage highlight the necessity of looking beyond firms and systematically accounting for alternative forms of organizing and the incentives that drive these forms during the formative years of an industry (Langlois & Robertson, 1992; Shah & Mody, 2014; Shah & Tripsas, 2007).

There are multiple research opportunities to link the capability reconfiguration literature with industry incubation. Capability reconfiguration efforts through adding, redeploying, recombining, or divesting capabilities are often entangled with firms' ability to expand and innovate (Karim & Capron, 2015). During the incubation stage, not only do industry emergence and firm-level economic value capture hinge on early entrants achieving a desired capability portfolio, but also the capability reconfiguration process becomes more challenging (Moeen, 2017). For entrepreneurial start-ups, future research may address their capability addition decisions such as the initial founding team formation and further reliance on alliances and acquisitions. For diversifying entrants, it is valuable to study how they add and redeploy capabilities using alliances and acquisitions, university collaborations, or hiring of employees and scientists.

Methodological Considerations

Identification of industry boundaries. Scholars will need to consider carefully the boundaries of a nascent industry. Industries are typically defined as centering on the particular products or services being offered. However, for the incubation stage, this definition is typically tractable retrospectively. The variety of categories and labels *ex ante* associated to an industry may further complicate this task. In addition, the distinction between a new industry and a new generation of an existing industry may not be always apparent. Contextual information about whether each industry "makes a large discontinuity from what has existed before" or "is

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sufficiently large and distinct to be classified as an industry in its own right" (Helfat & Lieberman, 2002, p. 278) may guide researchers in discerning new industries. This also implies the need for careful distinguishing between the incubation and subsequent evolution of underlying technologies (e.g., plant biotechnology) from the incubation and subsequent evolution of specific industries based on those technologies (e.g., agricultural biotechnology versus bioremediations).

In identifying key actors, conventional industry evolution studies have relied largely on datasets of producer firms in an industry. However, a lack of any product commercialization during the incubation stage necessitates that scholars look for identifying involved firms in other novel ways. One possibility is to track actors building on an initial trigger event. Further, regulatory requirements may create a paper trail, thereby supporting data collection on the incubation stage (Lomi, Larsen, & Wezel, 2010; Moeen & Agarwal, 2017; Navis & Glynn, 2010). Alternatively, when key foundational patents are required for advancing a research program in industries, early stage actors and the technological advancements they make may be identified by tracking initial patent licensees (Eggers, 2016). More generally, business historical archives such as tax records, business press, job postings, and telephone listings may offer opportunities for retrieving information about firms not involved in product commercialization (Forbes & Kirsch, 2011).

Choice of methodology. Depending on the research scope and questions, scholars may rely on a variety of methods. Given the early stage of our understanding of industry incubation, inductive theory-building efforts are remarkably helpful (Eisenhardt, 1989; Eisenhardt & Graebner, 2007; Van Maanen, 1979). Several understudied research areas related to industry incubation such as the motives of a wide variety of actors, actors' relationships to one another, actions undertaken and their effects on uncertainty, and the pathways forged in the incubation stage may particularly benefit from inductive methods. In particular, the collection of primary source data (such as through interviews) may be an effective way to identify as-yet-unknown actors and their actions. Techniques such as snowball sampling and the use of open-ended questions with follow-on questioning that seeks to reveal details about the informants' experiences can allow for theory development that illuminates the complex and multifaceted social structures of the incubation stage (Shah & Gorbatai, 2015). In addition, field studies and observations of technologies currently in the incubation stage can also help capture the variety of actions undertaken and their effects.

Historical methods and analytical narratives may also lead to useful insights. When real-time observation and documentation are not possible, reconstruction and interpretation of past events may be impacted by retrospective reordering and myopia. This is particularly relevant for studying industry incubation, given that researchers in the present may view and sensemake of the past in the light of their knowledge of how the industry has unfolded since then (Kirsch et al., 2014). The paths not taken, the uncertainty experienced, and the variety of challenges faced by actors may be eluded given the passage of time. However, by offering contextualized accounts of past events, historical methods may enable *ex post* analysis of antecedents, processes, and causes of industry incubation (Braguinsky & Hounshell, 2016).

Finally, large-scale empirical documentation and statistical analyses may reveal critical stylized findings and patterns. In doing so, construction of longitudinal datasets is important, as the incubation stage typically spans many years, over which actors and actions appear to evolve. These analyses may benefit from both single- and multi-industry studies. When pursuing multi-industry studies, there is an opportunity to identify common patterns about the attributes of the incubation stage, examine their pervasiveness in a variety of industries, or study industry-level contingency factors. Despite these benefits, scholars are often limited in the measurement of variables with similar interpretations across a set of industries. When focusing on a single industry, a deep contextual knowledge may permit the creation of rich data with multiple unique variables to provide an in-depth theoretical investigation. In addition to retrieving secondary data from archival sources, these efforts may focus on surveys of industries that appear to be on the path to becoming stand-alone industries and focus on perceptions about real-time technological and demand uncertainties.

Conclusion

Similar to the pre-history of Athena's birth, new industries are not suddenly born at the time of the

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first product commercialization. Instead, as we begin to illuminate in this article, complex interactions of various actors and actions during the incubation stage not only precede, but also shape the birth and subsequent structure of new industries. From a policy perspective, this heterogeneity in actors and actions is critical (Agarwal & Shah, 2014; Etzkowitz & Leydesdorff, 2000): incubating new industries requires multiple actors—not just firms. Hence, social action and policy may also pay attention to cultivating the wide variety of actors who set the stage for the commercial development of new industries. Because new industry emergence is related to entrepreneurial dynamism, economic growth, and national competitiveness, we believe that research directed toward understanding the precursors of industry formation will greatly enhance our ability to support, harness, and mobilize the variety of actors that spark and incubate new industries and, thereby, prime these engines of upward mobility and social well-being.

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Venture Boards: Past Insights, Future Directions, and Transition to Public Firm Boards

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Research summary: *Venture boards are theoretically important and economically relevant. They are at the apex of a venture's organizational hierarchy and have significant influence on the most important decisions related to venture strategy and personnel. This article reviews the organizational and strategy research on venture boards, clarifying how venture boards differ from venture investors and from public firm boards. It lays out a systematic research agenda to stimulate more research on venture governance, including venture board composition and structure, venture board processes, and venture board transitions to public firm boards. This agenda attempts to illuminate the research opportunities related to the distinctive nature of venture boards and enable theoretical engagement with the broader corporate governance scholarship on public firms.*

Managerial summary: *A venture's board of directors is highly consequential for its most important strategic and personnel outcomes. Uber and Theranos are just two recent ventures whose boards have come under public spotlight. This article reviews organizational and strategy research on venture boards, mapping the evolution of the academic literature, summarizing key findings, and identifying the most important limitations. It explains how venture boards are different from venture investors and from public firm boards. Importantly, it lays out a systematic research agenda that draws upon the distinctive nature of venture boards and also creates a bridge to the broader literature on public firm boards. New insights on venture board composition, structure, process, and transition to public firm boards will be relevant to venture executives, investors, and directors.* Copyright © 2017 Strategic Management Society.

In research on entrepreneurship, there is a growing recognition of the importance of the board of directors within ventures. Boards are at the apex of the venture's organizational hierarchy and have significant influence on major decisions (Daily, McDougall, Covin, & Dalton, 2002; Garg & Eisenhardt, in press). Board members are closely involved in and ultimately responsible for many of the most important venture decisions, including the selection and dismissal of key executives (Boeker & Karichalil, 2002; Wasserman, 2003) and the evaluation of potential investors (Bagley & Dauchy, 2008). They also help shape the venture's strategy and innovation trajectories (Garg & Eisenhardt, in press), key operating procedures (Hellmann & Puri, 2002), alliance portfolios (Beckman, Schoonhoven, Rottner, & Kim, 2014), and exits (Graebner & Eisenhardt, 2004; Higgins & Gulati, 2006; Pollock, Chen, Jackson, & Hambrick, 2010).

Moreover, the importance of venture boards appears to have increased with many "unicorn" ventures such as Airbnb, Spotify, and Uber choosing to continue to raise money as ventures rather than go public through an initial public offering (IPO).

Keywords: new ventures; board of directors; innovation; CEO-board relationship; resource dependence theory; agency theory
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Thus, venture boards can be in place for a number of years and have fiduciary responsibility for major ventures that are often at the cutting edge of the disruption of existing industries. A leading U.S. regulator noted this trend and its implications: *"As the latest batch of start-ups mature, generate revenue, achieve significant valuations, but stay private, it is important to assess whether they are likewise maturing their governance structures and internal control environments to match their size and market impact"* (White, 2016). Although the exact role of the board may vary across ventures and institutional contexts, venture boards are typically central to the most significant actions within ventures.

Our purpose is to review the organizational and strategy literatures on venture boards within entrepreneurship research and, more importantly, to stimulate future research. We begin by examining the composition of venture boards, their critical role vis-à-vis other governance control mechanisms, and their distinctiveness relative to the boards of public firms. We then take a retrospective look at the literatures within our review scope and clarify their contributions and shortcomings. Finally, we describe a systematic future research agenda on venture boards, including venture board composition, structure, and process. In order to encourage more research at the fertile intersection of entrepreneurship and corporate governance, we also call for greater attention to the essential changes that accompany venture boards' transitions to public firm boards.

Venture Boards: Composition and Distinctiveness

By ventures, we refer to privately owned and professionally funded entrepreneurial firms.[1] Often at the behest of their professional investors, these ventures typically form a formal board of directors (Bagley & Dauchy, 2008), particularly in the well-studied U.S. context.[2] A venture's board of directors frequently consists of both inside and outside directors (Garg, 2013). Inside directors include the CEO (who may also be a founder) and possibly one or two other firm executives. Outside directors include nonexecutives, primarily investor-directors who are direct representatives of professional investors in the venture such as venture capital (VC) and corporate venture capital (CVC) firms. Other outside directors may also include founders who are no longer working at the venture and independent directors who are usually senior executives from relevant industries (Bagley & Dauchy, 2008).[3]

Rights to board seats are one of various potential rights given to investors in venture investment contracts. These contracts may also provide cash flow rights, liquidation rights, and other control rights, and they may specify contingencies based on measures of financial and nonfinancial performance (Cumming & Johan, 2013; Kaplan & Stromberg, 2003). Analysis of real-world contractual arrangements finds that the various rights and contingencies in venture investment contracts are often highly correlated and provide complementary approaches to controlling ventures (Cumming et al., 2010). As Kaplan and Stromberg (2003, p. 282) observe, *"Cash flow incentives, control rights and contingencies in these contracts are used more as complements than as substitutes."*

Yet, there are important differences between investors' rights to a board seat and their cash flow rights. Rights to a board seat (and taking that board seat) enable investors to engage actively in monitoring, advising, and strategic decision making, both during and outside board meetings. By contrast, investors' cash flow rights are monetary claims to the venture's cash residuals as specified in the relevant investment agreement. These latter rights provide limited access to information and limited voice in strategic decision making in most investment agreements. Although the various other rights and contingencies in investment contracts create some control opportunities for investors and can potentially even substitute for board monitoring in some ventures, the rights to a board seat uniquely provide an avenue to influence a wide

[1] Following other scholars (Gompers et al., 2016), we exclude private equity backed firms for which board composition and board involvement are different.

[2] We thank an anonymous reviewer for the insight that national institutions can affect whether investors obtain board seats (Cumming, Schmidt, & Walz, 2010) and whether there is a board at all.

[3] Venture boards of directors (or "venture boards"), as defined here, should not be confused with *advisory boards* that, if present in a venture, function mainly as an informal advisory body with no governance rights and responsibilities. Neither should "venture boards" be confused with the *boards of venture capital firms,* which do not govern the investee ventures.

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variety of strategic decisions and the ongoing strategy and innovation trajectories of the venture (V. H. Fried, Bruton, & Hisrich, 1998; Garg & Eisenhardt, in press). Board seats are often highly valued by investors because of the ongoing influence over decisions they offer. This view was supported by the first author's multiple interviews with CVC investors who initially were indifferent to gaining a board seat but subsequently recognized the value of such a seat in improving the venture's likelihood of success (Garg, Howard, & Pahnke, 2017a). Thus, while the exact role of the venture board can vary depending upon contract specifics and institutional context (Broughman & Fried, 2010; Cumming et al., 2010; La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 2000), venture boards play a critical and distinctive role within many ventures, and participation on the board is highly valued by many investors.

Not all investors, however, obtain the control rights that allow them to appoint their representatives to the board (Kaplan & Stromberg, 2003). Changes to board composition depend upon the negotiations for board seats between new investors and the existing board. And while board rights and cash flow rights may go together, they can also be decoupled (Cumming & Johan, 2013; Kaplan & Stromberg, 2003). For example, Google, an investor in Uber, gave up its rights to a board seat in 2016 when it became clear that Google and Uber were becoming competitors in the driverless car domain. Google, however, remained an Uber investor with cash flow rights (Bensinger & Nicas, 2016). Research indicates that greater investment increases the likelihood that an investor will gain board seats, while strong venture performance and superior future prospects reduce that likelihood (Cumming, 2008; Cumming & Johan, 2008; Park & Steensma, 2014). Additionally, board size typically increases with new investment rounds, and so these rounds often lead to an increase in both the number and proportion of outside directors (Lerner, 1995; Rosenstein, Bruno, Bygrave, & Taylor, 1993). Empirical research suggests that investor-directors are likely to represent the single largest category of directors after multiple investment rounds, but this group is often just shy of the majority (Broughman, 2010; Kaplan & Stromberg, 2003). Venture boards, then, may include investors, but not all investors are necessarily directly represented on venture boards.

It is also important to note that venture boards are distinct from traditional public firm boards (Table 1). Although both types of boards have the fiduciary duty to protect the interests of all shareholders and the duty to provide access to resources (Bagley & Dauchy, 2008; Graebner & Eisenhardt, 2004), some key differences are likely to generate

Table 1
Venture Boards versus Public Firm Boards.

	Venture boards	Public firm boards
Typical board composition	Inside directors: CEO and possibly other executives Outside directors: investor directors, possibly founders who are no longer executives, independent directors	Inside directors: CEO and few other executives Outside directors: independent directors
CEO	High ownership alignment with the firm	Low ownership alignment with the firm
Outside directors	Well informed in the sector, have financial incentives (preferred stock for investor directors, common stock for others)	Sector outsiders, have low financial incentives (often common stock, if at all)
Key goals	Rapid growth and exit in the form of IPO or M&A	Growth in traditional financial metrics (acquisition may also occur)
Board structure	Limited formal board leadership structure (i.e., no board committees and often no board chair)	Mandated board committees, with overall board chair and committee chairs
Board size	Small, although it can increase over funding rounds	Large and stable

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distinct board dynamics. First, unlike public firm CEOs, venture CEOs are typically far more aligned with the fate of their firms due to their significant ownership in the venture (Horowitz, 2014). So, the classic agency problem of CEO misalignment that is often central in public firms (Berle & Means, 1932) is usually much *less* critical in ventures (Arthurs & Busenitz, 2003; Garg, 2013). Second, unlike public firms in which outside directors may not be experienced in the industry sector of the focal firm and may have limited financial incentives related to the success of the firm (Davis & Cobb, 2010; Diestre, Rajagopalan, & Dutta, 2015), venture directors are often very well informed about the venture's sector and have strong financial incentives. Investor-directors, in particular, usually own or represent "preferred shares"—i.e., their shares have better terms and superior payoff than the "common shares" owned by others (J. M. Fried & Ganor, 2006). As we will discuss later, these strong incentives can motivate investor-directors to be particularly inclined to pursue their self-interest—which can have both positive and negative effects on the focal venture. Third, unlike public firms, which use widely adopted financial metrics and are run for perpetuity (unless there are hostile acquisitions/attractive M&A offers), ventures often have limited financial performance (e.g., no revenue) and are operated to achieve rapid growth with a profitable exit, which is necessitated by the business model of venture capital firms (Sahlman, 1990). Fourth, unlike public firms, which are required in many institutional contexts to have board committees and a board chair, venture boards usually have a very limited formal structure and often have no committees or even overall board chairs (Garg, 2014). As a result, board activity involves the entire board as an entity and the CEO as a central actor. Finally, while the board size tends to be large and stable in public firms, the venture board size is typically smaller, even though it expands over funding rounds, as discussed earlier (Bagley & Dauchy, 2008). Overall, these differences between the boards of public and venture firms suggest that venture boards have unique processes and group dynamics that are likely to differ from those in public firms and those described in the literature on public firms (Garg & Eisenhardt, in press). These differences are bridged by the IPO event that transitions venture boards to public firm boards.[4] We discuss this transition later in the article, and we also note that new forms of entrepreneurial financing (e.g., crowdfunding) are blurring the boundaries between private and public governance as well as the related role of boards of directors. We now turn to reviewing key insights from the extant strategy and organizational literatures on venture boards.

