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Towards a Dynamic Model of Founding: Unlocking the Origins of Organizational Variation

Executive Summary
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How do entrepreneurs make strategic decisions during new venture formation? This is an important question because the strategies that entrepreneurs select have critical short- and long-term implications (Eisenhardt and Schoonhoven, 1990). In the short-term, an entrepreneur’s strategy choices will affect the new venture’s likelihood of survival. In the long-term, the entrepreneur’s strategy choices will affect the direction of the new venture’s growth as well as its level of competitive advantage within the industry.

This phenomenon, whereby initial choices are consequential for a new venture’s short- and long-term existence, is termed an “imprinting effect” (Stinchcombe, 1965). The occurrence of imprinting effects has been demonstrated by an abundance of empirical research across a variety of industry settings (e.g., Romanelli, 1989). In some cases, research has even shown that imprinting effects exhibit positive feedback, such that initial choices become more influential over time (Eisenhardt and Schoonhoven, 1990). While a great deal of research has shown the importance of imprinting effects for a new venture’s development, there has been relatively little research that explores how entrepreneurs come to the initial decisions that underlie these effects.

Although little is known regarding the factors that affect an entrepreneur’s strategic decision-making during new venture formation, past evidence points to several factors that may be influential. In particular, past research highlights both factors in the environment (e.g., public policy, competitive pressure, and product technology) as well as factors internal to the new venture (e.g., personality and knowledge of the founder and founding team) (e.g., Shane and Khurana, 2003). In this dissertation I focus on knowledge rather than the environment or personality characteristics for two primary reasons. First, while the nature of the environment can explain general trends within an industry (e.g., overall entrepreneurial activity), it cannot explain why specific individuals respond differently to the same industry environment. Second, the research on personality characteristics has generally yielded mixed results suggesting, at best, a weak relationship between personality traits and decision-making outcomes (Aldrich, 1999).

In this dissertation, I examine how an entrepreneur’s prior knowledge relates to the strategy choices he/she makes during new venture formation. I also examine how the founding team members affect the entrepreneur’s decision-making. I first develop a set of predictions and then test these
predictions using data from 120 new ventures in the United States air transportation industry from 1995-2005. In the following pages I present an executive summary that reviews the key predictions and findings from my research. I conclude the executive summary by discussing the implications of my research for practicing entrepreneurs, investors, and public policy.

**Background**

*New Venture Development*

New venture development encompasses a process that unfolds over time. In particular, new venture development involves three distinct stages: conception, startup, and experimentation/expansion. The first stage, conception, represents the stage during which an entrepreneur decides to form a new venture, sets forth a tacit or explicit plan for entry, and garners necessary resources to commence operations. The second stage, startup, encompasses the stage where the new venture begins selling a service or product to customers. The last stage, experimentation/expansion, includes the stage in which the new venture attempts to adapt the new venture’s strategy to increase its competitiveness and expands along certain dimensions to increase its operating size (e.g., expands into new geographic markets). In this research I focus on the first stage of new venture development (i.e., conception) because I am interested in how entrepreneurs first conceive of strategies for their new ventures. Because of imprinting effects, the strategy choices made during the initial stage of conception are likely to have a profound effect on the new venture’s subsequent development, at least for those ventures that actually commence operations.

*Strategy Choices*

Scholars have suggested a number of related concepts to describe differences among firms competing within an industry. Because I am focusing on the conception stage of organizational development, which involves individuals and their intentions, I draw on the fundamental notion of strategy. Chandler (1962: 14) defines strategy as “the determination of the basic long-term goals and objectives of an enterprise, and the adoption of courses of action and the allocation of resources necessary for carrying out these goals.” I further define strategy by distinguishing between two content dimensions. Two content dimensions of strategy that appear prominently in the literature are strategy as the firm’s market position (Porter, 1985) and strategy as the firm’s stock of resources (Wernerfelt, 1984). Here, strategy position refers to the prospective products or services to be produced (i.e., product market) and the geographic location (i.e., geographic market) in which these products or services will be offered. Resources, on the other hand, refer to the prospective intangible or tangible assets that will underlie the production of a service or product. Strategy choice, therefore, involves the choice of a product and geographic market for competing and the choice of a set of resources for operating within this market position. For example, in the context of the air carrier industry, a market position choice involves the
selection of city-pairs (e.g., Raleigh-Durham, New York LaGuardia). A resource choice involves the selection of aircraft (e.g., Boeing 737 or Airbus A340).

