

# Resources, Capabilities and Entrepreneurial Perceptions

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## *Abstract*

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# Resources, Capabilities and Entrepreneurial Perceptions

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## Abstract

We develop a subjectivist theory of entrepreneurship that focuses on individuals, their knowledge, resources and skills, and the processes of discovery and creativity, which constitute the heart of entrepreneurship. First, we establish the fundamental importance of subjectivity in entrepreneurial discovery and creativity that lead to economic change and to influencing organizational learning. Second, we build on Penrose (1959) to elaborate how entrepreneurs' perceptions and personal knowledge shape a firm's *subjective productive opportunity set*. Third, we explain that entrepreneurial perceptions partly originate from entrepreneurs' experiences in specific business settings such as the firm, the management team, and the industry. Fourth, we highlight the theoretical causal connections between subjectivity in entrepreneurship and observed heterogeneity in firm-level economic performance. Lastly, we suggest directions for further advancing a subjectivist resource-based approach to future entrepreneurship research.

Key words: Entrepreneurship, Resource-Based Approach, and Subjective Productive Opportunity Set.

## Introduction

Entrepreneurship is fundamentally important to firms and government agencies worldwide. Indeed, entrepreneurship is the core of the dynamics of modern capitalism. Entrepreneurship typically liberalizes the economy, promotes foreign investment, infuses new technology, and increases economic standards of living (Barringer and Bluedorn, 1999; McDougall and Oviatt, 2000; Zahra, Ireland, Gutierrez and Hitt, 2000). Understanding better how entrepreneurship enhances the economic development of poorer nations and creates economic wealth within developed nations requires increased effort by researchers, especially within an institutional context (George, 2000; Phan, 2004; Saravathy, 2004; Zahra, 2005).

This research paper adopts a broad definition of the entrepreneur (Low and MacMillan, 1988), which parallels that of Penrose (1959) and includes the individuals or groups within any firm providing these essential entrepreneurial services regardless of their organizational position. Conceptually, the entrepreneur need not be as dramatic as the one described by Schumpeter (1934), in which the entrepreneur offers an innovation that is new to the economy, but rather it is sufficient that the entrepreneur offer an innovation that is new to the *firm* (Penrose, 1959).

Entrepreneurial employees can provide a wide range of entrepreneurial services to their firm including generating and evaluating innovative ideas related to products, technology, and administrative organization, financing of firm-level activities, and guiding the direction and governance of a firm's growth. This proposed definition of entrepreneurship goes well beyond the limited focus on entrepreneurship through new products to include novelty in multiple entrepreneurial activities of the organization such as innovation in organizational design, leadership, and financing. As Hayek (1948) emphasized, an economy consists of myriad facts in time and in space. A business idea can only be new to the world once, but such an idea can be

innovative to a particular firm or customer group and still create utility for them. Pragmatically, a broader definition of entrepreneurship allows for greater recognition of the wide range of innovative activities in organizations, where entrepreneurship occurs through *subjective* processes of discovery, learning, and creativity (Penrose, 1959).

The current paper further develops Mahoney and Michael's (2005) subjectivist theory of entrepreneurship, which brings together elements of individual creativity, discovery, surprise, and learning. A subjectivist theory of entrepreneurship deals constructively with both individual creativity and the stochastic nature of knowledge-creation processes (O'Driscoll and Rizzo, 1985). Such a subjectivist theory rejects orthodox neoclassical microeconomic theory's strict definition of perfect economic rationality where actors engage in predictable moves on the basis of well-defined choice sets. We embrace the (existentialist) proposition that the future is not merely unknown, but *unknowable*.<sup>1</sup>

Business decisions in historical (or real) time are rarely made with complete knowledge of their consequences. In dealing with uncertainties, decision makers are “boundedly rational” (Simon, 1947), and such decision makers enact routines and standard operating procedures, at least in part, for the purpose of achieving effective coordination (Cyert and March, 1963). In a world of genuine (ineradicable) uncertainty (Knight, 1921) and subjectivity in decision making and creativity, holding on to the assumption of perfect economic rationality “as the traditional theory does, is to hide an essential thing and to ignore a fact which, in contrast with other deviations of our assumptions from reality, is theoretically important and the source of the explanation of phenomena which would not exist without it” (Schumpeter, 1934: 80).

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<sup>1</sup> We thank Elaine Mosakowski for bringing this important theoretical point to our attention. Indeed, the existentialist position is an uncomfortable one since there is full awareness of the potential unintended consequences of action, and simultaneously the sense of responsibility that one is still called to make decisions (and to act) under conditions of ineradicable uncertainty.

A subjectivist perspective of entrepreneurship acknowledges the non-deterministic, evolutionary nature of dynamic capabilities and entrepreneurial activities. Search outcomes, in particular, are partly stochastic. In Nelson and Winter's evolutionary theory of the firm: "firms are modeled as simply having, at any time, certain capabilities, and decision rules. Over time these capabilities and rules are modified as a result of both deliberate problem solving efforts and random events. And over time, the economic analogue of natural selection operates as the market determines which firms are profitable and which are unprofitable, and tends to winnow out the latter" (1982: 4). The "surprise" element is at the heart of the life of an entrepreneur, and the detection of errors, and learning are an integral component of "entrepreneurial discovery" (Kirzner, 1973; Shane, 2000). A subjectivist perspective of entrepreneurship is consistent with an Austrian economics approach where: "the notion of discovery, midway between that of the deliberately produced information in standard search theory, and that of sheer windfall gain generated by pure chance, is central" (Kirzner, 1997: 72).