Literature on Venture Boards: Early and Descriptive Studies

Venture boards' importance and distinctiveness have led to a growing interest in them among scholars. Much of the early literature is descriptive and cross-sectional. It seeks to characterize VC directors' involvement in ventures beyond simply their financial investment (Gorman & Sahlman, 1989). This literature was inspired, in part, by the growing role of ventures in creating innovations and the rise of the VC industry (Drover et al., 2017; Gompers & Lerner, 2001).

These early studies are typically based on surveys of VC directors about their involvement in their venture investments. They show that VC directors are often heavily involved in their ventures beyond simple financing. Some studies, for example, indicate that VC directors engage in a range of strategic issues and operational matters (Rosenstein, 1988). Although some VC directors are philosophically opposed to significant involvement in their ventures (Macmillan, Kulow, & Khoylian, 1988), many VC directors spend significant time with their ventures (V. H. Fried et al., 1998; Gorman & Sahlman, 1989)—typically more time than that spent by public firm directors. Research indicates that VC directors' involvement in their ventures tends to be paced by major events—both positive and negative, such as new M&A opportunities and missed performance targets (Gersick, 1994). Furthermore, studies find that VC directors' involvement increases with the venture's uncertainty. For example, there is more involvement at early stages, during times of substantial technological innovation, when the CEO has little experience as an entrepreneur or in the CEO role and when the top management team is incomplete (Sapienza & Gupta, 1994; Sapienza, Manigart, &

[4] We thank an anonymous reviewer for the insight that in some "unicorn" ventures or ventures that persist as private firms for a long time, these differences may become less stark. For example, CEOs of such ventures may sell-off their shares to external investors for personal liquidity. In these cases, the classic agency problem can increase.

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Vermeir, 1996). VC directors with more experience in the venture's industry are also typically more involved. VC director involvement, however, is unrelated to the level of management ownership.

But factors that decrease uncertainty for VC directors tend to lower their level of involvement. For example, timely feedback from entrepreneurs and the VC director's perceived self-influence, perceptions of procedural justice, and experience in venture capital all tend to decrease the VC director's involvement (Sapienza & Korsgaard, 1996). Recent research also suggests that directors' involvement decreases when the initial resource base of the venture team is high (larger team size, more diverse teams, and teams with higher R&D and finance experience) (Knockaert, Bjornali, & Erikson, 2015; Knockaert & Ucbasaran, 2013).

A few studies also explore the CEO's perspective on VC director involvement. These descriptive studies find that CEOs seek value from directors in more limited areas than those in which directors try to offer advice (Ehrlich, De Noble, Moore, & Weaver, 1994; Rosenstein et al., 1993). CEOs are also less likely to value VC director involvement when the VC has low status and the top management team has substantial experience in the venture's industry (Barney, Busenitz, Fiet, & Moesel, 1996; Rosenstein et al., 1993). In these situations, CEOs perceive that VC directors are less likely to have useful insights. In contrast, CEOs are more likely to value VC director involvement when they perceive high uncertainty, such as when the venture is at an early stage and is pursuing substantial technological innovation.

Assessment

Collectively, these early descriptive studies richly indicate that VC directors are involved in a wide range of strategic and operational matters, despite CEOs not always highly valuing their engagement. These studies, however, are largely confined to the U.S. context and to VC board members (but not other types of board members). They are also survey based and lack a theoretical lens and a longitudinal perspective. It is also possible that venture board practices have changed at least somewhat since the time of these early studies.

Literature on Venture Boards: Recent and Theory-Based Studies

Since the early 2000s, the focus has shifted from a description of venture board involvement *per se* to theory-based examinations of the influence of venture boards on specific outcomes such as innovation, IPO performance, and effective strategic decision making. As in the broader literature on boards in public firms, two key theoretical lenses dominate: agency (Jensen & Meckling, 1976) and resource dependence (Pfeffer & Salancik, 1978). While the public firm literature tends to emphasize agency theory (Dalton, Hitt, Certo, & Dalton, 2007), the venture board literature is more balanced and even tips in emphasis toward resource dependence perspective because resource challenges are often more relevant in ventures than potential malfeasance by venture CEOs.

There are several strands of *agency theory* research on venture boards. One strand studies classic agency theory issues such as the role of board monitoring, CEO incentive alignment, moral hazard, and adverse selection (Eisenhardt, 1989a). Some of this work notes, for example, that VC directors are more likely to monitor ventures when they are geographically closer to the focal venture (Lerner, 1995) or when travel to the focal venture is easier (Bernstein, Giroud, & Townsend, 2016). Other work studies the well-known agency problem of CEO goal alignment. It finds that when VC–CEO goals are not well-aligned, boards track the focal venture's progress more closely (e.g., Sapienza & Gupta, 1994). This work also finds that VC investors tend to attribute their replacement of CEOs to well-known agency theory concepts such as adverse selection and moral hazard (e.g., CEO opportunism) (Bruton, Fried, & Hisrich, 1997, 2000).

A second strand of the agency research on ventures, however, explores the breakdown of the traditional principal-agent conception of the CEO-board relationship. For example, some research finds that venture CEOs are often well aligned with their firms because of their substantial financial incentives associated with venture success and their close psychological identification with the venture (Arthurs & Busenitz, 2003; Garg, 2013). This alignment is particularly likely for venture CEOs who are also the founders of their firms (Wasserman, 2006). Similarly, CEO replacement has a complex relationship with venture performance that does not reflect traditional agency considerations. For example, while founder-CEOs may be replaced when venture performance is poor (Boeker & Karichalil, 2002), as anticipated by agency theory, they are also often replaced

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when the venture is performing very well (Boeker & Karichalil, 2002; Wasserman, 2003). In fact, a more relevant determinant of CEO replacement is board power (measured variously as investment in a firm, proportion of VC directors on the board, or size of equity ownership by VC firms), not venture performance.

Related work that is also at odds with the traditional agency theory view of CEOs and boards indicates that directors (not CEOs) may be misaligned with the venture's success in terms of firm value maximization (Cable & Shane, 1997). For example, VC directors may push ventures toward premature IPOs in order to improve their own prospects of raising future venture funds (Gompers, 1996). They may also allow IPO pricing that is unfavorable to the venture in order to gain the support of investment bankers for future IPOs of other ventures in their portfolios (Arthurs, Hoskisson, Busenitz, & Johnson, 2008). Other work finds that board members may pursue their own financial interests during fund-raising in down rounds, which leads to greater conflict in the process (Forbes, Korsgaard, & Sapienza, 2009). Scholars have speculated that pursuit of self-interests by different outside directors may also spark principal-principal conflicts in ventures (Garg, 2014; Krause & Bruton, 2014), as has been observed in the context of family firms (Villalonga & Amit, 2006).[5]

While these studies of venture directors' incentive misalignment vis-à-vis the firm value maximization goals are most often conducted in the U.S. setting, similar director misalignment is observed in other contexts as well. A study of European ventures, for example, finds that venture directors are more likely to push for quicker exits by their ventures (via acquisitions) than to wait for IPOs (Cumming, 2008). This finding indicates misalignment in that an IPO exit is often more lucrative for ventures (and often preferred by the entrepreneur). In light of these and similar findings, some research now argues that venture directors, especially those who own or represent preferred shares, may have too much power and that they are often more likely than venture CEOs to pursue their own self-interest at the expense of the venture (J. M. Fried & Ganor, 2006). This perspective has also led scholars to conclude that the classic principal–agent relationship, in which boards are aligned and CEOs are not, may be "flipped" in many ventures (Garg & Eisenhardt, in press). That is, venture CEOs are more like the well-aligned principals, while outside directors are more like the classic misaligned agents who may pursue self-interest at the expense of their firms (notwithstanding possible variation among these directors' self-interests).

There are also several strands of venture board research that take a *resource dependence* perspective (Pfeffer & Salancik, 1978). This theoretical lens is particularly relevant for ventures since these firms often have very limited resources and so resource acquisition is a major strategic challenge board members address. In particular, resource dependence theory as applied to boards conceptualizes directors as providers of key resources such as advice, financing, expertise, and social connections (Hillman, Withers, & Collins, 2009).

One strand of this research takes a positive view of boards and their resource provisioning role. This research confirms that boards can be a critical source of advice (Zahra & Filatotchev, 2004; Zhang, Baden-Fuller, & Pool, 2011), including strategy guidance (V. H. Fried et al., 1998; Garg & Eisenhardt, in press), and can "extend" the expertise of top management teams (Knockaert et al., 2015; Zahra, Filatotchev, & Wright, 2009). Directors can also assist in hiring key personnel, formalizing human resource policies, and stimulating rapid product commercialization (Boeker & Wiltbank, 2005; Fiet, Busenitz, Moesel, & Barney, 1997; Hellmann & Puri, 2000). In addition, they can provide the social connections that lead to acquisitions (Graebner & Eisenhardt, 2004), alliances (Beckman et al., 2014), and additional financial resources (Hallen & Eisenhardt, 2012). Finally, directors can signal greater prestige for ventures (Chen, Hambrick, & Pollock, 2008; Stuart, Hoang, & Hybels, 1999) and improve their performance (Daily et al., 2002; Vandenbroucke, Knockaert, & Ucbasaran, 2016). Studies reveal, for example, that having high status VC directors can improve the legitimacy of ventures (Chen et al., 2008) and thereby lead to better performing IPOs, especially in highly uncertain environments and industries (Gulati & Higgins, 2003; Pollock et al., 2010).

In contrast, a newer strand of resource dependence research takes a more nuanced and sometimes

[5] We thank an anonymous reviewer for the insight. Significant empirical work that adopts the principal-principal perspective in the context of venture boards is yet to emerge.

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negative view of venture boards. For example, Beckman and colleagues (Beckman et al., 2014) find that ventures build their alliance portfolios more quickly when their directors bring more diverse resources and central social connections—i.e., when boards include directors with heterogeneous, multiplex relationships and central network positions within the venture's industry. In particular, they find that non-investor outside directors who have central network positions help form alliance portfolios more quickly. Interestingly, however, when central investor-directors like VC directors dominate the board, the pace of alliance formation slows. Similarly, Garg and Eisenhardt (in press) find that while board members can and do offer helpful advice and resources, they may also provide poor advice when there are conflicts among the interests of different ventures in their portfolios, which can lead to suboptimal decisions for the venture. Finally, Katila and colleagues (Katila, Thatchenkery, Christensen, & Zenios, in press) look at the implications of board member skills for innovation within ventures. In a study of ventures in the medical device industry, they find that the presence of user (i.e., physician) board members has an inverted-U relationship with venture innovation. A moderate number of physicians on the board increases innovation, but both few and many physicians decrease it.

A third strand of resource dependence work in ventures returns to the original conception of resource dependence as an exchange theory in which a resource-power trade-off exists (Emerson, 1962). That is, there is a trade-off between the resources that board members provide and the power over the venture's direction that must be relinquished to them (Pfeffer & Salancik, 1978). For example, in a survey-based study, Wasserman (2017) examines the entrepreneur's *ex ante* choice between gaining the resources needed for growth versus retaining control (including of the board). He finds that if entrepreneurs choose control, then venture performance suffers. In a related study, Katila et al. (2008) find that entrepreneurs who are concerned that potential investors will misappropriate their technology will avoid taking these investments. While this study is not about boards *per se*, it is consistent with the notion that entrepreneurs take *ex ante* action to avoid potential misbehavior by board members. Finally, in a rare study of board processes, Garg and Eisenhardt (in press) examine how venture CEOs can *ex post* resolve this *resource* versus *power trade-off* by engaging in process behaviors that enable them to gain resources like advice from board members and yet also retain power. Based on observations of multiple board meetings, several waves of interviews with board members and CEOs, and surveys, the authors induct a board process framework with an underlying logic of *divide and conquer* by the venture CEO. They find that CEOs with more effective strategy-making processes: (a) have unique role-based, dyadic engagements with board members; (b) propose a single decision alternative (not multiple proposals) in board meetings; (c) use board meetings mainly for updates but hold separate meetings for strategy brainstorming; and (d) use political action to close the strategy-making process. The authors show that this process yields helpful advice and other resources while also mitigating the collective power of the board (which is often necessary because of their limited attention and frequent conflicts of interests). The result is a more effective strategy-making process at the board level. Overall, this study advances understanding of the venture CEO-board relationship by spotlighting the CEO perspective and by reconceptualizing boards of directors as CEO–director dyads (not as monolithic groups).

Assessment

Collectively, the recent theory-based studies of venture boards offer major insights. The work from the agency theory lens confirms the monitoring role of board members within the theory, including the positive relationship between proximity to ventures and monitoring by board members. But more interestingly, this work finds much less support for the traditional conception of the board-CEO relationship as a principal-agent relationship. Venture CEOs are often replaced, even when their ventures are performing well. Furthermore, venture CEOs (especially founder-CEOs) are likely to be well aligned and have close identification with their ventures, while board members (particularly VC investor board members who have rival investments) may not be well aligned. These board members have incentives that may result in them encouraging venture management to pursue strategies and take IPO and other exit actions that are not in the venture's best interests. And, they may engage in other inappropriate behaviors, such as leaking/

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misappropriating the venture's strategic plans and intellectual property to other portfolio firms.

The work from the resource dependence theory lens confirms that board members play an important resource provisioning role in many ventures, such as providing advice and connections for needed resources. They can also enhance the legitimacy and prestige of the venture. But accessing these resources can prove challenging for venture executives since power differences and political concerns can disrupt resource provisioning and some board members simply may be too busy to provide ventures with resources. In fact, some entrepreneurs *ex ante* anticipate challenges in working with potential board members and investors and simply avoid these situations even when potential board members have valuable resources and could likely improve venture performance. Other entrepreneurs engage with their boards to *ex post* mitigate these possibly negative situations.

In sum, our review of the organizational and strategy literatures on venture boards suggests that the resource dependence lens is a particularly promising theory given the resource challenges of ventures and the political and power processes that are often germane. By contrast, the traditional agency relationship between CEOs and boards often breaks down in ventures, as the two actors often "flip" their principal-agent roles. This perspective on the conflicts of interest and limited attention of board members suggests an emerging view that venture CEOs need to manage their board members and the board decision-making process. Overall, the recent extant research builds on the descriptive insights about board involvement from the early work on venture broads and, therefore, provides a useful theoretical and empirical foundation for future research.

Our review also highlights significant limitations in the venture board literature. First, despite much emphasis on board composition and its consequences, the extant research on *board composition* is limited. A major concern is that the extant research either treats boards as monoliths or focuses only on VC directors. In doing so, it fails to capture the richness of the full board composition (e.g., CVC directors, independent directors, nonexecutive founder-directors) and so often misses the textured dynamics among diverse directors. For example, it lacks exploration of the likely creation of subgroups and the emergence of politicking during investment rounds and exit decisions that may arise because of the conflicting financial incentives of some directors (often VCs). Further, there is little insight into the antecedents of board composition, such as how expertise, demographic similarity, status, and normative pressures for gender diversity may shape subsequent board processes. Relatedly, there is little attention paid to board structure (e.g., who fills the role of board chair, size of the board, distribution of board member expertise) or its antecedents and consequences. The literature also rarely examines the complementary role of other contractual rights in investment contracts and institutional contexts beyond the U.S. and, occasionally, Europe. Both contractual rights and institutional context are likely to influence board composition, its related structure, and its role within the venture.

Second, while the literature continues to be framed by agency and resource dependence theories, there is limited insight into *how venture boards actually work.* For example, extant research recognizes the very different but essential roles of monitoring and resource provisioning (Sundaramurthy & Lewis, 2003), but it does not clarify how to balance and manage them. The process through which CEOs and directors come to understand their roles on boards and become effective board room participants is also fundamental to how boards work. Prior research in organizational behavior indicates that role adaptation is challenging (Ibarra, 1999), but such adaptation and learning may be even more complex and difficult at the apex of the organization where there are few role models to observe and complicated roles to learn. The extant literature, however, assumes that the board participants are fully prepared for their board roles and, therefore, neglects their learning of those roles and their effectiveness in them.