**Entrepreneur’s Prior Knowledge**

In this research I explore how an entrepreneur’s prior knowledge affects his/her strategy choices during new venture formation. In order to understand how knowledge affects decision-making, the concept of a *knowledge structure* from social cognition is central (Fiske and Taylor, 1991). A knowledge structure is defined as a “cognitive structure that represents knowledge about a concept or type of stimulus, including its attributes and the relations among those attributes” (Fiske and Taylor, 1991: 98). Put another way, a knowledge structure encompasses components (i.e., a content dimension) and the relationships among the components (i.e., a structural dimension). A component may relate to objects, places, roles, persons, or events. Consider the following example: “Stacie stepped up to the home plate, observed the signaling from her coach, waited for a pitch in the strike zone, swung her bat, made contact with the ball, discarded the bat, and quickly ran to first base.” The knowledge structure of the softball player includes discrete roles (such as the coach), objects (such as the baseball bat and ball), and activities (discarding the bat). A knowledge structure relevant for a specific domain increases with experience in that domain (Fiske and Taylor, 1991).

In the context of complex decision-making individuals face almost a limitless set of options. Because individuals are cognitively constrained (March and Simon, 1958), they cannot contemplate all possible options and their consequences. Instead, individuals typically consider only those options that are similar to their past experiences. Thus, an individual’s knowledge structure delimits the types of choices he/she is able to make when faced with a decision task (Ward, 2004). Individuals often rely on their existing knowledge even in cases when the context has changed such that this knowledge is no longer sufficient to make a high quality decision.

If entrepreneurs draw on their knowledge structures during the planning stages of venture development, there should be a strong correlation between the entrepreneur’s knowledge structure and the types of strategy choices he/she makes. An entrepreneur’s knowledge structure may contain relevant knowledge, such as information about customers, suppliers, geography, technology, equipment, and industry best practices, which can be used during the decision-making process.

**Predictions**

In my dissertation, I first developed a set of predictions regarding the relationship between the founder’s knowledge and his/her strategy choices. These predictions are summarized in the following section.
Entrepreneur’s Knowledge Availability

The most basic factor affecting an entrepreneur’s decision-making is whether the knowledge necessary for that choice is available in memory (Higgins, 1996). When faced with a decision task, individuals can only respond using their available knowledge. Accordingly, Ward (2004: 176) states the following: “the truism that one cannot produce something from nothing…applies to ideas as well as to tangible things. Creative ideas do not appear…full-blown in the minds of their originators, but rather must be crafted from the person’s existing knowledge.”

While anecdotal evidence suggests many successful entrepreneurs begin new ventures without any domain specific knowledge, further investigation typically reveals the contrary. For instance, Herb Kelleher, a lawyer by training, is attributed with the initiation and success of Southwest Airlines in 1967. Further investigation, however, reveals that Southwest Airlines was started by a two person team, which included not only Herb Kelleher, but also Rollin King. Rollin King had extensive airline experience prior to starting Southwest Airlines and he served as Southwest Airline’s first chairman, president, and chief executive officer. Herb Kelleher only took over as president and CEO eleven years later in 1978, after Lamar Muse, who succeeded Rollin King, resigned from the top post.\footnote{Entrepreneurs likely require extensive hands on training to acquire requisite knowledge in technical fields, such as airlines, biotechnology, semiconductors, or oil and gas. In less technical fields, such as restaurants or small retail, knowledge can often be acquired through less intensive hands on training (e.g., home cooking) and observation of existing ventures (e.g., visited restaurants).}

If knowledge availability affects decision-making during new venture formation, then I would expect that this knowledge would have an important effect on the types of strategies the founder selects for his/her new venture. In particular, I predict that an entrepreneur is likely to select a strategy only if he/she possesses corresponding knowledge of that strategy.