By grounding the theory of entrepreneurship in subjectivism, the current paper highlights the subjective nature of entrepreneurial discovery and creativity, and builds on Penrose's (1959) resources approach to establish links between entrepreneurial creativity and entrepreneurial knowledge and intuition. As Penrose states: "the decision to search for opportunities is an enterprising decision requiring entrepreneurial intuition and imagination and must precede the 'economic' decision to go ahead with the examination of opportunities for expansion" (1959:34). Building on Penrose (1959), we consider processes that influence the development of entrepreneurial heuristics and business intuitions based on entrepreneurs' tacit knowledge and experiences.

This research paper consists of five sections. First, we establish the importance of subjectivity in entrepreneurial discovery and creativity leading to economic change and to influencing organizational learning. The development of a subjectivist theory of entrepreneurship makes clear that the substantial role of entrepreneurs is not only for providing entrepreneurial discovery of existing opportunities, but also entrepreneurs *create* economically profitable opportunities through their interactions with customers, technologies, and other stakeholders.

Second, we build on Penrose (1959) to elaborate how entrepreneurs' subjective perceptions and personal knowledge (Polanyi, 1962) can shape a firm's *subjective productive opportunity set*. The economic consequences of a subjective productive opportunity set is that uniqueness is not only in the set of productive opportunities each firm can pursue successfully, but there is also uniqueness in the rate at which a firm can profitably seize these opportunities.

Third, we explain that subjective entrepreneurial perceptions partly originate from entrepreneurs' experiences in specific business settings such as the firm, the management team, and the industry. This section develops a theory of the impact of firm-specific, team-specific, and industry-specific experiences on subjective entrepreneurial perceptions.

Fourth, we highlight the causal connections between subjectivity in entrepreneurship and observed heterogeneity in firm-level economic performance. The heterogeneity of economic performance among firms is posited to be, at least in part, a direct result of the heterogeneity of entrepreneurial beliefs and the heterogeneity of other resources and capabilities of firms, as well as the subjective deployment of these resources and capabilities.

Lastly, we suggest directions for a subjectivist resource-based approach to future entrepreneurship research. We anticipate that better integration of entrepreneurship and strategic management research literatures will contribute greatly to the evolving science of organization.

## Subjectivity in Entrepreneurial Discovery and Creativity

Subjectivist entrepreneurial discovery takes place as entrepreneurs seek to seize the opportunities afforded by market frictions, such as uncertainties in competitive and technological conditions, which are typically not known in advance, and will only be resolved over time. Entrepreneurs' interactions with customers, technologies, and firms lead to a *discovery procedure* (Hayek, 1978), which is then put to the market test. The market test sorts out which entrepreneurial frameworks and ideas are workable in the world of experience (Klein and Klein, 2001; Malmgren, 1961). The market system provides a trial-and-error process, which enables experimentation within a complex competitive landscape. Consistent with the subjectivist perspective, Schumpeter suggests that entrepreneurial success depends on “intuition, the capacity of seeing things in a way which afterwards proves to be true, even though it cannot be established at the moment and of grasping the essential fact, discarding the unessential, even though one can give no account of the principles by which this is done” (1934: 85).

Boulding notes that: “We are not simply acquiring knowledge about a static system which stays put, but acquiring knowledge about a whole dynamic process in which the acquisition of knowledge is itself part of the process [of discovery]” (1966: 9). Relatedly, Kirzner argues that: “human action involves a *posture of alertness* toward the discovery of as yet *unperceived* opportunities and their exploitation” (1979: 109). From a subjectivist perspective not only is there entrepreneurial discovery of existing opportunities (Jacobson, 1992), but also entrepreneurial creativity, whereby entrepreneurs *create* economically profitable opportunities through their interactions with customers, technologies, and other stakeholders (Buchanan and Vanberg, 1991).



Entrepreneurs do not merely respond to changes in the business environment, but such entrepreneurs also create change (Alvarez, Agarwal and Sorenson, 2005). Entrepreneurs seek to influence demand through advertising, selling, and personal charisma. Entrepreneurial discovery can occur as a coherent “spontaneous ordering” (Hayek: 1978: 34) that transcends inherent limits of individual knowledge and emerges from market interactions of various entrepreneurial activities. Such spontaneous ordering is a human social organization of activities, which is understood as: “the result of human action but not of human design” (Hayek, 1948: 7). In a subjectivist perspective of entrepreneurship, a given external environment does not strictly determine decision-making alternatives and choices. There is substantial room for the creativity and autonomy of individual choice (Cole, 1968; Penrose, 1959). Entrepreneurial discovery and creativity serve a coordination role, where entrepreneurial attempts to create new business models yield a network of entrepreneurial interactions that constitute the “marvel” (Hayek, 1948: 87) of the market process. It is a process whereby anyone’s entrepreneurial contribution is put to the market test and, where found lacking, may be corrected by other entrepreneurs. Within such a process, coordination emerges as a creative entrepreneurial act (Barnard, 1938; Hayek, 1948).