Finally, there remains a significant disconnect between the research on venture boards and the *transition of venture boards to public firm boards.* IPO is often considered a dependent variable and successful end point in entrepreneurship research (Beckman & Burton, 2008; Certo, Holcomb, & Holmes, 2009; Hannah & Eisenhardt, 2017). But it is also a major inflection point in the longer life of a firm. For example, the transition from private to public firm triggers a substantial change in board-level processes as the regulatory regime shifts in many institutional settings. Although there is

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research on window dressing with respect to board composition at IPO (Chen et al., 2008; Pollock et al., 2010), there is little investigation of key *structural* and *process* changes that occur within boards during this major transformation (SEC, 2003). These changes are likely to have important implications for firms' subsequent actions, strategies, and performance.

New Directions for Venture Governance Research

The limitations of prior research, together with the very practical relevance of venture boards, imply significant opportunities to shape future work in this important theoretical and empirical research area. While prior research has made substantial strides, this work does not yet constitute a systematic research program that crystallizes a board-level perspective on ventures. We now build on the major limitations identified earlier and propose new research directions. Our aim is to stimulate a research agenda on venture boards that is consistent with the classic dimensions of board composition, structure, and process (Finkelstein, Hambrick, & Cannella, 2009) and yet also breaks new ground by focusing on the transformation of privately held ventures to public listed firms (Figure 1). This agenda attempts to illuminate the research opportunities surrounding the distinctive nature of venture boards and to enable conversations that bridge to the literature on public firm boards.

Board Composition and Structure Within Ventures

One set of promising research opportunities revolves around a closer look at board composition and structure in ventures. Extant research examines boards either as monolithic actors within ventures or focuses on only one type of board member—VC directors. Given that there are different types of venture directors, there is an immense research opportunity to consider them simultaneously as distinct actors and to examine their effects on major venture outcomes. One early effort (Garg et al., 2017a) in this direction examines the effects of different types of directors on innovation within the minimally invasive surgery sector. After accounting for investment effects and endogeneity, this research finds that VC directors have a positive effect on commercial innovation (measured as product commercialization) and yet a negative effect on technical innovation (measured as forward citations of patents). Notably, CVC directors have the *opposite* effects on these two types of innovation. Furthermore, independent directors are likely to support VC directors in offsetting the positive effects of CVC directors on technical innovation. These findings suggest that venture boards may need to evolve to more diverse compositions in order to realize different types of innovation over time. Interestingly, these effects differ from prior research that examines the influence of *investment* by VCs and CVCs on types of innovation (Alvarez-Garrido & Dushnitsky, 2016; Pahnke, Katila, & Eisenhardt, 2015). This research on VC vs. CVC investment effects does not account for the presence of these investors on the board, and so it apparently misses the influence of these more proximate and relevant strategic decision makers. More broadly, the differences in the findings between studies of investment and those concerning board composition suggest that scholars could design research studies that compare the venture investment with venture board membership directly, thereby enabling an exploration of the influence of different types of directors on innovation and other significant venture outcomes at different points in the venture's evolution.

Beyond the effects of different types of venture directors, there is a significant opportunity to examine other implications of venture board composition. For example, syndication of venture investments in successive investment rounds implies that investor directors who join the board in later rounds are likely to hold shares with different valuation and liquidation preferences than those issued to board members in earlier rounds. Further, independent directors may be awarded common stock like that of the employees, rather than the preferred stock that investors own. These differences in financial incentives seem likely to create complex group dynamics that may affect key outcomes and the trajectory of the venture. Furthermore, these dynamics may be altered by prior relationships and coalitions among board members.

Given the importance of board composition, an examination of how specific board members are

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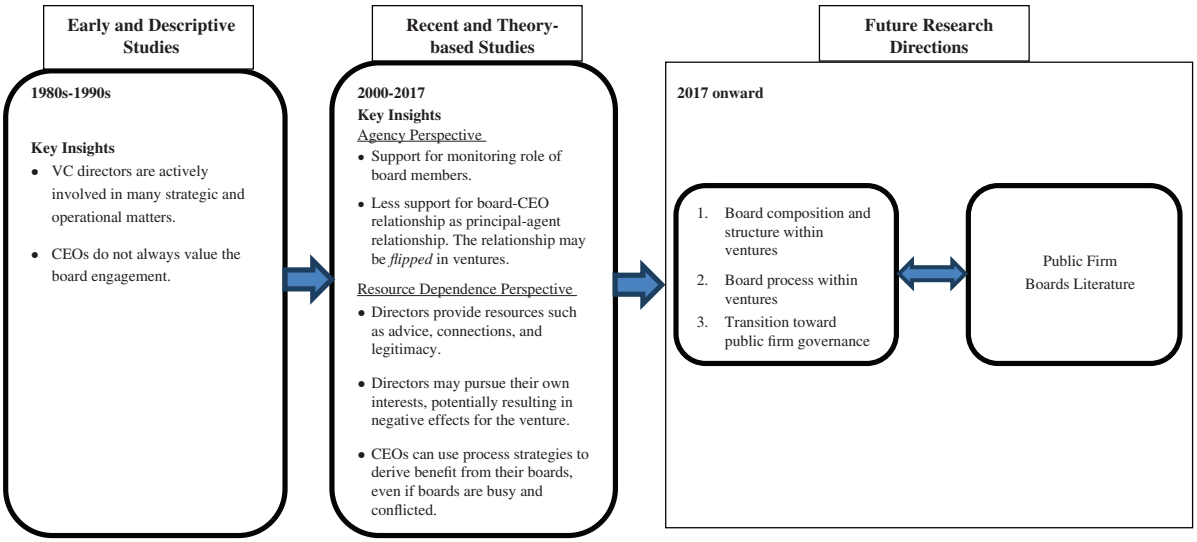

Figure 1. Research on venture boards.

selected is also likely to be insightful. That is, beyond investment, to what extent is board member appointment based on "rational" considerations (needs for director human and social capital) vs. demographic similarity (Westphal & Zajac, 1995) and preserving one's position in the status hierarchy (Acharya & Pollock, 2013), as suggested by work on the boards of public and newly public firms. As many outside directors (and management) in ventures have significant financial interests, different drivers for director selection may be in play in ventures than in those for public boards. Further, the configurations of these drivers may vary by the type of director (independent vs. VC director vs. CVC director). Any such research also needs to account for the sorting and matching processes that are likely to be relevant for director appointments (Hermalin & Weisbach, 2003).

In the same vein, to what extent is diversity relevant for board composition within ventures? Although the effect of gender diversity at the board level on performance remains confounded with potential selection effects (Adams, Hermalin, & Weisbach, 2010), recent research (Cumming, Leung, & Rui, 2015) and meta-analyses (Post & Byron, 2015) indicate that gender diversity produces positive effects overall. Importantly, diversity within venture boards may enhance creativity and innovation, which are significant venture outcomes, but it may also hinder fast decision making, which is critical for ventures (Eisenhardt, 1989b; Garg & Eisenhardt, in press). Interestingly, in arguably the most successful venture ecosystem in the world (i.e., Silicon Valley), the demographic diversity of boards is much lower than that of typical public firms (Fenwick & West, 2013). This raises interesting questions about the effects of gender diversity and the selection processes of venture boards. Research could also consider whether the lack of diversity at the board level can be mitigated by managerial diversity or other compensating factors at the firm and societal levels.

Related to the issue of board composition is board structure. Formal structure is usually quite limited in most venture boards (Garg, 2014; Wasserman, 2009). Yet, both composition and structure are theoretically and practically relevant. One key question is: what determines board size within ventures? The answer is not obvious since there are often no relevant regulatory restrictions on board size in many institutional contexts. While board size may be shaped by resource needs (Pfeffer & Salancik, 1978), it may also depend on resource procurement patterns. For example, ventures that pursue platform strategies often require more financing rounds than others (Colombo, Cumming, Mohammadi, Rossi-Lamastra, & Wadhwa, 2016) and, therefore, have more typical occasions for adding new board members. The decision concerning the board chair is another important area of study. Since adding structure as a board chair is not required, it seems worth examining why and

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when chair positions are adopted, who is likely to be appointed as the chair (e.g., nonexecutive founder, CEO, largest investor, independent director) and whether the presence of a board chair even matters for critical venture outcomes. For example, the "face-saving" approach of putting a dismissed founder-CEO in the chair role may provide little performance benefit to the venture. Exploring the dynamics of venture board structures may offer new understandings of the social versus instrumental aspects of such structures.

Finally, while deeper investigation into board composition and structure is a promising research direction, it is noteworthy that outside directors are unlikely to control a venture fully. Entrepreneurs have a strong and relevant voice in many strategic decisions, even exit decisions like acquisition (Graebner & Eisenhardt, 2004) and fundraising decisions like investor selection (Hallen & Eisenhardt, 2012). Future studies could expand the reach of venture board research to incorporate other contractual rights, contingencies, and decision-making norms for a richer picture of venture governance beyond the board *per se*. Likewise, future studies could usefully expand venture board research beyond the U.S. (see also Aguilera & Jackson, 2003; Cumming et al., 2010), especially given the rise of major venture hubs in China, India, the U.K., and Israel, among others.

Board Process Within Ventures

A second set of fruitful research opportunities lies in a richer examination of the board processes that shape how boards actually operate (Finkelstein & Mooney, 2003). To understand board processes, it is fundamental to understand how key board-level actors (i.e., CEOs and other board members) adapt (or not) to their board roles and adjust them in ongoing engagement with each other. Research on newcomer socialization at lower organizational levels highlights processes like training, peer observation, and trial and error (Ibarra, 1999; Wanberg, 2012). However, the opportunities to engage in these processes are very limited at the board level, where interactions are episodic and mistakes are often expensive. In one early effort, Garg (2017) inductively explores how first-time venture CEOs learn how to enact their own CEO roles and how to relate to their boards. In contrast to the common assumptions in the public board literature that CEOs are hard-wired "agents" or "stewards," this study finds that CEOs do not see themselves as either of these. Instead, CEOs are likely to experience "watershed" moments in working with their boards that reveal that their initial mental models for being CEO are invalid and that crystallize a more valid understanding of the CEO role. Failing to have an accurate understanding of the CEO role and its relationship to the board typically leads to weaker firm-level outcomes and sometimes CEO dismissal.

A related opportunity is to study how other (i.e., non-CEO) directors adapt to their board roles. For example, the appointment of (non-CEO) inside directors is often considered as a tactic to counterbalance the power of outside directors. This board role, however, is likely to create a conflict for non-CEO inside directors as they balance the need to present a united front with the CEO by staying quiet/agreeing and the need to exhibit original, independent, and creative thinking on critical board issues. Similarly, outside directors may need to learn to separate their conflicts of interest as investors or as industry executives. These conflicts of interest may be further complicated by the varied time horizons and commitments of time and money by different types of directors. Given their sectoral knowledge and strong financial incentives, these directors often must limit their tendencies to micromanage venture executives. Overall, understanding how various types of board members can effectively adapt to their board roles is likely to be central to board effectiveness.

A second board process opportunity is to examine how directors manage core business dilemmas on an ongoing basis. Many strategic decision domains are related. For example, new product decisions involve trade-offs between speed, quality, quantity, profitability, and growth. Research could usefully examine how venture directors make these interconnections across decision domains—individually and collectively—especially given their very episodic engagement with the focal venture. A related dilemma focuses on the distinctive functions of the board. For example, when and how should board members focus on resource provisioning versus monitoring? On the one hand, being an advisor to a CEO in his/her search for superior strategy may be both useful and enjoyable (Furr et al., 2017b). On the other hand, monitoring

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is also essential, especially when significant investment in these risky firms has occurred. Recent examples illustrate the great need for this monitoring: Uber's executives allegedly engaged in significant misconduct (Isaac, 2017), Theranos' supposed breakthrough medical product was an apparent fraud (Carreyrou & Weaver, 2016), Hampton Creek's stellar sales were driven by secretive self-purchase (Zaleski, Waldman, & Huet, 2016), and Zenefits' software illegally sidestepped regulators (Primack, 2016). While venture directors are obliged to monitor and provide resources, they also have substantial time and attention constraints. Furthermore, balancing these two functions may depend, *inter alia*, on board structure, characteristics of individual directors, and social and group dynamics on the board. These issues present a research opportunity for empirical examination.

Transition Toward Public Governance

A third set of research opportunities centers on the transition of ventures from private firms to public firms. It seems likely that the strategic decisions made during the IPO transition can imprint ventures as they evolve into mature public firms. Beyond changes in board composition (e.g., adding prestigious directors), which have been examined (Chen et al., 2008; Higgins & Gulati, 2006; Kroll, Walters, & Le, 2007; Pollock et al., 2010; Sundaramurthy, Pukthuanthong, & Kor, 2014), significant research opportunities lie in studying the other major board-level changes that occur during this transformation. One is the formalization of the board leadership structure. Venture boards are often informal and have limited structure (Garg, 2014; Wasserman, 2009), but this often changes with an IPO, albeit depending upon the specific venture and institutional context. For many ventures (including those in the U.S.), an IPO triggers the installation of a board committee structure (e.g., audit committee, compensation committee) whereby some outside directors become committee chairs while others serve as ordinary members. Since substantial board activity frequently takes place in committees (Finkelstein et al., 2009), these initial committee structures and assignments are likely to be consequential for board participants and the outcomes of the newly public firm. Some research has begun to study this formalization of board leadership structure. For example, Garg and colleagues find that configurations of board leadership structures where outside directors are undervalued vis-à-vis peers on the board—i.e., they are passed over for board chair and committee chair positions despite their normatively accepted qualifications—are highly disruptive for newly public ventures. Higher undervaluation of directors leads to an unpleasant board climate that increases the likelihood of turnover for outside directors and the CEO (Garg, Li, & Shaw, in press), leads to selection of new outside directors that are overall less qualified (Garg, Li, & Shaw, 2017b), and hurts firms' financial performance even to the extent that they can get delisted from the stock exchange (Li, Garg, & Takeuchi, 2017).

Future research could expand to other governance-related transitions at IPO, including equity selling behaviors of CEOs. Such work might also shed light on whether CEOs of newly public firms transition into "agents," as anticipated by agency theory. A configuration analysis of IPO boards with multiple governance mechanisms and due attention to home-country institutions (Bell, Filatotchev, & Aguilera, 2014) can generate normative insights on effective transformation to public form of governance.

In the transition from private venture to public firm, the evolution of board processes provides another research opportunity. There may, for example, be less reliance on one-on-one meetings for discussing strategic decisions in order to avoid legal liabilities. In addition, board work in public firms is distributed across board committees. In contrast to a private venture, where all directors may be involved in all important issues, IPOs often are likely to bring compartmentalization of information within board committees and, hence, a greater need for coordination within newly public firms. IPOs also usually bring an important new outward-facing process involving managing relationships with investors and media. Finally, the IPO transition may have implications for how closely directors identify with the firm (Hillman, Nicholson, & Shropshire, 2008).

In sum, there are significant research opportunities to understand venture boards with regard to their composition, structure, and processes, as well as their transition during IPOs. Research within these directions is also likely to facilitate greater engagement with the literature on the boards of public firms. Overall, exploring these research

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opportunities is likely to contribute to a more holistic and empirically grounded view of how corporate boards and, more broadly, governance evolve.

Potential Data Sources

A key challenge in empirical research on venture boards is the limited availability of data. Past studies have relied on CEO surveys (Forbes et al., 2009), board meeting observations and interviews (Garg & Eisenhardt, in press), archival data and interviews (Beckman et al., 2014), and deal documents from venture investors (Cumming, 2008; Kaplan & Stromberg, 2003). Scholars can also manually collect new information on venture boards by searching sources such as SEC Form D filings and S-1 filings in the U.S., similar filings in other countries, and websites for ventures and investors, including archived versions of websites through www.archive.org. They can also triangulate and complement these data with press releases from LexisNexis, *Businessweek*'s Private Company Information website, and BoardEx, which provides extensive information on boards of directors. Further, ZoomInfo and LinkedIn provide professional biographies. Investment round dates, available from VentureXpert and VentureSource, can provide an additional check to verify the dates individual directors joined a board. This approach to data collection has been used recently to collect venture board member data in the U.S. medical device industry (Garg et al., 2017a). In a similar vein, scholars have also used data aggregated by Crunchbase to obtain board information (Cumming, Werth, & Zhang, 2016). Lately, CB Insights has also emerged as an important data source, especially for recent U.S. ventures. For other countries, such as the U.K. and India, data on ventures (including boards and financials) are available from their respective governments for modest fees. As such, we expect *rich data* rather than *big data* is likely to be the main engine of venture board research in the near term.