Entrepreneur’s Knowledge Accessibility

When individuals face a decision-making task they can draw on a breadth of knowledge held in memory. The specific knowledge that is used during decision-making will affect the outcome of the decision process. Whether specific knowledge is used depends on its accessibility to the decision-maker (Higgins, 1996). A central factor that affects the accessibility of knowledge at the time of a decision task is how frequently the knowledge has been activated or used.

The notion of frequency can be made more precise by considering the different dimensions that comprise an individual’s knowledge structure. The cognition literature distinguishes between two dimensions of knowledge: a content and structural dimension (Fiske and Taylor, 1991). Content knowledge refers to discrete knowledge about a concept or stimulus. This discrete knowledge can relate to objects, places, roles, persons, or events. Structural knowledge, however, consists of knowledge about...
the relationships between content knowledge (Fiske and Taylor, 1991). This knowledge relates to the sequencing, association, or linkage between objects, places, roles, persons, or events.

As an entrepreneur increases his/her cumulative experience with a specific strategy element he/she develops greater content knowledge about that strategy element. For example, an entrepreneur will develop greater knowledge about specific features of a low cost strategy (e.g., operational efficiency, low differentiation, price leadership, etc.) with additional experience with a low cost strategy (e.g., employment at Southwest Airlines). When an entrepreneur is faced with making a strategic decision for his/her new venture, he/she will draw on his/her available content knowledge that is readily accessible in memory, where accessibility is a function of cumulative experience. Thus, I predict that an entrepreneur is more likely to select strategy element as his/her content knowledge of that strategy element increases.

In addition to content knowledge, entrepreneurs develop greater structural knowledge about strategy choices through exposure to those choices in different contexts. The entrepreneur gains knowledge about specific features of strategy (i.e., content knowledge) and how that strategy relates to other organizational and environmental dimensions (i.e., structural knowledge). For instance, an entrepreneur may be exposed to a low cost strategy across three firms and three industries (e.g., Dell, Southwest Airlines, and Wal-Mart). In each firm the entrepreneur gains knowledge about the critical features of a low cost strategy and, moreover, how a low cost strategy relates to different organizational and environmental dimensions (e.g., organizational structure and customers or suppliers). When an entrepreneur selects a strategy for his/her new venture, he/she will likely select a strategy where he/she possesses greater structural knowledge. Therefore, I predict that an entrepreneur is more likely to select a strategy element as his/her structural knowledge of that element increases.

I suggest that structural knowledge may be more influential for decision-making during the new venture formation process. In particular, literature suggests that individuals acquire knowledge at a greater rate by performing a variety of related problem solving tasks, instead of through the repetition of a single task (Schilling et al., 2003). There is reason to believe that structural knowledge will be especially influential in the context of strategic decision-making during new venture formation. Strategic decision-making is particularly complex and this is compounded by the significant uncertainty associated with the new venture formation process. Given this considerable complexity, entrepreneurs are likely to rely on their abstract knowledge structures for decision-making, rather than simple structures developed through the simple repetition of a task over time. These abstract knowledge structures are acquired by experiencing a specific strategy element in multiple contexts, and thus acquiring knowledge not only about the element, but its relation to other contextual variables. Consequently, I predict that the effect of structural knowledge on strategy choice will be significantly greater than the effect of content knowledge on strategy choice.
The recency of knowledge use or activation has also been shown to influence the degree to which knowledge is accessible during decision-making (Higgins, 1996). Research suggests that knowledge accessibility decays over time. As entrepreneurs accumulate knowledge over their lifetime, they acquire different elements of knowledge at different points in time. The recency in which the specific knowledge was acquired, whether content or structural, will affect the degree to which the knowledge is accessible to the entrepreneur. More recent knowledge will be more accessible to the entrepreneur and will therefore have a greater influence on the direction of his/her decision-making. We can be more specific about the nature of this relationship by drawing on past research that explores the decay rate of knowledge over time (Rubin and Wenzel, 1996). In particular, research on long-term memory suggests that knowledge decay occurs quite rapidly within the first few years, but then levels off over time. Hence, I predict that an entrepreneur is more likely to make a strategy choice if his/her knowledge of that choice is more recent. Moreover, as time passes, the effect of knowledge on strategy selection will decay rapidly at first and then level off over time.