Entrepreneurs not only identify economic opportunities, but also seek resources to develop these opportunities. Entrepreneurs often engage in risk taking to utilize an opportunity with fewer resources than other decision makers can imagine will prove adequate (Stevenson and Gumpert, 1985; Stevenson and Jarillo, 1990). Entrepreneurial energies and individuals’ ambitions lead to experimentation with new business activities. However, entrepreneurship involves more than willingness to take risks; effective entrepreneurship also includes intelligent searching for ways of avoiding unnecessary risks while still achieving a substantial positive rate of firm-level growth when opportunities are available (Penrose, 1959; Rubin, 1973).

Entrepreneurship involves possessing subjective visions about business opportunities and mobilizing resources and capabilities to turn entrepreneurial visions into business reality (Shepherd and DeTienne, 2005; Stuart and Sorenson, 2005).<sup>2</sup>

A subjectivist theory of entrepreneurship suggests a causal link between entrepreneurial creativity and how entrepreneurs learn from dynamics in various market processes (Barreto, 1989; Baumol, 1968, 1990, 1993). Hayek notes that competitive dynamics involves “a process of the formation of opinion ... a process which involves a continuous change in the data and whose significance must therefore be completely missed by any theory which treats these data as constant” (1948: 94). Market dynamics act as economically valuable exploration opportunities for the entrepreneur (McGrath, 2001). As Hayek explains: “Competition is valuable *only* because, and so far as, its results are unpredictable and on the whole different from those which anyone has, or could have, deliberately arrived at” (1978: 180). Various entrepreneurs in an organization collectively influence an organization’s learning as these entrepreneurs discover, learn, create and enact new opportunities during interactions with an ever-changing and unpredictable business environment. Organizational learning occurs through an evolutionary discovery procedure guided by entrepreneurs’ new images of potential opportunities and innovative interpretive frameworks for handling new types of business problems (Penrose, 1959). The process of organizational learning as a collective phenomenon allows the exchange of ideas and knowledge among individuals and widens a firm’s collective imagination concerning viable productive opportunities (Zahra and Flatochev, 2004).

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<sup>2</sup> Such perceptions by entrepreneurs may, however, be subject to systematic biases in decision-making under uncertainty (Busenitz and Barney, 1997; Camerer and Lovallo, 1999; Kahnemann, Slovic and Tversky (1982)).

The critically important case of technology helps illustrate the process of organizational learning and the substantial business role of institutional entrepreneurship (Garud, Jain and Kumaraswamy, 2002). Technology can be viewed as a set of pieces of knowledge: some in products, some in journals, some in manuals, and some within persons. Knowledge is typically organized into “paradigms,” which are defined as patterns of solutions to specific technical problems with specific principles and technologies (Dosi, 1982). These knowledge-based paradigms impose stability on the knowledge within a firm (Patel and Pavitt, 1997). As a result, firms tend to search for technical opportunities in areas in which these firms currently possess some knowledge and experience (Brusoni, Prencipe and Pavitt, 2001). Conversely, firms sometimes engage in technical research to learn about new technical opportunities within an environment of institutional constraints (Hwang and Powell, 2005). These modern ideas in contemporary resource-based theory concerning knowledge-based resources and technology paradigms are anticipated in Penrose’s (1959) “resources approach,” to which we now turn our research attention.

### **Entrepreneurial Knowledge and Penrose’s (1959) Resources Approach**

The economic importance of the entrepreneur’s *personal knowledge* (Polanyi, 1962) comes to the foreground of a subjectivist entrepreneurial theory. Due to asymmetric information and tacit knowledge it is possible that viable new business ventures will lack sufficient financial funds to make significant capital investments that are essential for growth. Yet, many business ventures still succeed and grow into large firms because of astute entrepreneurial intuition and the capability to attract the necessary financial support for these ventures. Penrose notes that: “there are many examples testifying to the ingenuity of the superior businessmen in obtaining the

funds he needs, and only if the requisite entrepreneurial ability is lacking can one safely say that a firm cannot attract the required capital” (1959: 37-38). With experience and knowledge, many entrepreneurs find creative ways to fund new business ideas even in mature product and service markets (e.g., in franchising (Michael, 1996)).

Astute entrepreneurial judgment goes beyond vivid imagination, good insights, and self-confidence. Entrepreneurial judgment also involves “organization of information-gathering and consulting facilities within a firm, and it leads into the whole question of the effects of uncertainty on, and the role of expectations in, the growth of firms” (Penrose, 1959: 41). Entrepreneurship requires devising and discovering markets and accurately evaluating alternative product opportunities and techniques (North, 1990). Moreover, entrepreneurship typically requires experiential knowledge of the firm’s resources and inner workings, and the knowledge of the competitive market. Such experiential knowledge is subjective, and needs to be discovered. Moreover, different people may discover different things or put different interpretations on what they discover.