Toward a Richer Understanding of Governance in Entrepreneurial Firms

In this article, we focus on venture boards—i.e., boards of privately owned and professionally funded firms. These firms are usually closely held, VC backed, and focused on innovation. Beyond ventures, however, there is also a rich ecology of private firms that are both theoretically and economically important. These other types of entrepreneurial firms include small businesses (Gabrielsson, 2007; Huse, 2000), family firms (Schulze, Lubatkin, Dino, & Buchholtz, 2001), and university spin-offs (Lockett & Wright, 2005). These firms are similar to ventures in that they are also closely held. But they also differ in crucial ways, including their ownership structures, goals, and time horizons. They may lack a formal board of directors. If they do have boards, nonexecutive directors may simply be family members (in the case of family firms) or university administrators (in the case of academic spin-offs) rather than the domain experts who commonly populate venture boards. CEOs may hold several additional external posts when working in family businesses, university spin-offs, and other small enterprises. A key implication is that scholars must pay attention to these differences among the various forms of entrepreneurial firms and their institutional contexts. Such awareness is likely to enable the development of more contextually relevant insights into board structure and composition, board processes, and possible transition into becoming public firms. Further, scholars may find it useful to employ inductive approaches to generate middle-range theories, rather than force fitting extant theories like agency and resource dependence (Eisenhardt, 1989c).

Beyond different types of entrepreneurial firms, new developments in entrepreneurial financing (Wright, Lumpkin, Chris, & Agarwal, 2016) also have highly relevant implications for venture governance, especially boards. For example, equity crowdfunding—just like IPOs—allows ventures to have hundreds and even thousands of equity investors through internet platforms while remaining private firms (Ahlers, Cumming, Günther, & Schweizer, 2015; Bruton, Khavul, Siegel, & Wright, 2015). These shareholders, however, are very unlikely to be represented on the board. In fact, boards are not required for these firms in many (if not all) institutional contexts. Unlike ventures, entrepreneurial firms that are crowdfunded usually lack financially motivated domain investor experts who can effectively monitor and advise. Instead, in these entrepreneurial firms with large numbers of equity investors, there is often "direct governance" by which these small investors actively voice their concerns through social media. This practice can be

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a huge drain on the attention of firm executives and boards at a time when they need to focus on bringing the innovation to the market (Lewis-Kraus, 2015). The emergence of such new forms of financing of entrepreneurial firms is exciting, but it is also blurring the boundaries between private and public governance, as well as the related role of boards of directors.

Finally, another potential direction for future research is the exploration of venture boards and other governance mechanisms as critical tools to adapt entrepreneurial search. One distinctive feature of entrepreneurial firms is the search to create value under conditions of uncertainty. In such conditions, entrepreneurs frequently must adapt their search (Dencker, Gruber, & Shah, 2009) while also struggling with potential cognitive traps that bias search (Furr, Cavarretta, & Garg, 2012; Furr et al., 2017). Because entrepreneurs typically operate without the support of a large organization or a broad set of external stakeholders, correcting for these biases and adapting the vector of entrepreneurial search may be one of the most important areas of entrepreneurial research (Furr, 2017). Venture boards are an important corrective mechanism for entrepreneurial search, and future research should explore how venture board structure, oversight processes, and distribution of rights may be employed to adapt search effectively.

Conclusion

Venture boards are both theoretically important and economically relevant. The present article takes stock of the strategic and organizational research on venture boards and lays out a future research agenda that we hope will generate fresh insights and enable theoretical engagement with the broader corporate governance research that centers on public firms. Given the early stages of this research, this intersection of entrepreneurship and governance will remain a promising research avenue for many years to come.

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Bridging Strategic Human Capital and Employee Entrepreneurship Research: A Labor Market Frictions Approach

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Research summary: *Strategic human capital research sits at the intersection of strategy and employee mobility research. Employee entrepreneurship research sits at the intersection of entrepreneurship and employee mobility research. We demonstrate how a shared focus on labor market frictions connects these two complementary but largely disparate literatures through their mutual emphasis on employee mobility. Our examination of the impact of various labor market frictions on employee mobility to competitor firms and employee transitions to entrepreneurship suggests that the outcomes of some frictions are divergent across the two literatures, the outcomes of some are aligned, and the outcomes of some are ambiguous. The complex interplay of labor market frictions provides opportunities for future research specifically exploring the intersection of the strategic human capital and employee entrepreneurship literatures.*

Managerial summary: *Our research suggests that some factors that prevent employees from leaving their employers to join competitor companies may also keep those employees from leaving to start new companies. Other factors that prevent employees from leaving their employers, however, may actually encourage employees to leave to start new companies. We identify areas for future research to help us understand better when companies' efforts to hold on to their workers are effective at preventing both movement to competitor companies as well as to entrepreneurship.*

The strategic human capital literature is largely focused on explaining heterogeneity in performance based on differences in firms' abilities to leverage valuable human capital (Barney, 1991; Barney & Wright, 1998; Castanias & Helfat, 1991). Accordingly, the strategic human capital literature brings from its strategy roots a focus on firm performance heterogeneity and from its human capital roots a focus on employee mobility.[1] In this literature, mobility is viewed primarily as a threat to firms because it represents the loss of valuable human capital that might be important for firm capabilities and performance (Coff, 1997). Thus, the strategic human capital literature has emphasized the critical role of labor market frictions in constraining mobility of human capital and, therefore, facilitating sustained human capital-based competitive advantages (Campbell, Coff, & Kryscynski, 2012; Chadwick, 2017).

Keywords: competitive advantage; entrepreneur; resource-based view; spin-offs; human resource management; human capital

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[1] For a recent review of the expansive literature on employee mobility, please see Mawdsley and Somaya (2016).

In contrast, the employee entrepreneurship literature brings from its entrepreneurship roots a focus on understanding the formation of new ventures and the economic outcomes of innovation; and from its roots on the agency of individual entrepreneurs, it brings a focus on mobility choices of potential founders. As such, the employee entrepreneurship literature is largely focused on understanding the conditions that cause employees to leave employment in order to found their own firms and the economic and personal consequences of those entrepreneurial actions. In this literature, mobility is viewed primarily as a positive outcome because it is associated with greater economic returns for the individual entrepreneurs (Campbell, 2013; Hamilton, 2000; Hellmann, 2007), enhanced performance of newly created firms (Agarwal, Echambadi, Franco, & Sarkar, 2004; Chatterji, 2009; Franco & Filson, 2006; Klepper, 2009; Sakakibara & Balasubramanian, 2015), and flows of knowledge and innovations that benefit markets and geographic regions as a whole (Agarwal, Audretsch, & Sarkar, 2010; Almeida & Kogut, 1999; Berchicci, King, & Tucci, 2011; Chatterji, Glaeser, & Kerr, 2014; Gambardella & Giarratana, 2010). From this perspective, employee entrepreneurship research has focused on how various labor market frictions may increase or decrease the propensity of potential entrepreneurs to leave their jobs and found new firms.

We visually depict the relationships among these literatures in Figure 1. Strategic human capital scholarship exists at the intersection of the strategy and employee mobility literatures, while employee entrepreneurship scholarship exists at the intersection of the entrepreneurship and employee mobility literatures. We highlight that strategic human capital scholarship and employee entrepreneurship scholarship both draw on the market friction logic embedded in the employee mobility literature, but focus on different objectives and outcomes of interest. Accordingly, we see an opportunity to link these two theoretical conversations through the language and logic of labor market frictions and, in so doing, to explore the intersection between strategic human capital and employee entrepreneurship research.

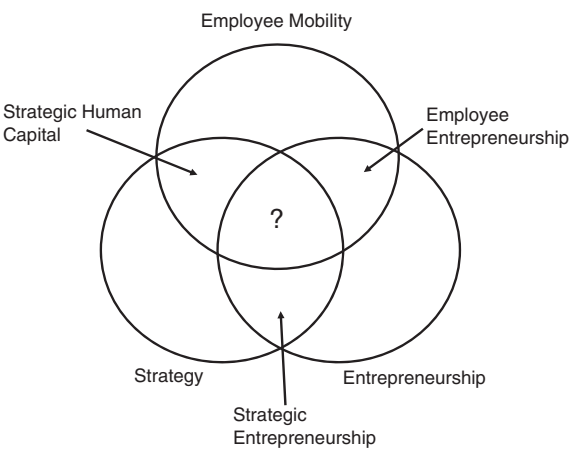

Figure 1. Visualizing intersections in extant literature.

In this article, we provide a short overview and summary of labor market friction logic and briefly review how each friction manifests in the strategic human capital and employee entrepreneurship literatures. Our review suggests that in some instances, the outcomes of these frictions diverge across literatures, in other instances, they align across literatures, and in other instances, the extent of alignment or divergence is unclear or ambiguous. We then identify opportunities for future research explicitly focused on the intersection of the strategic human capital and employee entrepreneurship literatures.

Labor Market Frictions

Market frictions are imperfections in product or factor markets that inhibit perfect competition (Mahoney & Qian, 2013). Economic theory suggests that in perfectly competitive markets, economic rents are unattainable. By preventing perfectly competitive market outcomes, market frictions can facilitate rent creation and rent capture by market participants. In both the strategic human capital and employee entrepreneurship literatures, understanding how market frictions in labor markets impact the mobility of employees into and out of firms is a key concern.

A common theme across strategic human capital theory is that labor market frictions that constrain voluntary employee mobility are necessary for firms to capture value from employees. Valuable human capital can be very difficult to obtain or imitate and yet may be particularly important for achieving a competitive advantage (Barney, 1991; Castanias & Helfat, 1991). Unlike other strategic resources and capabilities that the firm can build, borrow, and/or buy in the market, human capital is embedded in individuals with agency (Coff, 1997). These individuals can choose to leave their employers for any number of reasons and for any number of alternative destinations and when

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they do, they take their valuable human capital and relationships with them (Carnahan & Somaya, 2013; Dokko & Rosenkopf, 2010; Raffiee, 2017; Somaya, Williamson, & Lorinkova, 2008). This threat of voluntary employee mobility, which is not present in other strategic factor markets, is one source of the managerial dilemmas that firms face when dealing with this unique firm resource (Coff, 1997).

Similarly, employee entrepreneurship research explores how labor market frictions impact the decisions of employees to leave employment to start a new venture. The employee entrepreneurship literature generally views entrepreneurship as a career choice (Douglas & Shepherd, 2000): potential entrepreneurs consider their opportunities (Sorensen & Sharkey, 2014) and their opportunity costs (Amit, Muller, & Cockburn, 1995) and then choose to become an entrepreneur and stay an entrepreneur (Gimeno, Folta, Cooper, & Woo, 1997) as long as that choice enhances the entrepreneur's utility. Therefore, labor market frictions that limit the utility of employees at their current employer or constrain the ability of employees to gain utility from founding a new firm fundamentally shape the career choices of potential employee entrepreneurs.

In their exploration of the role of market frictions in driving the dominant theoretical perspectives found in the strategy literature, Mahoney and Qian (2013) categorize market frictions and provide insights into how market frictions shape rent creation and appropriation. We adapt the logic and framing of Mahoney and Qian (2013) to explore how key labor market frictions impact outcomes in both strategic human capital and employee entrepreneurship research. Because employees are themselves strategic actors with agency, the market frictions that impact labor markets are often more nuanced and varied and the consequences more complicated than for market frictions in other strategic factor markets. We also emphasize that the outcomes in labor markets may differ from those in other strategic factor markets because employees can potentially start their own new firms, an outcome not available in other markets.

Table 1 contains our review of the strategic human capital and employee entrepreneurship research that explicitly or implicitly leverages labor market friction logic to explain constraints on employee mobility. The table provides a broad (but by no means complete) review of the labor market frictions common to the literatures on mobility and employee entrepreneurship. Each row describes a friction, provides references to research in both literatures, and provides a high-level assessment of the effect of that particular friction in the extant literature. The last column indicates the extent to which the employee mobility and employee entrepreneurship outcomes discussed in these literatures appear aligned or divergent, based on our review. Next, we briefly discuss each row of Table 1. We group the frictions according to whether their impact on employee mobility and employee entrepreneurship is divergent, aligned, or ambiguous. Again, we stress that this is an incomplete list of labor market frictions designed to identify opportunities for future research.

Divergent Labor Market Frictions

Human capital specificity. A primary market friction explored in the employee mobility literature is co-specialized human capital. Two assets are co-specialized if they each create more value when combined with the other (Teece, 1986). In the context of human capital, co-specialized human capital arises when the worker invests in knowledge, skills, and abilities that are uniquely valuable in the context of the firm's idiosyncratic resources and capabilities (Becker, 1964; Molloy & Barney, 2015). Co-specialized human capital is useful for the firm because it underlies many of the firm's competitive capabilities (Mahoney & Kor, 2015), but also because it limits the employees' outside options. Other firms are less likely to benefit from the employees' highly co-specialized skills and, accordingly, may not compensate employees for those skills (Becker, 1964; Wang & Barney, 2006), therefore reducing the likelihood of employees moving to other firms (e.g., Coff & Raffiee, 2015; Marx et al., 2009; Morris et al., 2017; Wang et al., 2009). The limited external market for specific human capital constrains the mobility of employees with firm-specific human capital. This reduces employee mobility to established firms, limiting the ability of employees to leverage external offers to bid up their compensation. In turn, this potentially supports firms' capture of human capital rents by allowing the employer to retain a valuable employee at a discount.