Entrepreneur’s Knowledge Variety

The above discussion suggests that many entrepreneurs will simply imitate the practices of existing firms within the industry because they have knowledge structures that reflect prior industry experience (Aldrich, 1999). Although many entrepreneurs are likely to imitate the practices of existing firms, a few may generate novel practices that deviate substantially from prevailing ways of doing things. Research on creative thinking suggests that individuals generate novel solutions by taking their existing knowledge and establishing new relationships or linkages among the knowledge. Because individuals are only able to establish new linkages between knowledge that exists within their repertoire (Ward, 2004), entrepreneurs with a greater stock of knowledge that spans problem domains will have greater opportunity to recombine knowledge and derive solutions that deviate from past ways of doing things. It can be argued that the total variety of the entrepreneur’s knowledge will largely delimit the range of choices the entrepreneur can select. If the entrepreneur possesses a dearth of domain knowledge then he/she may only have few strategic options available to him/her, thus sharply limiting his/her flexibility. On the other hand, if the entrepreneur possesses a breadth of domain knowledge, then his/her decision-making will be much less constrained by any one specific past experience. In short, I predict that entrepreneur will be more likely to select a strategy element if he/she possesses knowledge of that element and little knowledge of alternative strategy elements.

Team Member’s Knowledge

Many studies of entrepreneurship overlook a conspicuous feature of new ventures; namely, that many ventures are started by collaborative teams. Team members entail those individuals who actively participate in the establishment of a new venture in which they hold an equity interest (Watson, et al.,
To more fully understand the antecedents of strategy choice in new ventures requires a better appreciation for how ideas might emerge from the interactions among the team members. Here, I draw on research on groups in the social psychology and management literature to develop several predictions that explore how the knowledge held by team members influences the decision-making of the lead entrepreneur. Because team members have different work and life experiences, members often possess different knowledge about strategy choices.

Teams founding new ventures are best described as hierarchical teams with distributed expertise (Hollenbeck et al., 1995). A single individual is usually held primarily responsible for the decision of the team (i.e., the lead entrepreneur) and members of the team bring to the group a diversity of expertise. Most important to the discussion here, team members often influence each other in the decision-making process. If team members influence each other during the decision-making process, then I would expect that the knowledge held by team members will be reflected in the lead entrepreneur’s decision-making.

This relationship between team knowledge and the entrepreneur’s decision-making can be made more precise by drawing on several important findings from research in social psychology. Past research has shown that members within teams tend to focus their attention on information that is shared among group members (Kerr and Tindale, 2003). If founding teams are more likely to present shared knowledge than unshared knowledge, then the founding team is likely to coalesce around shared knowledge during the new venture formation process. This shared knowledge, in turn, will strongly influence the lead entrepreneur’s decision-making. If shared knowledge is influential, then I predict that an entrepreneur is more likely to select a strategy element if the entrepreneur and team possess shared knowledge about that strategy element.