During the entrepreneurial process, entrepreneurs acquire non-theoretical “knowledge of the particular circumstances of time and place” (Hayek, 1945: 521). Such entrepreneurial knowledge often involves tacitness (Polanyi, 1962). Discovering markets and accurately evaluating product markets and technologies involve the development of tacit knowledge. North suggests that: “The (political or economic) entrepreneurs may devote their talents or tacit knowledge to ferreting out profitable margins, estimating the likelihood of success, and risking the organization’s resources to capture potential gains. Obviously, the efficiency of organizations depends on perceiving and realizing these opportunities” (1990: 87). Strategically, this tacitness of the entrepreneurs’ knowledge is an invisible asset (Itami and Roehl, 1987) and

can be an important source of sustainable competitive advantage for the firm due, at least in part, to uncertain imitability (Rumelt, 1987).

Combining knowledge in creative ways yields entrepreneurial activities (Bull and Willard, 1993; Hagedoorn, 1996). Schumpeter (1934) notes that the entrepreneur develops *new combinations* of economic value creation activities: “This concept covers the following five cases: (1) the introduction of a new good ... or a new quality of good. (2) The introduction of a new method of production ... (3) The opening of a new market ... (4) The conquest of a new source of supply of raw materials ... [and] (5) The carrying out of the new organization of any industry ...” (1934: 66). According to Schumpeter (1934), the creative act of formulating new knowledge combinations is fundamentally different from following standard operating procedures. Specifically, Schumpeter states that: “Carrying out a new plan and acting according to a customary plan are things as different as making a road and walking along it” (1934: 85). Imagining new combinations of economic value creation activities and resources is at the heart of entrepreneurial creativity.

The versatility and subjectivity of entrepreneurial knowledge and insight help explain the persistence of firm-level heterogeneity in entrepreneurial activities. Penrose notes that: “A versatile type of [entrepreneurial] service is needed if expansion requires major efforts on the part of the firm to develop new markets or entails branching out into new lines of production. Here the imaginative effort, the sense of timing, the instinctive recognition of what will catch on or how to make it catch on become of overwhelming importance. These [entrepreneurial] services are not likely to be equally available to all firms” (1959: 37). Given the limited availability of entrepreneurial services in firms, examining different characteristics and sources of entrepreneurs’ subjective knowledge generates new insights about how entrepreneurs adapt

and respond to changing environmental conditions. Here, the fundamental insights from Penrose's (1959) subjectivist resources approach to economic value creation prove quite useful.

In Penrose's (1959) resources approach to firm-level growth, the entrepreneur and firm's resources and dynamic capabilities take center stage. Penrose emphasizes the distinction between resources and the services of resources noting that: "Strictly speaking, it is never *resources* themselves that are the 'inputs' in the production process, but only the *services* that the resources can render. ...[R]esources consist of a bundle of potential services and can, for the most part, be defined independently of their use, while services cannot be so defined, the very word 'service' implying a function, and activity. ...[I]t is largely in this distinction that we find the source of the uniqueness of each individual firm" (1959: 25).

This distinction is crucial because the causal linkage between resources and the services of these resources occurs because of the creative insights of the entrepreneur. Casson notes in some business cases that: "The entrepreneur believes he is right while everyone else is wrong. Thus the essence of entrepreneurship is being different --- being different because one has a different perception of the situation" (1982: 14). In such cases, there is an incomplete market for business judgment, which typically is made even more complicated due to potential opportunism and moral hazard problems (Barzel, 1987; Foss and Foss, 2005; Foss and Klein, 2005). The crucial point for the discussion here is that *entrepreneurial knowledge is subjective*.

Entrepreneurs' knowledge is viewed as subjective because not only do different entrepreneurs produce different combinations of knowledge, but also these entrepreneurs interpret such new combinations in unique ways. Even when operating with the same resources, different individuals may generate entirely different services from these resources. Penrose states that: "The productive activities of such a firm are governed by what we shall call its

‘productive opportunity’, which comprises all of the productive possibilities that its ‘entrepreneurs’ see and can take advantage of” (1959: 31). Because resources and the services of these resources differ for each entrepreneur in a subjective manner, each individual’s productive opportunity differs from others. Due to the subjectively perceived multiple uses of a specific resource and the subjectively envisioned combinations of resources, there exists a large number of possibilities for entrepreneurial choices and activities, which in turn produces different firm-level economic performance outcomes.

Unlike neoclassical microeconomics treatments of entrepreneurship (e.g., Demsetz, 1983), which typically posit demand as exogenously determined by environmental forces, Penrose (1959) recognizes the close connection between the entrepreneur and the opportunities the environment “offers” to the firm. The entrepreneur’s subjective perception of such opportunities is closely linked to the perception of economic demand. Penrose observes that: “The really enterprising entrepreneur has not often, as far as we can see, taken demand as ‘given’ but as something he ought to be able to do something about” (1959: 80). In fact, Penrose submits that: “There is a close relation between the various kinds of resources with which a firm works and the development of the ideas, experience, and knowledge of its managers, and entrepreneurs, and we have seen how changing experience and knowledge affect not only the productive services available from resources, but also ‘demand’ as seen by the firm” (1959: 85). Thus, the subjectivity of the opportunities envisioned by the entrepreneur stems, at least in part, from the unique bundle of resources and capabilities that each firm possesses.