In contrast, the employee entrepreneurship literature largely suggests that asset specificity of

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Table 1
Common Labor Market Frictions and Their Impacts on Employee Mobility and Employee Entrepreneurship

Labor market friction	Description	Impact on		Alignment?
		Employee mobility	Employee entrepreneurship	
Firm specificity and complementary assets	Demand-side friction arising when the worker invests in knowledge, skills and abilities that are uniquely valuable in the context of the firm's idiosyncratic resource and capability bundles.	***Negative*** (Becker, 1964; Coff & Raffiee, 2015; Mahoney & Kor, 2015; Marx, Strumsky, & Fleming, 2009; Morris, Alvarez, Barney, & Molloy, 2017; Wang & Barney, 2006; Wang, He, & Mahoney, 2009)	***Positive*** (Campbell, Ganco, Franco, & Agarwal, 2012; Carnahan, 2017; Franco & Filson, 2006)	Divergent
Social complexity	Demand-side friction caused when employee value stems from shared routines among socially complex teams.	***Negative*** (Campbell, Saxton, & Bannerjee, 2014; Groysberg & Lee, 2009; Groysberg, Lee, & Nanda, 2008; Madsen, Mosakowski, & Zaheer, 2003)	***Positive*** (Agarwal, Campbell, Franco, & Ganco, 2016; Dahl & Sorenson, 2012; Phillips, 2002; Wezel, Cattani, & Pennings, 2006)	Divergent
Information asymmetry/ Causal ambiguity	Demand-side friction arising when it is difficult for outside observers to observe and discern the quality of employees, leading to causal ambiguity and a lemons problem.	***Negative*** (Blyler & Coff, 2003; Ganco, 2013; Starr, Frake, & Agarwal, 2017; Stern & James, 2016)	***Positive*** (Ganco, 2013; Hayward, Shepherd, & Griffin, 2006; Lowe & Ziedonis, 2006)	Divergent
Thin markets/ Collusion	Demand-side frictions because there are a limited number of alternative employers in a market.	***Negative*** (Almeida & Kogut, 1999; Carnahan, 2017; Whittington, Owen-Smith, & Powell, 2009)	***Positive*** (Carnahan, 2017; Sorensen & Sharkey, 2014)	Divergent
Intellectual property and non-competes	Demand- and supply-side frictions based on legal protections of a firm's knowledge and intellectual property.	***Negative*** (Agarwal et al., 2009; Fallick et al., 2006; Ganco et al., 2015; Marx, 2011; Marx et al., 2009; Samila & Sorenson, 2011; Yeganegi et al., 2016; Younge & Marx, 2016)	***Negative*** (Agarwal et al., 2009; Anton & Yao, 1995; Buenstorf et al., 2016; Hellmann, 2007; Starr, Balasubramanian, & Sakakibara et al., 2017; Starr, Frake et al., 2017)	Aligned
Future opportunities with employer	Supply-side friction arising from credible future opportunities available at employer.	***Negative*** (Bidwell & Mollick, 2015; Carnahan et al., 2012; Hoisl, 2007)	***Negative*** (Carnahan et al., 2012; Cassiman & Ueda, 2006; Kacperczyk, 2013; Sorensen & Sharkey, 2014)	Aligned

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Table 1
Continued

Labor market friction	Description	Impact on		Alignment?
		Employee mobility	Employee entrepreneurship	
Mobility Costs	Supply-side friction reflecting the costs to an employee of employee mobility and employee entrepreneurship.	***Negative*** (Agarwal et al., 2009; Campbell, Ganco et al., 2012; Kuhn & Skuterud, 2004; Sorensen & Sharkey, 2014; Whittington et al., 2009)	***Negative*** (Agarwal et al., 2009) ***Positive*** (Campbell, Ganco et al., 2012; Raffiee & Feng, 2014; Sorensen & Sharkey, 2014)	Possibly divergent
Heterogeneous Employee Ability	Demand-side friction arising from thinner markets for low and high ability employees.	***Negative*** (Campbell, Ganco et al., 2012; Carnahan et al., 2012) ***Positive*** (Chatterji et al., 2016; Di Lorenzo & Almeida, 2017; Ganco et al., 2015; Palomeras & Melero, 2010)	***Positive*** (Campbell, Ganco et al., 2012; Carnahan et al., 2012; Chatterji et al., 2016; Dahl & Sorenson, 2012; Elfenbein et al., 2010; Sorensen & Sharkey, 2014)	Possibly divergent

human capital may increase, rather than decrease, the likelihood of employee entrepreneurship. While other established firms may not be willing to compensate outside employees for their highly firm-specific human capital, employees can potentially leave their focal firms, start new firms, and recreate the relevant co-specialized assets at the new ventures. This mechanism is consistent with the findings of Franco and Filson (2006), Campbell, Ganco et al. (2012), and Carnahan (2017), which demonstrate that while investments in firm-specific human capital may limit the likelihood of turnover overall, employees with high levels of firm-specific human capital are more likely to pursue entrepreneurship when they do choose to leave their current employers.

Social complexity. Coff (1997) highlights that firm-specific human capital is often manifest in the tacit knowledge embedded in social relationships and social culture. In other words, when employees are entrenched in a specific social structure, they are able to create more value than in alternative social structures. While the tacit knowledge of socially complex relationships is relationship specific and not necessarily firm specific, being embedded in a socially complex team makes it harder for alternate employers to transfer the value created by that team into their organization (Groysberg & Lee, 2009; Groysberg et al., 2008). The team members would all need to move together and adapt their shared routines to the new context (Marx & Timmermans, 2017; Selby & Mayer, 2013), which is potentially costly because the new employees' routines may disrupt existing routines (Campbell et al., 2014), and incumbent firms may resist adopting new routines (Madsen et al., 2003). As a consequence, production that occurs in socially complex teams reduces the threat of mobility, allowing firms to retain knowledge embedded in team members at a discount (Grant, 1996).

This constraint, however, may be less important when starting a *de novo* organization. First, employee entrepreneurs are typically higher performing employees (Campbell, Ganco et al., 2012; Klepper & Thompson, 2010) and are, thus, better able to rally teammates to move with them (Agarwal et al., 2016; Dahl & Sorenson, 2012) and take advantage of the collectively held knowledge of the team (Phillips, 2002; Wezel et al., 2006). Second, entrepreneurs start from a blank slate when

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designing social structure and organizational culture (Burton, Sørensen, & Beckman, 2002), thus the risk of conflicting routines between the moving team and incumbent employees, which devalues the socially embedded knowledge, is mitigated (Campbell et al., 2014). Therefore, relative to a team-embedded employee moving to an established firm, employee entrepreneurs may be better able to move with a team and transfer their socially complex knowledge, and they are better able to create value from that knowledge in a new organization.

Information asymmetry/causal ambiguity. Asymmetric information may make it difficult for outside employers to observe and discern the quality of embedded employees, leading to causal ambiguity problems (Blyler & Coff, 2003; Polanyi, 1962; Reed & DeFillippi, 1990) and lemons problems (Salop & Salop, 1976). In other words, it may be very difficult for external firms to know whether they are hiring an employee who will be valuable in their firm. This is particularly relevant when knowledge is complex and hard to assess externally (Ganco, 2013) and when there is uncertainty on the efficacy and coverage of legal market constraints (Starr, Frake et al., 2017). When there are high levels of information asymmetries, hiring firms are less likely to poach employees and those who are actually high quality may face a lemons discount when they consider other options in the labor market, thus constraining employee mobility. When information about the value of an employee becomes less ambiguous, for example through voluntary disclosures about value creation and value appropriation strategies of the firm, the likelihood that employees will be poached increases (Stern & James, 2016).

However, information asymmetry problems in labor markets may encourage employee entrepreneurship. While external employers may not be able to observe outside employees' human capital, individuals do see and appreciate their own human capital. Thus, when external firms will not pay for outside employees' skills, these undervalued employees can potentially form a new firm and fully reap the benefits of their abilities. When entrepreneurs have private expectations about their own skills and quality that exceed the expectations of the market, they are likely to pursue entrepreneurship (Hayward et al., 2006; Lowe & Ziedonis, 2006). Similarly, while the complexity of knowledge possessed by employees (which is very hard for outside employers to see) reduces employee mobility, it is associated with an increase in employee entrepreneurship (Ganco, 2013).

Thin markets/collusion. Employee mobility is negatively related to the number of independent employers in the labor market. The fewer the number of external employers, the fewer options employees have on the external market, and employee mobility is constrained. For example, increased geographic dispersion of firms within an industry limits the mobility of employees (Almeida & Kogut, 1999; Whittington et al., 2009). Similarly, the dissolution of competitor firms in an industry is also associated with a reduction in employee mobility (Carnahan, 2017). In contrast, although dissolution of competitor firms may limit the mobility of employees to existing firms, it spurs entrepreneurship by employees of the surviving firms (Carnahan, 2017). So, similar to the frictions identified earlier, this demand-side constraint likely limits movement from firm to firm; but, by constraining the ability of employees to threaten mobility to bid up their compensation, thin markets may actually enhance the likelihood that employees will depart to start their own firms because entrepreneurship allows these individuals to circumvent this source of demand-side constraints.

Aligned Labor Market Frictions

Intellectual property and non-competes. Legal structures that prevent employees from taking knowledge from a firm reduce employee mobility. For example, when firms implement non-compete agreements to constrain the ability of an employee to leave the firm and compete with the employer (Buenstorf, Engel, Fischer, & Gueth, 2016; Starr, 2016) or threaten intellectual property enforcement to prevent an employee from using the firm's knowledge in a different context (Ganco, Ziedonis, & Agarwal, 2015), they not only inhibit the willingness of employees to move to an existing firm (Agarwal, Ganco, & Ziedonis, 2009; Fallick, Fleischman, & Rebitzer, 2006; Ganco et al., 2015; Marx, 2011; Marx et al., 2009; Samila & Sorenson, 2011; Yeganegi, Laplume, Dass, & Huynh, 2016; Younge & Marx, 2016), but they also inhibit employees from forming their own firms by preventing employee entrepreneurs from imitating important aspects of their parent firm (Anton & Yao, 1995; Yeganegi et al., 2016). Intellectual

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property protection, thus, reduces the entrepreneurial aspirations of employees (Autio & Acs, 2010) and constrains the ability of employees to become entrepreneurs (Hellmann, 2007), especially if the parent firm values the intellectual property highly (Gambardella, Ganco, & Honoré, 2014). Similarly, if they are enforceable, non-compete agreements increase the risks facing employee entrepreneurs and limit the value of the knowledge they can take with them to their new firm (Starr, Frake et al., 2017; Starr, Balasubramanian et al., 2017). Research suggests that non-competes may be effective even if they are not enforceable because they create an implicit contract for the employee that is psychically costly to break (Kryscynski & Starr, 2017). This class of frictions ultimately has aligned effects in reducing mobility to both established firms and new ventures.

Future opportunities with employer. In contrast to the assumption that in competitive labor markets there are many homogeneous employers, in actual labor markets, employers vary with respect to the opportunities available within the firm. As individual productivity and opportunities for career advancement increase within a firm, both mobility (Hoisl, 2007) and entrepreneurship (Cassiman & Ueda, 2006; Kacperczyk, 2013; Sorensen & Sharkey, 2014) are limited. Career opportunities within firms lead to higher rates of internal promotion, which are associated with increased responsibility for employees (Bidwell & Mollick, 2015) and increased utility for the employees. As employers increase the potential for promotion and increased authority within the firm, they decrease the likelihood of mobility to established firms or to new ventures. Similarly, as opportunities for advancement within a focal firm become more limited, employees will look to advance their careers by pursuing opportunities in other firms or by starting their own firms.

Ambiguous Labor Market Frictions

Mobility costs. Mobility costs can include the costs of job search, bargaining, and switching as well as the opportunity cost associated with leaving the original job. The negative effect of mobility costs on employee mobility to established firms is clear: as mobility costs increase, the likelihood of changing jobs decreases (Kuhn & Skuterud, 2004; Stevenson, 2008). Similarly, as the opportunity cost of leaving a job increases, the mobility rate decreases (Agarwal et al., 2009; Campbell, Ganco et al., 2012; Sorensen & Sharkey, 2014; Whittington et al., 2009). However, the impact of mobility costs on employee entrepreneurship is less clear. While, actual start-up costs of starting a new venture have a negative impact on entrepreneurship (Evans & Jovanovic, 1989), the impact of opportunity costs on new venture creation are less clear. Opportunity costs may negatively impact employee entrepreneurship because employees with high opportunity costs face more risk in starting a new venture (Agarwal, Campbell, Carnahan, & Choi, 2017, Agarwal et al., 2009), or they may positively impact employee entrepreneurship because employees with high opportunity costs may seek extreme rewards through entrepreneurship (Carnahan, Agarwal, & Campbell, 2012; Sorensen & Sharkey, 2014) or pursue hybrid entrepreneurship (Raffiee & Feng, 2014).

Heterogeneous employee ability. Just as differences between firms present frictions that impact employee mobility and entrepreneurship, employees themselves are not fungible, and differences between the employees create frictions in labor markets. For example, employees differ according to their ability. Studies examining the relationship between employee ability and employee mobility find mixed results. In some cases, higher ability workers are found to be more likely to join competitor firms (Chatterji, de Figueiredo, & Rawley, 2016; Di Lorenzo & Almeida, 2017; Gambardella et al., 2014; Palomeras & Melero, 2010). Other studies find that higher ability workers are less likely to leave for competitors (Campbell, Ganco et al., 2012; Carnahan, 2017). Employee ability, however, is consistently associated with higher rates of employee entrepreneurship (Campbell, Ganco et al., 2012; Carnahan et al., 2012; Chatterji et al., 2016; Dahl & Sorenson, 2012; Elfenbein, Hamilton, & Zenger, 2010; Sorensen & Sharkey, 2014).

A Pathway to Greater Convergence

Our summary of labor market frictions in both the strategic human capital and employee entrepreneurship literatures demonstrates how labor market frictions may provide a pathway for connecting and

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integrating these two streams of research. We offer two messages in conclusion: First, we suggest a potential explanation for why in some cases we observe divergence between the strategic human capital and employee entrepreneurship literature. Second, we identify avenues for future research that can more fully bring the insights from these literatures together.

Why Might These Literatures Diverge?

Scholars in the strategic human capital domain are generally interested in exploring the conditions under which firms are able to capture rents from human capital and gain a competitive advantage over their competitors. Thus, while many strategic human capital studies leverage individual-level data and invoke individual-level theories, their primary research motivation is to explain firm-level differences across established firms. This focus on established firms as the actors of interest may engender an implicit bias toward theoretical and empirical studies that examine mobility to established firms. This perspective treats employee mobility as a negative outcome that should be constrained and leads scholars to systematically ignore the implications of entrepreneurship as an employment outcome. In contrast, the employee entrepreneurship literature explores employees' decisions to found their own firms and is implicitly built on the assumption that entrepreneurship is a career choice. Thus, individuals are the actors of interest in this research, and employee mobility is seen as a positive outcome that enhances the utility of individuals, facilitates new venture performance, and drives knowledge flows and innovation.

Our review of these two literatures suggests an important boundary condition on research in the strategic human capital tradition. Specifically, theories of how labor market frictions restrict mobility and enhance human capital-based competitive advantages may need to be limited to contexts in which entrepreneurship is not an attractive option for employees who are the source of human capital rents. If entrepreneurship is a viable and potentially attractive options for firms' employees, then strategic human capital theories need to address how entrepreneurship as a mobility destination alters assumptions about the relationship between labor market frictions, mobility, and human capital rents.

Moving Toward Convergence

We identify three key research areas that will leverage the market friction logic and deepen our understanding of the interaction between employee entrepreneurship and strategic human capital. Specifically, we call for: (a) a deeper analysis of how specific labor market frictions impact the ability of firms to capture human capital rents when employee entrepreneurship is a threat; (b) an exploration of the set of firm strategies that may constrain employee entrepreneurship; and (c) an analysis of how the matching of entrepreneurially inclined employees and employers is endogenous to the set of frictions present in a context.

Human capital rents and employee entrepreneurship. The omitted choice of employee entrepreneurship is important to a market friction logic because entrepreneurship provides a pathway for employees to navigate around labor market frictions that might otherwise limit their mobility. Even if employees cannot threaten mobility to an *existing* firm in order to bargain for higher wages, they can threaten to start a *new* firm. In some cases, the stronger the labor market frictions that reduce firm-to-firm mobility, the greater the attractiveness of entrepreneurship as a career choice. Thus, a potential consequence of leveraging labor market frictions in pursuit of human capital rents is that firms may inadvertently increase the incentives for their employees to become entrepreneurs, particularly if the affected employees are already inclined toward the rewards available through entrepreneurship. The divergent effects associated with some labor market frictions in preventing employee mobility to established firms versus preventing employee entrepreneurship, therefore, presents an upper bound on how aggressively firms can leverage labor market frictions to appropriate value from their employees.

There are also opportunities to study specific labor market frictions and examine how they shape employee mobility and employee entrepreneurship and the resulting impact on value capture by firms. Our presentation of common labor market frictions is only at a high level, and these discussions are cursory and incomplete and designed primarily to

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illustrate the potential underlying relationships. More comprehensive research is necessary to explore the specific mechanisms underpinning the role of labor market frictions in providing a competitive advantage to firms while still constraining employee entrepreneurship.

Furthermore, it remains an open question whether the potential loss of employee entrepreneurs outweighs the benefits of leveraging labor market frictions to retain non-entrepreneurially inclined employees. If these frictions allow the firm to hold on to non-entrepreneurially inclined employees at a discount but actually encourage entrepreneurially inclined employees to start their own firms, what does that mean for the overall human capital-based competitive advantage for the firm? While the mobility outcomes may diverge, it is not as clear *ex ante* whether the implications for competitive advantage also diverge. There seems a fruitful path for future research exploring entrepreneurial mobility and the human capital rents of established firms simultaneously to help us more fully understand when and how these literatures align and diverge.

Connecting employee entrepreneurship to firms' human capital approaches. In a world where employee entrepreneurship is a threat to firms' ability to capture human capital rents, firms may have to adapt new human capital management approaches to constrain the mobility of entrepreneurially inclined employees. If firms' use of labor market frictions to constrain mobility to established firms may enhance the threat of employee entrepreneurship, the next step in the logic is to ask how firms can counteract the ability and willingness of entrepreneurially inclined employees to leave to form a new venture. The strategic human capital lens highlights that firms could respond to entrepreneurship threats by leveraging supply-side frictions that decrease an employee's willingness to leave and become an entrepreneur. For example, firms may offer spin-off or intrapreneurship opportunities to employees whose mobility options with existing firms are limited, but who might otherwise become employee entrepreneurs. These opportunities create supply-side constraints, incenting employees to remain with the existing employer rather than create new competitor firms. We next briefly discuss several potential ways firms can reduce the entrepreneurship threats of employees, though there may be many more to explore in future research.