Although a collection of research emphasizes that teams are more likely to attend to shared knowledge rather than unshared knowledge during decision-making, there is reason to believe that unique knowledge held by the minority may be influential as well. For instance, scholars contend that team members that possess unique knowledge may be able to cognitively stimulate the decision-making of other members in the decision-making process (Dugosh et al., 2000). In particular, this cognitive stimulation introduces new insight to the decision process and thus fosters the consideration of new options that may lie outside each individual’s stock of knowledge. Therefore, if unshared knowledge is influential, then I would expect that the decision-making of the lead entrepreneur will reflect specific elements of this unshared knowledge.

There are several reasons to believe that the effects of unshared knowledge may be especially influential on the entrepreneur’s decision-making during the new venture formation process. First, founding team members hold an equity interest in the new venture and typically hold a prominent role in the top management team. Because these members have put their status and wealth at risk, they are likely
to take an active role in the decision-making process. Research has shown that groups, with active participation among its members, are more likely to incorporate the ideas and opinions of each member in the group, even if the ideas conflict with those held by the majority (De Dreu and West, 2001). Second, members on a founding team often have had experience working together in their previous employment. Research has shown that unshared knowledge is often shared over time and that unshared knowledge positively influences decision outcomes when groups are given sufficient time to discuss the decision task (Winquist and Larson, 1998). Individuals that have previous experience working together are more likely to reveal their ideas and opinions over time. Thus, while shared and unshared knowledge among the founder and team will influence the decision-making process, unique knowledge held by team members may be especially influential in the context of new venture formation. In sum, I predict that unshared knowledge, relative shared knowledge, will have a greater effect on the lead entrepreneur’s decision-making.

Summary of Results

Above I presented the core predictions that were explored in this dissertation. I tested these predictions using data from the United States air transportation industry. From 1978-2005 there were at least 588 new carriers that received authorization from the U.S. Department of Transportation (DOT) to operate in the industry, with 329 large scheduled passenger carriers, 171 charter and cargo carriers, and 88 commuter carriers (DOT). From this population of new carriers, I analyzed a sample of 120 prospective new ventures in United States air transportation industry from 1995-2005. The principal source of data was the new venture’s “application for economic authority” submitted to the DOT. The applications submitted to the DOT contain the core information that is typically presented in a business plan. For instance, the applications contain comprehensive information regarding the applicant’s corporate structure and ownership, management expertise and technical ability, and financial position and operating plans. Using various elements of this information, augmented with data from other sources, I developed a database for the empirical analysis.

The three strategy choices I examined in the empirical study included the new venture’s choice of product market (i.e., ACMI, all-cargo, executive charter, vacation charter, premium scheduled, low cost scheduled, regional commuter), geographic market (i.e., New England, Mid-Atlantic, South, Midwest, Southwest, West, Canada and/or Alaska, Mexico and/or Caribbean, and other international), and resource (e.g., light aircraft, regional turboprop, regional/business jet, narrow body jet, wide body jet, rotary wing, medium piston). Each predictor variable, in turn, was developed by assessing the founder’s work experience relative to each strategy choice. For instance, when examining product market choice a set of predictor variables were constructed that explored the founder’s prior work experience with each of the seven possible choices. Therefore, instead of measuring knowledge directly, which is problematical in the
best of circumstances, I followed past research and used experience as a proxy. I also included several control variables to control for alternative explanations for the results.