A firm’s idiosyncratic resources and organizational capabilities can greatly influence the entrepreneur’s “image” and expectations of the future (Boulding, 1956) and consequently can serve as cognitive drivers of future strategy via “resource learning” (Mahoney, 1995; Spender,

1996). The cognitive models held by a firm's leaders typically play a critical role in directing the path of the resource accumulation process and resource learning (Barr, Stimpert and Huff, 1992). Such resource learning constitutes the stock and flows of a firm's "combinative capabilities" (Ahuja and Lampert, 2001; Dierickx and Cool, 1989; Kogut and Zander, 1992).

Penrose's "resources approach" (1959: 217) focuses on the relationship "not only between the 'inherited' resources of a firm and the ability of the firm to take advantage of the opportunities perceived by its entrepreneurs, but also between these resources and the perceptions of the entrepreneurs" (1959: 216). A firm's pool of unused productive services of resources interacts with the evolving vision of entrepreneurs to create the subjective productive opportunities for each firm. Entrepreneurial image becomes a major driver of firm-level heterogeneity and *differential* absorptive capacity (Cohen and Levinthal, 1990; Kor and Mahoney, 2004; Wiklund and Shepherd, 2003).

Entrepreneurial perceptions and vision influence the rate and direction of the future growth of a firm. As Penrose (1959) explains, the services available and imaginable from a firm's bundle of resources depend upon the vision of the top management team, but the development of the entrepreneurial vision is also affected by the unused productive services of resources. Unused productive services of resources shape "the scope and direction of the search for knowledge" (Penrose, 1959: 77). As the entrepreneur's subjective perceptions and the productive services of firm's resources shape each other and evolve together, so does the subjective vision about future directions of firm-level growth (Mahoney and Pandian, 1992). In fact, a firm's rate of growth will also be limited by the capacities of the existing managerial and entrepreneurial resources because management possessing firm-specific knowledge cannot be hired in the external labor market (Teece, 1982). There is uniqueness not only in the set of



productive opportunities each firm can pursue successfully, but there is also uniqueness in the rate at which a firm can profitably seize these opportunities.

Given the substantial role of subjective entrepreneurial perceptions for identification and development of a unique productive opportunity set for the firm, it should prove to be useful to consider the originations of the subjective entrepreneurial perceptions. Understanding better the sources of the entrepreneurs' subjective perceptions and personal knowledge may help us to better explain and predict the path that firms will take in the course of decision making under uncertainty. Penrose notes that: "if we can discover what determines entrepreneurial ideas about what the firm can and cannot do, that is, what determines the nature and the extent of the 'subjective' productive opportunity of the firm, we can at least know where to look if we want to explain or to predict the actions of particular firms" (1959: 42).

The subjective view of entrepreneurship emphasizes that resources gain economic value from their use by customers and not from the underlying economic costs. It is the economic value placed on outputs that give economic value to inputs (resources). The economic value of wool depends, in part, on what customers will pay for sweaters and other outputs derived from wool. The economic value of any entrepreneurial innovation is influenced by a *relationship* between the buyer and the seller. As a result, the entrepreneurial capability to foresee the potential economic value of any innovation depends upon the number of potential relationships of which the entrepreneur is aware. Such relationships can be functional, personal, or social, and these relationships are created and maintained through experiences.

The entrepreneurial character of an individual including the sense of direction (intuition), risk-willingness, and coordination of successful experiments (Eliasson, 1990) is influenced by a variety of *experiences* that this individual possesses. We next consider how the subjective

entrepreneurial perceptions and personal knowledge originate from entrepreneurs' specific experiences in various contexts such as the firm, the team, and the industry.

## **Individuals' Experiences and Subjective Entrepreneurial Knowledge and Perceptions**

### ***Firm-specific experience***

Experience in a particular firm enables managers to develop intimate and tacit knowledge of the firm's resources, capabilities, organizational structures, standard operating procedures, unique historical conditions, operations, and personnel. Managers build firm-specific knowledge over time as a result of historical interactions with the firm's resources and management team members (Penrose, 1959). Because firms develop their resource and capability bundles through path-dependent processes, firms typically benefit from managers with tacit knowledge of the firm's material, human, and intangible resources (Kor, 2003). For example, managers' tacit knowledge of the firm's employees enables these managers to match more effectively their employees' skills to particular jobs, and employees can be matched better to each other in team settings (Prescott and Visscher, 1980). Firm-specific knowledge may constitute an important part of management capital since compared to managers who are relatively new to the firm managers with firm-specific experience may accurately envision a superior subjective productive opportunity set for the firm (Kor and Mahoney, 2000). This outcome may occur because managers' historic and intimate knowledge of the firm provides these more experienced managers with the appropriate conceptual lenses to identify the entrepreneurial opportunities a firm should pursue. These managers can assess more precisely the opportunities in the environment that *fit* with the firm's internal strengths and weaknesses (Andrews, 1980). Even a

specialized base of resources and services may have a considerable real options economic value; however, only with the experiential knowledge of the firm's resources can the entrepreneur create these strategic options for further expansion and to increase the firm's absorptive capacity (Kor and Mahoney, 2004; Mahoney 2005).