Spin-off firms. In a spin-off, a parent firm creates a new venture in which they maintain substantial equity. Thus, the parent firm gives an entrepreneurially inclined employee the green light to pursue an entrepreneurial opportunity and, further, makes an initial investment in exchange for equity in the new venture. From the parent firm's perspective, it does not completely lose the valuable employee because the firm retains some of the financial benefits from the human capital of the founder. Additionally, the firm can "harvest" innovations from these ventures (Dushnitsky & Lenox, 2005) and learn about new technologies (Dushnitsky & Lenox, 2006). Firms benefit because they did not lose these employees to a competing venture or to a rival (Burrows, 2012); the founders benefit because they reap the financial rewards (Hamilton, 2000), meaning and purpose (Carnahan, Kryscynski, & Olson, 2016), autonomy (Roach & Sauermann, 2015), flexibility (Sørensen, 2007), responsibility (Elfenbein et al., 2010), and human capital development (Campbell, 2013) that can accompany entrepreneurship.

Intrapreneurship. Firms can also offer intrapreneurship opportunities to entrepreneurially inclined employees. In intrapreneurship, employees are given autonomy over and rewards from an innovative activity within the boundaries of the firm (Hellmann, 2007; Kacperczyk, 2013). Intrapreneurs typically work closely with other units of the firm and have access to the complementary assets of the parent. Again, the employer benefits by stimulating innovation and then owning the rights to those innovations. Employees with entrepreneurial inclinations benefit because they receive at least some of the benefits associated with being an entrepreneur.

Through both spin-offs and intrapreneurship, firms leverage supply-side frictions to counteract the adverse effects that demand-side frictions impose on entrepreneurially inclined employees. By receiving many of the benefits associated with entrepreneurship while remaining associated with their current employer, entrepreneurially inclined employees are less likely to seek out external entrepreneurial opportunities. While these are just two examples of how understanding the antecedents and consequences of employee entrepreneurship can shape firms' approaches to capturing human capital rents, there are rich avenues of future research exploring how firms can seek to neutralize the dilemmas associated with managing human capital that is free to leave and start new ventures.

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Labor market frictions and employer-employee matches. Much of the extant strategic human capital literature implicitly assumes that individuals are randomly assigned to firms. However, it is likely that employees sort into firms based on the intensity of the frictions they anticipate experiencing at the firm. For example, an employee with very low expected utility from entrepreneurship may be less willing to sort into a firm with high demand-side constraints than an employee with high expected utility from entrepreneurship. The entrepreneurially inclined employees may be less sensitive to demand-side frictions because they always possess a credible exit threat. As such, the intensity of demand-side frictions at a firm might shape the composition of the firm's workforce. This highlights a path through which strategic human capital researchers can more deeply examine how frictions shape the process by which employees select into firms and how employees are motivated within firms.

This logic is particularly salient at the regional level and, therefore, for policy makers. As an example, consider Silicon Valley and Route 128. Saxenian's (1996) arguments suggest that demand-side constraints in the Route 128 area are, on average, more intense than demand-side constraints in Silicon Valley, which leads to relatively greater mobility in Silicon Valley. However, if we compare employees in each region that are identical on all dimensions except for the demand-side constraints they face in their region, our logic suggests that *ceteris paribus*, employees in Route 128 may be more likely to become entrepreneurs because they face more intense demand-side constraints. However, it is difficult to make a *ceteris paribus* argument here because the higher average demand-side constraints in Route 128 reduce the ability of entrepreneurs to recruit other team members. This, in turn, reduces the average expected utility from entrepreneurship in Route 128 relative to Silicon Valley, which leads to sorting of more entrepreneurially inclined employees into Silicon Valley. So, when aggregating to the regional level, demand-side constraints and expected utility from entrepreneurship may co-vary in predictable ways. This suggests an opportunity to explore how policy makers can shape the labor market frictions within a region in order to stimulate employee entrepreneurship and attract entrepreneurially inclined individuals into the region.

Conclusion

The extant strategic human capital literature is built on a theoretical foundation that draws deeply on labor market friction logic. So, also, is the extant literature on employee entrepreneurship. However, these literatures leverage labor market friction logic in distinctly different ways, from distinctly different perspectives, and with distinctly different objectives. Nevertheless, bridging these literatures can provide a foundation for developing richer answers to a variety of research questions regarding the antecedents and consequences of human capital value capture when employee entrepreneurship is a threat. By linking these literatures through their shared focus on market frictions, researchers can contribute to the understanding of how entrepreneurial mobility has firm-level consequences, how firms' quests for human capital rents can enable or constrain employee entrepreneurship, and how managers and policy makers can shape the interaction of individuals and firms.

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The Problems with and Promise of Entrepreneurial Finance

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Research summary: *This article provides a review of the entrepreneurial finance literature in the surprisingly not very well integrated entrepreneurship and finance journals. Entrepreneurial finance encompasses venture capital, private equity, private debt, trade credit, IPOs, angel finance, and crowdfunding, among other forms of finance. We analyze trends in citation activity to these topic areas across 16 journals that publish at least somewhat regularly on these topics, and we show there has been a rise in citations on venture capital, private equity, and IPOs post-2006. We highlight an unfortunate degree of segmentation in the literature, as well as topics that have been the subject of scholarly focus, and identify promising topics for future research.*

Managerial summary: *Who does research in entrepreneurial finance—entrepreneurship or finance scholars? And which types of journals are more likely to publish research in entrepreneurial finance? In this article, we provide an overview of the literature on topics that include venture capital, private equity, private debt, trade credit, IPOs, angel finance, and crowdfunding. Our review of the literature shows some elements of segmentation by the specific topic, which we explain is partly due to the fact that datasets on entrepreneurial finance themselves are often segmented and do not include information on more than one form of entrepreneurial finance at a time. Further, we show citation patterns are segmented by the type of journal, with finance journals being much less likely to refer to entrepreneurship journals.*

"Lee Smolin begins The Trouble with Physics (Smolin, 2007) by noting that his career spanned the only quarter-century in the history of physics when the field made no progress on its core problems. The trouble with macroeconomics is worse. I have observed more than three decades of intellectual regress".

-Romer (forthcoming)

Entrepreneurial finance encompasses the intersection of the two separate fields of "entrepreneurship" and "finance." The field began with publications first appearing in entrepreneurship journals, such as *Research Policy* (founded in 1972), *Entrepreneurship Theory and Practice* (founded in 1976), *Strategic Management Journal* (founded in 1982), and *Journal of Business Venturing* (founded in 1986). More recently, *Strategic Entrepreneurship Journal* was added in 2007. Apart from studies of initial public offerings (IPOs), topics in entrepreneurial finance began to appear in finance journals starting only in 1990, with studies on the impact of venture capital on initial public offering (IPO) performance (Barry, Muscarella, Peavy, & Vetsuypens, 1990; Megginson & Weiss, 1991), despite the fact that the first finance journal—*Journal of Finance*—was founded in 1946. More recently, *Journal of Banking and Finance* was founded in 1977 and *Journal of Corporate Finance* was founded in 1994; these are two of the mainstream finance journals, with a

Keywords: entrepreneurship; economics; finance; IPO; venture capital
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nontrivial proportion of their content focused on topics pertinent to entrepreneurial finance. In this article, we provide a retrospective and prospective look at the development of entrepreneurial finance in both entrepreneurship and finance journals, and we do so by focusing on specific areas that include venture capital, private equity, crowdfunding, angel finance, private debt, trade credit, and IPOs. Our direct and critical analysis is inspired in part by the hard-hitting Paul Romer, quoted earlier.

What makes entrepreneurial finance an interesting area for scholarly examination? Put differently, why should anyone care about how the field develops? Traditional finance models such as the CAPM were developed to study publicly traded companies on stock exchanges. Retail and institutional investors, including professional fund managers, rarely get involved as active investors in the companies in which they trade. In effect, the finance issues are often separated from issues that involve governance provided by the source of capital. Entrepreneurial finance, by contrast, typically involves non-publicly traded companies that have yet to be listed on a stock exchange. Publicly traded firms that are almost always the subject of scholarly examination in finance journals were all once privately held prior to becoming listed on an exchange. And many of the most successful publicly traded companies, such as Apple and Facebook, and some of the most successful acquisitions, such as Hotmail and Skype, were previously venture capital-backed companies. Entrepreneurial finance typically involves very active investors who provide strategic, financial, human resource, and marketing advice, as well as an array of connections with lawyers, accountants, consultants, and investment banks for entrepreneurs so they can grow and develop into large firms, possibly even firms listed on a stock exchange. Hence, there are a huge array of issues in entrepreneurial finance that mix strategy and finance, including topics in fundraising, investing, staging, syndication, financial contracting, and selling companies in initial public offerings and acquisitions. Moreover, with many governments around the world interested in recreating the success of Silicon Valley, there is substantial interest among scholars, practitioners, and policymakers on the topic of government policy toward entrepreneurial finance.

Research in entrepreneurial finance has had a slow and rocky start due to the dearth of systematic datasets on the topic. In most countries (excluding Scandinavian countries and some continental European countries such as France and Belgium), firms are not mandated to disclose information until they are publicly traded on a stock exchange. Hence, the development of early work on finance began with publicly traded companies, not privately held ones. Early research in entrepreneurial finance was largely carried out with the use of surveys. One of the first (if not the first) research centers on entrepreneurial finance, was the Center for Management Buyout Research (CMBOR);[1] it was founded by Professor Mike Wright at the University of Nottingham in 1986. Entrepreneurial finance has tremendous potential to be at the forefront of interdisciplinary research linking the fields of not only entrepreneurship and finance, but also public policy (e.g., Klein, Mahoney, McGahan, & Pitelis, 2013), strategy (e.g., Sirén, Kohtamäki, & Kuckertz, 2012), psychology (e.g., Felin & Zenger, 2009), sociology (e.g., Stuart & Sorenson, 2007), geography (e.g., Coombs, Deeds, & Ireland, 2009), and economics and law (e.g., Cumming, Sapienza, Siegel, & Wright, 2009). The study of entrepreneurship has made tremendous strides in being interdisciplinary across each of these areas. Entrepreneurial finance, by contrast, is different, which gives rise to a certain element of complaint and remorse in this article, but nevertheless also suggests opportunities for future research.

In this article, we explain and empirically analyze trends in the development of the literature on entrepreneurial finance. We see a number of things in entrepreneurial finance that are distinct from other fields. Most notably, entrepreneurial finance is a segmented literature across journals in "management/entrepreneurship" and "finance." This segmentation gives rise to issues that are distinct from fields that are not interdisciplinary. For example, physics and macroeconomics have many journals, but there are not two separate groups of top tier journals from which authors can choose, unlike entrepreneurial finance. This segmentation enables a different type of coevolution of the field, which is interesting to analyze.

In this article, we empirically analyze a large dataset extracted from Google Scholar regarding

[1] http://wwwf.imperial.ac.uk/business-school/research/the-centre-for-management-buy-out-research/. CMBOR founder Mike Wright often recounts how his senior colleagues at the time thought he was ruining his career by doing so, though that turns out not to have been correct!

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reference to different topics in entrepreneurial finance, including venture capital, private equity, IPOs, debt, trade credit, angel finance, and crowdfunding. The data show interesting patterns about the growing interest in these topics post-2006 and factors that affect the development of the field. Also, the data are consistent with a general sentiment we have noticed in our study of topics at the intersection of entrepreneurship and finance over the last 20 years. That is, the interdisciplinary nature of entrepreneurial finance can be characterized as one that is considered to be interdisciplinary by most scholars in entrepreneurship and not interdisciplinary by most scholars in finance. Specifically, researchers in entrepreneurship often reference research in finance journals, while researchers in finance are much less likely to reference research in entrepreneurship journals. As such, topic development and scientific progress are fragmented and, as a result, there have been hurdles to the development of research on entrepreneurial finance in ways that are consistent with Paul Romer's (forthcoming) *The Trouble with Macroeconomics* and Lee Smolin's (2007) *The Trouble with Physics.*

In this article, we are somewhat critical of certain papers. As such, we begin by saying we have no intention of being highly critical of the researchers who wrote those papers and instead, at the outset, highlight the excellent high quality of the work in general. Instead, we merely point out some factual issues with some papers and research in entrepreneurial finance that highlight a high degree of segmentation, among other problems that arguably impede the development of the field. We do so only for the purpose of suggesting improvements to the entrepreneurial finance research culture.

A key theme from our analysis is that the most innovative work in the future will make use of the large benefits that come from an interdisciplinary approach to entrepreneurial finance that draws on not purely finance perspectives, but also strategy and management, as well as legal and institutional theory, psychology, and sociology. At the intersection of these areas are the greatest opportunities to be innovative and bring about advancement in theory and empirical testing.

In this article, we next discuss the link between segmented and low quality data and segmented research clubs in entrepreneurial finance across the entrepreneurship and finance journals. We then introduce Google Scholar citation data and provide an empirical analysis of those data with reference to the post-2006 period. Finally, we offer some concluding remarks and hopes for the further development of the field of entrepreneurial finance.

A Backgrounder on Interpreting Citation Data in Entrepreneurial Finance

As explained elsewhere (e.g., Cumming, 2016; Cumming & Vismara, 2017a, 2017b), research in entrepreneurial finance is highly segmented. One main reason for the segmentation in the literature is the type of data that is available.

For example, if you want to write a paper on venture capital, then you can go to a data vendor that sells venture capital data. But, these data will not comprise 100% of the firms that have received venture capital (even if you focus only on recent years) due to the fact that most data vendors obtain such data from voluntary reporting and others pick up such information where they see it, such as through media and other searches. The venture capital dataset you obtain will typically comprise information only on venture capital finance and will not have any other information on other forms of finance that the companies in the dataset received. Also, it will not have any information on companies that tried to but did not obtain venture capital nor will it have any information on companies that did not even seek venture capital. In effect, venture capital studies are isolated by the type of data that are available and, as such, you are typically able to publish venture capital research only by looking at venture capital as the one external source of finance obtained by the companies in the sample; and you can do so without analyzing any selection and treatment effects associated with the application for and obtaining of venture capital. Without casting aspersions about the quality of research of others, we are guilty of these problems in most, albeit not all, of our studies. One way to get around these data problems is to obtain data from companies themselves, which can be done with surveys, such as that in Cosh, Cumming, and Hughes (2009) for the U.K. and Robb and Robinson (2014) for the U.S., albeit this approach leads to other problems of representativeness. Another possibility is to try to merge datasets and different sources of information such as that in Cole, Cumming, and Li (2016), but that still leaves questions that are impossible to resolve with such merging

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because secondary data in entrepreneurial finance never enables one to know if a firm applied for finance but was subsequently turned down (also a problem with Robb & Robinson, 2014, but not Cosh et al., 2009).