I used a conditional logit model (McFadden, 1974), which is an econometric technique, to explore the data. First, I found that the founder’s knowledge was a significant predictor of his/her strategy choices. Indeed, an entrepreneur was about twelve times more likely to select a strategy if he/she had prior experience with that strategy. Second, I found that an entrepreneur who had experience with a particular strategy, but in multiple companies (i.e., structural knowledge) over time, was much more likely to select that strategy (i.e., for each additional work experience, the entrepreneur was two times more likely to select that strategy). Surprisingly, experiencing a particular strategy for an extended period within a single company (i.e., content knowledge), had little effect on the entrepreneur’s decision-making. This suggests that individuals acquire deeper knowledge by experiencing concepts in multiple contexts and that the repeated exposure to a concept in a single context may not provide significant learning opportunities over time. The effect of the founder’s knowledge recency on strategy choice was highly significant and knowledge decay appeared to occur quite rapidly at first and level off over time. Specifically, for each year that passed since the founder had experience with a particular strategy he/she was four times less likely to select that strategy. The effect of the entrepreneur’s knowledge variety on decision-making was less conclusive. Knowledge variety appeared to have only a weak effect on an entrepreneur’s ability to think more broadly during decision-making. The results suggest that moderate levels of knowledge variety were more influential than severe levels of variety. Furthermore, knowledge variety may not attenuate an individual’s fixation on a single strategy choice because individuals with greater knowledge variety have been exposed to more sophisticated resources (e.g., large body aircraft such as the Boeing 747) and distinctive geographic markets (e.g., Mexico and/or Caribbean). On subsequent decisions these individuals are biased towards choosing these more sophisticated resources and distinctive geographic markets.

Surprisingly, I found that shared knowledge among the team members had only a weak effect on the lead entrepreneur’s strategy choices. While I found mixed results for shared knowledge, the effects for unique knowledge were quite strong. Indeed, when a team member possessed unique knowledge of a strategy element, the lead entrepreneur was over four times more likely to select that strategy. This suggests that knowledge held uniquely by team members is particularly influential for decision-making in the context of new venture formation.

After including all the predictor variables, the econometric model predicted from 50% to 70% of the strategy choices correctly, depending on the choice (i.e., product market, geographic market, or resource).
**Implications**

In this research, I found that knowledge significantly constrains decision-making and I identified certain features of knowledge that are more constraining than others. I also identified several factors that may attenuate the constraining effects of knowledge during decision-making, such as unique knowledge held by team members. I believe this research has several important implications for practitioners.

First, I believe these findings have significant implications for entrepreneurs. Most significantly, it suggests that entrepreneurs are dependent on their stock of knowledge and this knowledge may represent either a threat or opportunity. The research presented in this dissertation can be used to instruct entrepreneurs on how to avoid significant biases in their decision-making. According to the research in this dissertation, entrepreneurs are more likely draw on knowledge acquired through multiple work experiences and from recent work experiences. Entrepreneurs that have worked for a collection of companies in the same industry that employ a similar strategy may be especially prone to imitate the strategy choices of firms where they previously worked. Given that entrepreneurs face significant liabilities of newness, the imitation of an incumbent’s strategy is likely not the best route to achieve a successful outcome. To avoid these biases, entrepreneurs should draw on a variety of knowledge to aid in the decision process. If the entrepreneur’s work background is limited, then entrepreneurs should involve team members with unique knowledge to buttress their decision-making capabilities.

Second, this research has significant implications for investors, such as venture capitalists. Many investors treat the composition of a new venture team as an indicator of the venture’s likely success. However, investors generally rely on the tacit evaluation of the team to ascertain its effectiveness. This dissertation research suggests that investors can systematically evaluate an entrepreneur’s background to detect whether the entrepreneur is severely constrained by his/her work background and if so how to instruct the entrepreneur to avoid significant bias in his/her decision-making. For example, an investor may insist that the entrepreneur take on additional team members that have distinctive knowledge.

Lastly, I believe this research has significant implications for public policy. Many economists stress that entrepreneurship serves as a critical engine for economic growth (Schumpeter, 1934). In particular, commentators advocate the importance of entrepreneurship for inner-city revitalization and emerging market economies. The research in this dissertation, however, points to a potential dilemma. If knowledge is a prerequisite for entrepreneurship in many industrial sectors, then societies that lack necessary skills and expertise will be devoid of entrepreneurial activity in these sectors. This likely will occur even if there are significant economic opportunities and public policies in place to foster new venture activity. This suggests that local governments must provide some form of entrepreneurial education to the local populace or attract individuals from outside the region that have the requisite skills before entrepreneurial activity will flourish within the local area.
References