The development of subjective entrepreneurial insights concerning new productive opportunities involves the pre-condition of intimate familiarity with the firm. Familiarity involves the experiential "knowledge about the unique characteristics of machinery, physical environment, people, performance strategies, and jobs in a particular section at a particular time" (Goodman and Leyden, 1991: 579). With experiential knowledge of the firm, individuals can develop a better understanding of firm policies and organizational language (Arrow, 1974; March and Simon, 1958) and may become more committed to the organization (Kerr and Jackofsky, 1989). Also, firm-specific knowledge and organizational capabilities developed during experience within a specific firm cannot be readily transferred to another firm (Harris and Helfat, 1997). As Penrose explains: "experience produces increased knowledge about things and contributes to 'objective' knowledge in so far as its results can be transmitted to others. But experience itself can never be transmitted; it produces a change—frequently a subtle change—in individuals and cannot be separated from them (1959: 53). Therefore, managers' experience-based intimate knowledge of the firm's resources and organizational capabilities may contribute substantially to a hard-to-imitate system of entrepreneurial renewal for the firm.

Despite the substantial economic value of firm-specific experiences, an extensive period of experience in the same organization may not contribute in a linear way to a firm's capacity of entrepreneurial services. As upper-echelons theory reveals, after early economic success and initial learning, managers may commit psychologically to business-level and corporate-level

strategies that they are comfortable with, and with each passing year, these senior managers may increasingly believe in the correctness of their worldview (Finkelstein and Hambrick, 1996). Long tenure in the firm may diminish managers' inclination to communicate with outside information sources and to seek or to heed external advice. Managers may become both less perceptive and less receptive to new information that signals that previously agreed upon or implemented decisions are no longer as appropriate. Because managers may become more risk-averse with extended tenure in a specific firm, these senior managers may lack the agility of mind to formulate and to implement adaptive (or preemptive) changes other than incremental changes or imitative changes (Wiersema and Bantel, 1992).

Thus, it may *not* be desirable to have a top management team where all or most of the managers have uniformly high levels of firm-specific experience. Instead, a healthy mix of managers with different levels of experience in the firm may create more synergistic interactions among managers as the experienced managers' historical knowledge of the firm blends with different entrepreneurial perceptions of managers who are relatively new to the firm but who still have important other (business and/or non-business) experiences. Research suggests that the best results for innovation are achieved when the team contains different backgrounds and different perspectives (Tushman and O'Reilly, 1997). The most prolific entrepreneurial visions may potentially emerge from combining tacit knowledge of a firm's unique bundle of resources and capabilities with a diverse set of entrepreneurial perceptions about the new economic "demand" conditions.

### *Team-specific experience*

Team-specific experience refers to managers' decision-making and implementation experience as a particular team. Managers' experience in functioning together as a team includes discussions and debates on strategic decisions, during which these managers learn each other's strengths, weaknesses, and idiosyncratic habits (Kor, 2003; Penrose, 1959). Team experiences also include taking risks on behalf of the firm, committing economically to certain strategic actions under uncertainty, and winning or losing together as a team (Kor and Mahoney, 2000). While having participated in many teams may help a manager to develop teamwork skills, each team is likely to be unique in its functioning, and the addition of a new member to the team will require adjustments for all existing members. As Richardson explains: "the capabilities of any particular cooperating group — the scope and effectiveness of the activities it can undertake — will depend both on the skills of its members and on their inter-relationships. Irrespective of the contractual arrangements associated with this inter-relationship, is the need for it to be stable enough for members of the group to learn to work with each other (2002: 41). In many business cases, management teams with shared experience are non-substitutable *organizational capital* because other management teams lack the knowledge of specific circumstances and unique historical conditions in which actions need to be interpreted and subsequently coordinated.

Managers' shared team-specific experience may contribute substantially to a firm's entrepreneurial renewal because such experience can accelerate the team's decision making as the team can focus more time and attention to the particular business problems at hand rather than on group process issues (Eisenhardt and Schoonhoven, 1990). Experiential knowledge of the skills and habits of team members prepares the firm for taking otherwise risky endeavors and saves time in coordination (Kor and Mahoney, 2000). Also, team experience may enhance

communication and socialization among team members, promoting reduced goal conflict and lower turnover (Smith et al., 1994). Managers' team-specific experience can be a difficult to imitate source of entrepreneurial success because developing tacit and intimate knowledge about team members involves specificity in time and place (Kor, 2003). Only through managerial interactions within a specific team and over time can managers collectively accumulate a tacit understanding of the strengths, weaknesses, and idiosyncratic habits of others.