There is a further segmentation of research in entrepreneurial finance other than by type of data: namely, by field of author. Some academics that work on topic are in "finance" (for the purposes herein, we include economics as categorically similar), while others are in "entrepreneurship" (again, for purposes herein, we also include management and strategy as categorically similar). Finance scholars typically do not value publications in entrepreneurship (for an extended explanation why, see Cumming, 2016). The data we will present later indicate that finance scholars are less inclined to cite papers in entrepreneurship. For instance, let's consider two examples of papers that were released shortly after we wrote this article. We picked these examples because they are extremely recent and because the topics clearly involve the intersection of papers in finance and entrepreneurship journals. First, in Gompers, Gornall, Kaplan, and Strebulaev (2016), the authors deal with the topic of how venture capitalists make decisions. They reference only one paper from a management or entrepreneurship journal, and that paper is, at best, tangential to the topic they study. On Google Scholar in September 2016, we typed (with quotes for a more restrictive search) "venture capital decision" and up came more than 1,000 papers, virtually all of which are published in management and entrepreneurship journals. Some of these papers have more than 1,000 citations on Google Scholar, and many have titles that are extremely similar to the Gompers et al. (2016) study, with the words "venture capital" and "decision" in the title (e.g., Dushnitsky & Lavie, 2010; Gerasymenko, De Clercq, & Sapienza, 2015; Hill, Maula, Birkinshaw, & Murray, 2009; Iriyama, Li, & Madhavan, 2010; Wuebker, Hampl, & Wüstenhagen, 2015; see also Manigart et al., 2002; Sapienza, Manigart, & Vermeir, 1996; Wright et al., 2004; Wright, Pruthi, & Lockett, 2005). Also, work on venture capital and private equity performance tends to be segmented by the use of particular data, with datasets such as those from Thomson being publishable and acknowledged in finance work (e.g., Nahata, 2008), but data from CEPRES (Cumming & Walz, 2010; Cumming, Schmidt, & Walz, 2010), CMBOR, Pitchbook (Johan & Zhang, 2014), and VICO (Bertoni, Colombo, & Grilli, 2011) being less often recognized in finance journals (although there are some exceptions, such as Franzoni, Nowak, & Phalippou (2012) with CEPRES data, Johan and Zhang (2016) with Pitchbook data, and Nikoskelainen and Wright (2007) with CMBOR data).[2]

Finally, it is noteworthy that there is not merely segmentation in entrepreneurial finance across journals in finance *versus* entrepreneurship, but also within journal fields. Specifically, entrepreneurial finance papers in the three leading finance journals— *Journal of Finance*, *Journal of Financial Economics*, and *Review of Financial Studies*— often do not reference papers on the exact same topic in the second-tier finance journals. As one example that is very familiar to us, compare Cumming, Fleming and Schwienbacher (2005, first distributed as a working paper in 2001) to Gompers, Kovner, Lerner, and Scharfstein (2008, first distributed as a working paper in 2005). We understand that the reason for this typical exclusion is that the papers in the top three finance journals are typically obliged to reference only papers published in finance journals at the same level. In short, entrepreneurship scholars should not feel completely isolated from being referenced in finance research, as the level of segmentation in entrepreneurial finance in many cases is within the top three finance journals.

In other academic fields outside entrepreneurial finance, academics have shown collective concern when prior research is not properly cited; for example, see the work linking economics and medicine, which has been featured prominently on Retraction Watch,[3] Economic Job Market Rumors,[4] and numerous blogs.[5] But in entrepreneurial finance, when there is not proper reference to prior work, no one appears to speak up.

Segmentation in entrepreneurial finance work can have negative consequences. Briefly, these

[2] Other excellent research based on new datasets and topics includes, but is not limited to, Bertoni and Groh (2014), Butticè, Colombo, and Wright (2017), Colombo, Franzoni, and Rossi-Lamastra (2015), Croce and Marti (2016), Meuleman, Vanacker, and Manigart (2014), Tykvova (forthcoming), Wright, Wilson, Gilligan, Bacon, and Amess (2016).

[3] http://retractionwatch.com/2016/05/26/economists-go-wild-over-overlooked-citations-in-preprint-on-prenatal-stress/.

[4] https://www.econjobrumors.com/topic/new-family-ruptures-aer-nber-is-rip-off-of-obscure-paper.

[5] The most referenced blog on point appears to be here https://gborjas.org/2016/06/30/a-rant-on-peer-review/.

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consequences can be summarized as follows: First, it encourages some authors to submit the exact same paper at the exact same time to a finance journal and an entrepreneurship journal in the expectation that they will not be caught because the editors and referees are typically quite distinct (see Cumming (2016) for further discussion). Second, the lack of communication across fields can lead to serious mistakes that, in turn, lead to incorrect public policy decisions. One example is in relation to research on the impact of public policy toward venture capital, in which there is widely cited work by Da Rin et al. (2006) that uses grossly erroneous rankings of the U.K. venture capital market as the worst in the world, and countries like Austria, Hungary and Iceland as the best venture capital markets in the world (for a detailed explanation, see Cumming, 2011a, 2011b, 2014, 2016). Numerous errors, misstatements, and misguided policy recommendations in work such as Lerner (2009) could have been avoided with a more careful review of work published in entrepreneurship journals and less blind reliance on finance and economics journals. This example shows that there is a clear harm from networked-based reading and citation patterns.[6]

Romer (forthcoming) and Smolin (2007) discuss problems with the advancement of macroeconomics and physics, respectively. In part, Romer (forthcoming, p.15) refers to networked researchers who have "tremendous self-confidence," "a sense of identification with the group akin to identification with a religious faith or political platform," and "a disregard for and disinterest in ideas, opinions, and work of experts who are not part of the group." Some of these characteristics seem quite common in the finance arena. Among other things, Cumming (2016) reports that finance professors view work done by non-finance professors extremely negatively—such that the worst finance journal is better than an entrepreneurship or management journal—and scantly ever cite management journals. Likewise, Romer (forthcoming, p.15) highlights "a strong sense of the boundary between the group and other experts" and "a tendency to interpret evidence optimistically, to believe exaggerated or incomplete statements of results, and to disregard the possibility that the theory might be wrong," among other things. It is well known that finance papers do not have to cite non-finance papers to get published in finance journals. In fact, doing so could lead to a lower chance of your paper being accepted by a finance journal. So, the sense of boundary is extremely strong. Further, it is widely regarded in the entrepreneurial finance area that if you have a result that some gatekeepers do not like or competes with the results of other finance authors with differential access to finance journals, then it is best to take your work to entrepreneurship or management journals. In short, there is the impression, at least among some in venture capital and private equity, that these characteristics are not only common among those in macroeconomics and physics, but also among some gatekeepers in entrepreneurial finance.

In the next section, we conduct an empirical analysis of citation patterns that are at a general level considering the high degree of segmentation in the field.

Trends in Google Scholar Data

Here we take a stab at integrating an analysis of entrepreneurial finance in entrepreneurship and finance journals. To some degree, we hope our first look helps reflect on where the "action is" in the segmented field, how developments over the past decade have helped shape this landscape, and where there are opportunities to break down pigeon holes or silos in future years.

We make use of Google Scholar citation data by year to the topics entrepreneurial finance, venture capital, private equity, private debt, trade credit, crowdfunding, and IPOs (hereafter the "entrepreneurial finance topics") for the following 16 journals (alphabetically): *Academy of Management Journal* (AMJ), *Administrative Science Quarterly* (ASQ), *Entrepreneurship Theory and Practice* (ETP), *Journal of Banking and Finance* (JBF), *Journal of Business Venturing* (JBV), *Journal of Corporate Finance* (JCF), *Journal of Finance* (JF), *Journal of Financial and Quantitative Analysis* (JFQA), *Journal of*

[6] Oddly enough, other work in venture capital shows that venture capitalists who rely on the friends for deal flow similarly end up with worse results (see Gompers, Mukharlyamov, and Xuan (2016)) . Of course, we don't want to fall into a trap of missing citations, as this is not a full review of all papers in the area. We acknowledge there are other authors that are active as well in the finance area in entrepreneurial finance, including, e.g., Chemmanur, Loutskina, and Tian (2014), McCahery and Vermeulen (2016), Puri and Zarutskie (2012), and Yung (2009).

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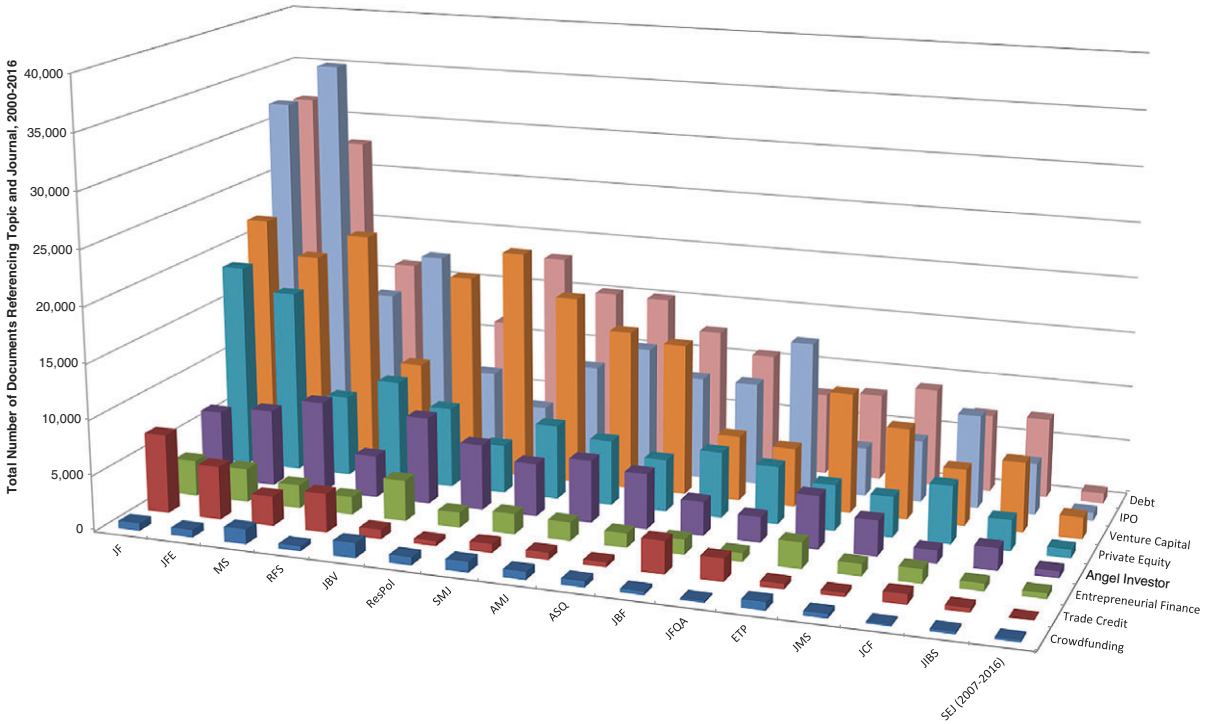

Figure 1. Google Scholar hits by topic and journal. This figure presents the number of Google Scholar hits for the years 2000 to 2016 for "entrepreneurial finance," "venture capital," "private equity," entrepreneur debt (not in quotes to capture papers about entrepreneurs and debt), "trade credit," angel investor (not in quotes to capture papers about angel investors), crowdfunding, and IPOs. JF = *Journal of Finance;* JFE = *Journal of Financial Economics;* MS = *Management Science;* RFS = *Review of Financial Studies;* JBV = *Journal of Business Venturing;* RP = *Research Policy;* SMJ = *Strategic Management Journal;* AMJ = *Academy of Management Journal;* ASQ = *Administrative Science Quarterly;* JBF = *Journal of Banking and Finance;* JFQA = *Journal of Financial and Quantitative Analysis;* ETP = *Entrepreneurship Theory and Practice;* JMS = *Journal of Management Studies;* JCF = *Journal of Corporate Finance;* JIBS = *Journal of International Business Studies;* SEJ = *Strategic Entrepreneurship Journal* (started in 2007). A paper in the data appears more than once for each journal that referenced the paper

Financial Economics (JFE), *Journal of International Business Studies* (JIBS), *Journal of Management Studies* (JMS), *Management Science* (MS), *Research Policy* (RP), *Review of Financial Studies* (RFS), *Strategic Entrepreneurship Journal* (SEJ), *and Strategic Management Journal* (SMJ).[7]

Figure 1 shows the total number of journal hits to these different journals for all of the entrepreneurial finance topics from 2000 to 2016. The citation patterns pick up, by year, each journal that was mentioned in a paper that was pertinent to one of these entrepreneurial finance topics and/or published a paper on one of these entrepreneurial finance topics. The greatest share of activity comes from JF, followed by JFE, MS RFS, JBV, RP, SMJ, AMJ, ASQ, JBF, JFQA, ETP, JMS, JCF, JIBS, and SEJ. Note that the citation statistics do not mean, for example, that a paper on venture capital was cited from *Journal of Finance*; instead, it means that a paper that referred to "venture capital" also referred to a paper in *Journal of Finance* that may or may not have been on the topic of venture capital. Hence, the citation counts track the influence of different journals on topic areas.

Figure 2 shows the trends in citation patterns to different areas in entrepreneurial finance. All topics are trending upward. But, perhaps most notable, since 2007, crowdfunding research has gained

[7] We thank the reviewers for suggesting many of these journals. There are many other excellent journals that publish on topic. Our analysis is not meant to be exhaustive. Future research could explore other important journals.

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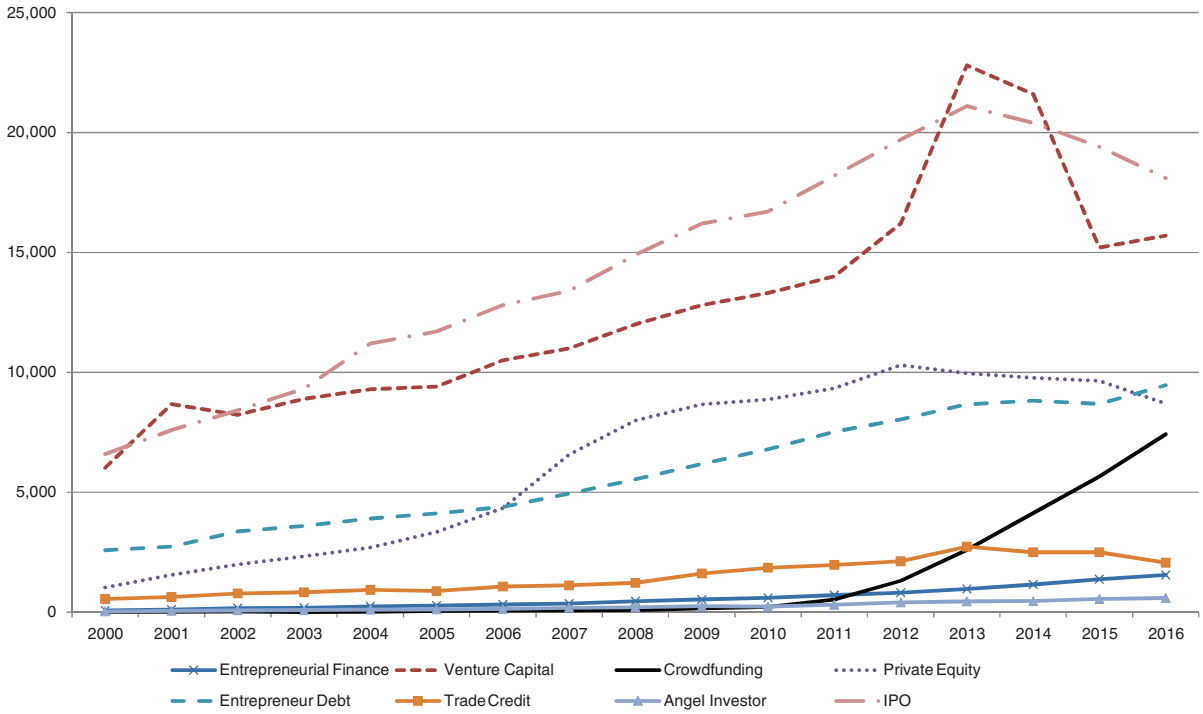

Figure 2. Google Scholar hits by topic and year. This figure presents the number of Google Scholar hits for the years 2000 to 2016 for "entrepreneurial finance," "venture capital," "private equity," entrepreneur debt (not in quotes to capture papers about entrepreneurs and debt), "trade credit," angel investor (not in quotes to capture papers about angel investors), crowdfunding, and IPOs.

significantly in popularity, partly spurred on by early theoretical and empirical work published on donations- and rewards-based crowdfunding (Belleflamme, Lambert, & Schwienbacher, 2014; Mollick, 2014) and equity crowdfunding (Ahlers, Cumming, Guenther, & Schweizer, 2015).

Table 1 presents a panel regression analysis of the data presented in Figures 1 and 2. The sample is a panel of the 16 journals, excluding SEJ. The regressions are an extremely simple setup: the left-hand side variable is the number of citations per year per journal for the different topic areas in entrepreneurial finance as indicated in each column. The right-hand side variables include journal fixed effects, along with variables for a time trend (to account for a cumulative increase in citations over time and growing interest in the topic area and greater availability of data over time; somewhat consistent with the general linear patterns that appear in Figure 2), a lag of the number of Google Scholar hits for the topics pertaining to each area of entrepreneurial finance (past papers inspire future papers), and a dummy variable equal to 1 for the years 2007–2016. The post-2006 variable captures a host of issues such as rise in entrepreneurial activities, gig economy, and new forms of entrepreneurial finance such as crowdfunding. The variable is particularly important, as it captures the effect that goes beyond the other two control variables: the time trend each year and the prior number of entrepreneurial finance citations.