However, high levels of shared experience among managers may invite a groupthink phenomenon (Allison, 1971; Janis, 1972). Speaking a common language and sharing common values, managers may gradually cease questioning and debating each other when in the process of strategic planning. Groupthink tendencies among managers can seriously threaten entrepreneurial adaptation and renewal of the firm. In high-velocity environments (Bourgeois and Eisenhardt, 1988), where firms need to refine and redefine their productive opportunity set continuously in response to frequent changes in economic demand, competition, and technology conditions, a free exchange of views among managers is typically preferred to conformist thinking (Hambrick, 1995). Strategically, firms need to achieve a balance in promoting a top management team that possesses sufficient familiarity with, and confidence in, team members so that managers are willing to make strategic commitments and take risks under uncertainty, yet at the same time not end up cultivating conformity and groupthink in the team. Firms may promote such a strategic balance by nurturing moderate levels of shared team experience among team members, while allowing some level of turnover and/or rotation among different entrepreneurial teams.

### *Industry-specific experience*

Subjective entrepreneurial knowledge and perception is also shaped by managers' experiences within a specific industry. Industry-specific experience involves interactions with various buyers, suppliers, distributors, and other stakeholders, which produce knowledge about the opportunities, threats, competitive conditions, and governmental regulations that are unique to each industry (Kor, 2003; Mosakowski, 1993). Many developments in technology, competitive, and regulatory conditions in an industry follow a path-dependent pattern (Arthur, 1994). Thus, historical and experience-based knowledge of the industry can be highly useful for insightful perception and evaluation of new entrepreneurial opportunities. Industry experience often embeds goodwill with certain customers, suppliers, and industry stakeholders. Experienced managers can capitalize on this reputation and goodwill by initiating and securing new business relationships for their current firm. Thus, experience in a specific industry not only provides knowledge concerning how the industry works but such knowledge may also contribute to the economic success of a new business venture when the experienced entrepreneur can more easily secure resources and business orders for the firm through previous industry connections. Consistent with this logic, empirical research indicates a lower start-up firm-level mortality rate and more successful innovative activities for business ventures founded by entrepreneurs experienced within the industry (Cooper, Gimeno-Gascon, and Woo, 1994).

Despite the advantages of such within-industry experience, not *all* managers should be equipped with experience that concentrates solely within a single industry. When the majority of managers have a strong industry orientation, the management team may become entrenched by current industry norms and practices (Geletkanycz and Black, 2001; Hambrick, Geletkanycz, and Fredrickson, 1993). Rigid commitments to insights from previous industry experience may be

counterproductive in high-velocity environments where timely adaptations to changes in economic demand, competition and technological conditions are essential for sustained entrepreneurial development and renewal. When the top management team is uniformly entrenched with historical views of competitive dynamics and buyer expectations, their perception and imagination of the new entrepreneurial opportunities are more likely to be truncated, if not misguided. Therefore, firms should be cautious about having the entire team of managers with a homogeneous level of industry experience. Because managers with different levels of industry experience will have varying levels of commitment to historical industry trends, such differences are likely to spur healthy conversations and debates concerning new strategic directions for the firm. Also, when managers are exposed to inter-industry differences in technology, distribution, marketing, and pricing, these managers are more likely to be innovative in formulating and implementing new strategies and to position current and future products and services creatively.

### ***Team heterogeneity***

Managers' experiences with the firm's resources, management team members, and numerous industry players simultaneously inform, enable, stimulate, and constrain entrepreneurial imagination. When managers share highly similar types and levels of experience, these managers may develop groupthink tendencies and thus become blindly loyal to doing things in old established ways. An effective solution to this problem can be cultivation of heterogeneity within entrepreneurial teams. As team members become more diverse in experience and skills, the team is more likely to consider a wider range of strategic options in decision-making and to avoid groupthink and behavioral inertia (Eisenhardt and Schoonhoven,



1990). Heterogeneity in the level of tacit knowledge about the firm, the team members, and the industry can enrich the team's cognitive resources and can stimulate vigorous discussions about innovative entrepreneurial initiatives (Hambrick, Cho, and Chen, 1996). Team heterogeneity can be important especially in highly competitive and complex environments (Carpenter, 2002; Priem, 1990; Rajagopalan and Datta, 1996), where versatile cognitive resources are needed to regularly produce creative resource combinations and to redefine the firm's productive opportunity set.

The economic benefits derived from increased team heterogeneity are highly likely to be non-linear. Such a theoretical proposition is warranted from the nature of knowledge: either the team knows some idea, or the team does not know that idea. An additional member to the team may bring the crucial idea concerning a key technology, market, or customer, which identifies the opportunity completely and allows the creation of an economically valuable product or service. Something as simple as the identity of a customer can transform an abstract business model into a viable business plan. Conversely, additional members that do not expand the knowledge base of the team can create more economic costs than economic benefits. Thus, maximizing heterogeneity is not typically the best means for achieving economic success. High levels of heterogeneity in the top management team may cause incompatibility and goal conflicts among executives, which can impede the decision-making process (Hambrick, Cho and Chen, 1996). High levels of conflict in the team may reduce team member satisfaction and can potentially even block the emergence of a newer and more effective dominant logic (Prahalad and Bettis, 1986; Wanous and Youtz, 1986).