Note that because different journals in finance and entrepreneurship, and certain authors in particular, simply do not cite one another (as discussed earlier), in the specifications, we examine overall citations levels as a measure of the flow of ideas and interest in ideas overall.

The data in column 1 of Table 1 are consistent with the view that there was a positive and significant (at the 5% level) effect of the post-2006 variable on venture capital (VC) citations per year. The economic significance is such that citations to VC increased by 12.4% relative to the average level of citation activity per year across the journals in the sample, rather than being attributable to any particular journal.

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Table 1
Regression Evidence of Citation Counts

	Venture capital		Private equity		Debt		Trade credit		Angel		IPOs	
	coefficient	t-statistic	coefficient	t-statistic	coefficient	t-statistic	coefficient	t-statistic	coefficient	t-statistic	coefficient	t-statistic
Post-2006 variable	96.37	2.50**	111.02	3.62***	5.78	0.13	–4.19	–0.27	–0.83	–0.04	127.62	2.31**
Lag prior counts all entrepreneurial finance fields	0.09	9.59***	0.10	13.11***	0.16	14.89***	0.03	7.92***	0.03	6.50***	0.14	9.70***
Year trend	34.47	5.70***	4.64	0.96	32.57	4.80***	0.28	0.11	20.81	7.03***	13.79	1.59
Constant	111.38	4.33***	–10.18	–0.50	–0.57	–0.02	12.38	1.21	–9.19	–0.73	115.90	3.15***
Number of observations	240		240		240		240		240		240	
Number of groups	15		15		15		15		15		15	
R2 within	0.88		0.86		0.90		0.57		0.83		0.79	
R2 overall	0.71		0.76		0.83		0.46		0.65		0.59	

Note. This table presents panel regressions of the determinants of citation counts per year with the journal name and the topic area for each of the topics: venture capital, private equity, debt, trade credit, angel, and IPOs. Data are from Google Scholar for January 2000 to December 2016. The variable post-2006 is a dummy variable equal to 1 for the years 2007 to 2016 and 0 for the other years. The regressions also include a 1-year lag of the prior counts for all areas in entrepreneurial finance to account for prior research spurring future research and a year variable as a time trend to account for increasing citation patterns over time. Journal fixed effects are used in all of the regressions.
*, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Similarly, the data in column 3 similarly indicate that post-2006, there was a positive and significant effect (at the 1% level) on private equity (PE) citations per year. The economic significance is such that citations to PE increased by 26.2% relative to the average level of citation activity per year across the journals in the sample.[8] And in column 7, post-2006, there was a positive and significant effect (at the 5% level) on IPO citations per year, with the economic significance at 17.1%.

To further consider the robustness of the post-2006 effect, we tried different variables related to the post-2006 variable with a lagged variable for a dummy = 1 for years 2006 and onward, 2005 and onward, *etc.*, and lead variables for 2008 and onward, 2009 and onward, *etc.* Those variables cannot be included simultaneously with the 2007 and onward variable since they are highly correlated (> 0.8) with the 2007 and onward variable, so we used them in separate regressions. We do not report those regressions here for reasons of conciseness and instead explain the results briefly. First, for venture capital, private equity, and IPOs, the post-2006 variable at plus 1, plus 2, minus 1, and minus 2 remained significant, but the economic and statistical significance was lower for plus 2 and minus 2 for all three dependent variables. For private equity, the economic and statistical significance was marginally higher for plus 1 and marginally lower for minus 1, relative to the post-2006 variable reported in Table 1. For IPOs, the economic and statistical significance was marginally higher for minus 1 and marginally lower for plus 1, relative to the post-2006 variable reported in Table 1. At plus 3 and minus 3, the modified variable is statistically insignificant for venture capital, private equity, and IPOs. Likewise, for the trade credit, debt, and angel variables, all of the modified variables for minus 1, 2, and 3, and plus 1, 2, and 3 are statistically insignificant.

Some further evidence consistent with a structural shift since 2007 is presented in Table 2 for cross-citation patterns. As we explained earlier, first, entrepreneurship journals are, by design, inter-

[8] Note that in an earlier version of this article, we reported the analysis in Table 1 with a subset of two finance journals and four management journals, and the findings were extremely similar, with the exception that the economic significance of the post-2006 variable was greater for venture capital and private equity.

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Table 2
Cross-citation Patterns in Google Scholar for Venture Capital and Private Equity

		Venture capital papers with at least one reference to a…			Private equity papers with at least one reference to a…		
		Finance journal	Entrepreneurship journal	Management journal	Finance journal	Entrepreneurship journal	Management journal
	2007–2016						
Papers that also have a reference to a…	Finance journal	**45.90%**	19.69%	28.34%	**53.50%**	33.25%	39.95%
	Entrepreneurship journal	21.29%	**25.21%**	29.02%	18.30%	**21.60%**	23.78%
	Management journal	32.80%	55.10%	**42.64%**	28.21%	45.15%	**36.27%**
		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
	2000–2006						
	Finance journal	**53.67%**	21.15%	27.53%	**58.07%**	41.41%	42.43%
	Entrepreneurship journal	18.64%	**21.23%**	27.07%	18.25%	**17.67%**	23.16%
	Management journal	27.70%	57.62%	**45.39%**	23.68%	40.92%	**34.41%**
		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Note. This figure presents the percentage of cross-references (only; not journal self-citations) in 2000–2006 and 2007–2016 for papers with "venture capital" and "private equity" for the number of Google Scholar hits for the years 2000 to 2016 for "entrepreneurial finance," "venture capital," "private equity," entrepreneur debt (not in quotes to capture papers about entrepreneurs and debt), "trade credit," angel investor (not in quotes to capture papers about angel investors), crowdfunding, and IPOs. The figures in bold highlight references that are not cross-references to other types of journals; so, for example, 53.50% of private equity papers that reference a finance journal in 2007–2016 also reference another finance journal. Finance journals include JBF = *Journal of Banking and Finance*; JCF = *Journal of Corporate Finance*; JF = *Journal of Finance*; JFE = *Journal of Financial Economics*; JFQA = *Journal of Financial and Quantitative Analysis*; and RFS = *Review of Financial Studies.* Entrepreneurship journals include ETP = *Entrepreneurship Theory and Practice*; JBV = *Journal of Business Venturing*; RP = *Research Policy*; and SEJ = *Strategic Entrepreneurship Journal* (started in 2007). Management journals include AMJ = *Academy of Management Journal*; ASQ = *Administrative Science Quarterly*; JIBS = *Journal of International Business Studies*; JMS = *Journal of Management Studies*; MS = *Management Science*; and SMJ = *Strategic Management Journal.* A paper in the data appears more than once for each journal that referenced the paper.

disciplinary. Second, finance journals are, by design, disciplinary focused, Therefore, it follows that there would be more citations from entrepreneurship to finance than from finance to entrepreneurship. A null hypothesis is that the citation patterns have to do with the *ex ante* focus of the journals, rather than the *ex post* choices of specific authors. In fact, it lends itself to empirical investigation.

Table 2 shows that from 2000 to 2006, 53.67% of venture capital papers that cited a finance journal also cited at least one other finance journal, while only 21.29% also cited an entrepreneurship journal and 32.80% also cited a management journal; these statistics of segmentation in venture capital with finance declined to 45.90% over 2007–2016, and they improved with cross-references to entrepreneurship to 21.29% and management to 32.80%. Table 2 further shows that from 2000 to 2006, 58.07% of private equity papers that cited a finance journal also cited a different finance journal in 2000–2006; only 18.25% also cited an entrepreneurship journal, and 23.68% also cited a management journal. These statistics of segmentation diminished in finance to 53.50% for finance cross-references over 2007–2016 and improved for entrepreneurship only to 18.30% and management to 28.21%. These percentages are extremely high and show a massive amount of segmentation in the literature, despite the fact that venture capital and private equity papers appeared in entrepreneurship and management journals long before these topics were ever mentioned in finance journals; but, these statistics on segmentation in finance journals are going down over time.

Note that Table 2 also shows segmentation in entrepreneurship journals and management journals for venture capital and private equity papers. For example, venture capital papers with a reference to an entrepreneurship journal are more likely to also

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reference management journals than other entrepreneurship journals or finance journals in both periods 2000–2006 and 2007–2016. Papers in venture capital with reference to management journals are more likely to reference other management journals than other entrepreneurship or finance journals in 2000–2006 and 2007–2016. Nevertheless, relative to venture capital papers, private equity papers that reference entrepreneurship or management journals are more likely to also have reference to finance journals; and to that extent, private equity appears less segmented from entrepreneurship and management references accommodating finance references despite the fact that private equity finance references are less accommodating of entrepreneurship and management references. We leave the analysis of these citation patterns and other related topics for future scholars (see also the discussion below).

Note that in Table 1, we do not have a regression for one of the topics referred to in this paper: crowdfunding. There was scant reference to crowdfunding prior to 2007 (in some years, one or two references, in other years, nothing at all). Hence, the regression cannot include a test of the 2007, effect as we would have to start the sample in 2007. Perhaps one thing to note is that crowdfunding research started later than it perhaps should have, while crowdfunding is now one of the most active and fastest-growing research areas in entrepreneurial finance. Anecdotally, we are aware of silos growing among certain pockets of researchers similar to venture capital research in the 1990s, but remain hopeful that the field will grow more along the open lines of work on IPOs. Likewise, we do not report a regression in Table 1 for the search term "entrepreneurial finance" in Google Scholar, as the results were insignificant and because papers are often on the topic of entrepreneurial finance without containing the words entrepreneurial finance (for example, many venture capital, private equity, and IPO papers fit into this category).

In light of this analysis, we next discuss some specific topics we believe will become important or should be important in our view in future years.

The Future of Entrepreneurial Finance and Some Unanswered Research Questions

As we highlighted in the introduction, entrepreneurial finance offers fantastic opportunities for a lifetime of research topics. The main theme is that for private entrepreneurial investments, finance is not merely about providing the capital, but also providing the advice, networks, monitoring, and governance and mitigating information asymmetries and agency costs between different parties. Increasingly, academics are developing better datasets and measures to quantify these information, advice, and monitoring variables in different contexts.

Post-2006, there has been a marked surge in research on entrepreneurial finance, perhaps associated with the rise in entrepreneurial activities, the gig economy, and new forms entrepreneurial finance such as crowdfunding. This period also coincided with the launch of *Strategic Entrepreneurship Journal.* But, there is still a long way to go and ample scope for future research papers. Some questions that could be raised in future research include the following: First, why do venture capital and private equity contracts differ so drastically in different countries? Explanations offered include tax (Gilson & Schizer, 2003), sophistication and experience, legal rules, legal enforcement, and culture (Cumming & Johan, 2013). But there is little consensus across different papers and different authors, and different hand-collected datasets yield vastly different results. Further, there could be more work on the relation between legal and cultural settings in investment outcomes (see also Nahata, Hazaruka, & Tandon, 2014; Zahra, 2014).

Second, for non-venture capital and private equity investments, what are the investment terms. How do they vary across regions and countries, characteristics of investing parties, and different time periods? There is scant research on contractual terms for angel investments and private debt investments, particularly in different countries and institutional settings.

Third, under what contexts do different types or sources of entrepreneurial finance complement one another to enable superior entrepreneurial outcomes? For example, are bank debt, VC, trade credit, angel investment, and crowdfunding complements or substitutes? Most entrepreneurial finance papers make use of one source of capital only due to the segmented nature of the data. And relatedly, are financing terms (cash flow rights, control rights, valuation) in entrepreneurial finance different depending on the presence of different sources of capital financing the firm at different points in time? Which forms of entrepreneurial finance enable the best outcomes for

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entrepreneurial firms and under which contexts (by industry, stage of development, team size, region, country, gender, etc.)? Some innovative work along these lines and a further discussion are found in McCahery and Vermeulen (2016).

Fourth, given the newness of the fields, there are a number of research questions on crowdfunding and angel investment. For example, what are the most effective sets of rules for equity crowdfunding? How distinct are different crowdfunding platforms, and do they make a difference in respect to financing outcomes for entrepreneurial firms? For angel investment, the data to date are so scant that it is hard to even quantify the overall investment levels in different countries and even within the U.S. A substantial amount of work could be done to improve the quality of data across countries.

Finally, there could be substantially more studies on the extent to which there are gender and racial biases in different sources of entrepreneurial finance. Venture capital is notorious (at least in the media) for apparently being gender biased, with famous lawsuits such as the one involving Kleiner Perkins. To what degree is gender bias reduced in crowdfunding, and does the interplay between crowdfunding and venture capital reduce gender bias? And how do these biases vary across countries and regions?

The segmented field of entrepreneurial finance gives rise to a separate stream of research questions about the development of the field in the spirit of the empirical analysis discussed earlier. First, it would be useful to document cross-citations across the journals. How many entrepreneurial finance papers published in economics/finance journals cite entrepreneurship/management studies? How many entrepreneurial finance papers in entrepreneurship/management journals cite finance journals?

Second, it would be useful to track networks of authors within the different fields. How often do "outsiders" in entrepreneurial finance (i.e., non-colleagues and non-Ph.D. students of individuals who worked on topic with A-tier publications) break into the top three finance journals?

Third, it would be useful to document the effects of networks and the absence of cross-referencing. What is the incidence of false or non-reliable or non-replicable papers in entrepreneurial finance, and are such papers more or less often authored by those who are "networked" in finance or entrepreneurship journals? To what extent do policy makers and practitioners reference entrepreneurial finance studies published in management versus finance journals, and which is associated with greater success or failure? How many practitioners and policy makers have relied on research, such as work on public policy toward entrepreneurial finance, and what is the dollar benefit or harm from such a reliance?

Fourth, it would be useful to benchmark whether or not researchers "study the right thing" so to speak. That is, does the frequency of papers in different topics in entrepreneurial finance reflect the frequency of usage of different forms of entrepreneurial finance in practice? And which journals get the balance right? Does the study of new modes of entrepreneurial finance (e.g., venture capital in the 1970s and 1980s and crowdfunding since 2010) more often appear first in finance or management journals?

Finally, how do scholars reconcile what differences in what are considered to be valid datasets in entrepreneurial finance, apart from not citing one another when results from such data are different? What are the research consequences of groups that control access to datasets in entrepreneurial finance and reveal research topics of interest to obtain such data that are deemed to be appropriate for publication in certain journals? That is, do such data centers such as that promoted by Kaplan and Lerner (2016) encourage or stifle research in entrepreneurial finance? Or does it shift the focus of research to different types of people and reinforce networks of researchers in entrepreneurial finance and accompanying citation patterns? (Cumming, 2016, provides some disturbing anecdotes.)

These are merely a sampling of topics that could be the focus of future study, both of entrepreneurial finance and of those who have done work on entrepreneurial finance. Just as the topics in entrepreneurial finance are fascinating, so too are the personalities and dynamics of the researchers who engage in the study of these topics.

Concluding Remarks and Hopes for the Future

At the risk of overgeneralizing, in this article, we have characterized the field of entrepreneurial finance across segmented finance and entrepreneurship journals as sharing an unequal relationship in

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which entrepreneurship scholars appear to be more welcoming of research from finance than finance scholars are of research from entrepreneurship. The silos in different journals, among other things, has given rise to issues in the development of entrepreneurial finance that resemble macroeconomics (Romer, forthcoming) and physics (Smolin, 2007).

Despite finance and entrepreneurship colleagues working in the same business school buildings at different universities around the world, and many on overlapping topic areas, they do not talk to one another and typically do not cite one another. This is unfortunate.

One of the main reasons for the incredible degree of segmentation of research in entrepreneurial finance is the poor quality of data that are available for entrepreneurial finance studies. Unlike companies publicly traded on stock exchanges, in most countries in the world (perhaps with the exception of some Scandinavian countries), there are no mandated reporting requirements and datasets on what it is that privately held firms do and where they obtain their capital.

The poor quality of data to date enables a massive number of topics that could be explored in future research. It also enables research about the researchers themselves, as discussed herein. We hope to see substantially more work in both directions for many years to come.

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