While task-oriented cognitive conflict enhances the decision quality, when cognitive conflict is perceived as personal criticism then the individuals' contributions to the decision-

making process may diminish along with the quality of decisions produced by the team (Amason, 1996). If the interpersonal conflict that is derived from differences in attitudes and values intensifies, teams may then experience both substantial turnover within the team, and difficulties in socializing new team members (McCain, O'Reilly and Pfeffer, 1983). Therefore, some level of team homogeneity should be allowed in order for managers to develop a common vocabulary and common interpretations of events, which may promote positive team dynamics and fast implementation of strategic actions (Zenger and Lawrence, 1989). In highly competitive business landscapes, fast decision making and implementation will be necessary for seizing emerging entrepreneurial opportunities (Ancona and Caldwell, 1992).

### **Subjectivity in Entrepreneurship and Financial Performance**

The heterogeneity of economic performance among firms is posited to be, at least in part, a direct result of the heterogeneity of entrepreneurial beliefs and the heterogeneity of other resources and capabilities of firms, as well as the subjective deployment of these resources and capabilities. Alvarez and Busenitz observe that: "heterogeneity is a common attribute of both resource-based and entrepreneurship theory --- although resource-based logic has tended to focus on heterogeneity of resources while entrepreneurship theory has tended to focus on heterogeneity in beliefs about the value of resources" (2001: 756). Frequently, entrepreneurial economic profits are created because different decision-makers have different beliefs about the relative economic value of the opportunities associated with resources and new resource combinations (Penrose, 1959; Schumpeter, 1934; Vaughn, 1994). Indeed, Audretsch maintains that: "[I]t is the uncertainty inherent in new economic knowledge, combined with asymmetries across agents

with respect to its expected value, that potentially leads to a gap between the valuation of that knowledge” (1995: 39).

Contemporary resource-based theory addresses the business conditions under which resources can yield differential long-run economic performance advantages. Specifically, resources yield superior economic performance if resources are valuable, rare, imperfectly imitated and non-substitutable (Barney, 1991). Imitation is made difficult by causal ambiguity (Rumelt, 1984), which occurs when the organization that desires to imitate the economically successful firm is uncertain concerning the transformational processes through which firm’s resources are converted into profit-generating capabilities. Attempts at imitation to replicate closely another firm’s competitive advantage is also mitigated through social complexity (Barney, 1991), which can occur when individuals and their skills are combined through many organizational routines, working relationships and teamwork experiences that collectively form a distinct corporate culture.

Amit, Glosten and Mueller (1990, 1993) emphasize the need for a theory of heterogeneity of entrepreneurial opportunities within a dynamic resource-based theory of the firm. Similarly, Mosakowski maintains that: “Traditional research on the resource-based view of strategy has generally ignored the wide range of human choices and behaviors involved in identifying, leveraging, and creating resources” (2002: 106-107). Recently, however, some modest progress along these research lines has been made. For example, contemporary resource-based research has begun to highlight the entrepreneur’s role in firm-level strategy (e.g., Alvarez and Barney, 2000, 2004; Mosakowski, 1998). Alvarez and Barney argue that: “Indeed, it may be by examining the intersection between entrepreneurship and the resource-based view (RBV) that clarity may be achieved with regard to the larger impact of entrepreneurship on strategic

management” (2002: 89). Further, by examining the dynamics between entrepreneurship and the resource-based approach, Alvarez and Busenitz (2001) develop a theory of entrepreneurship that builds on Peteraf’s (1993) four cornerstones of competitive advantage, which includes: resource heterogeneity (Barney, 1991), ex post limits to competition due to causal ambiguity (Rumelt, 1984), imperfect factor mobility due to non-tradeable asset stocks (Dierickx and Cool, 1989), and ex ante limits to competition (Rumelt, 1987). From opportunity recognition to the capability to organize these resources into a firm and then to the creation of heterogeneous outputs through the firm that are superior to those offered in the market, Alvarez and Busenitz (2001) examine the key role of entrepreneurial resources within dynamic resource-based theory. Moreover, researchers have drawn from the resource-based view of strategy to explain outcomes associated with new business ventures (e.g., Deeds, DeCarolis and Coombs, 2000; McGrath, 1995; Thornhill and Amit, 2001).

We suggest here that further enrichment of the resource-based theory of entrepreneurship can occur through the theoretical insights from Penrose (1959) concerning entrepreneurial choices and behaviors. We particularly emphasize Penrose’s (1959) insight that a firm’s resources alone are not determinative, but rather how the subjective entrepreneurial choices about how the firm develops and deploys its resources are highly important in the creation of entrepreneurial opportunities and economic rents. Penrose’s (1959) resource-based approach when applied to entrepreneurship offers theoretical insights into why there are economic performance differences among entrepreneurs. The linkages between resources and the services of these resources require that the resource-based approach to entrepreneurship be a subjective one. The key elements of such an approach include creativity, information, judgment, and perceived entrepreneurial possibilities. The ongoing changes in competition and technology

create opportunities for new resources and resource combinations to be discovered and implemented by entrepreneurs.

In bringing together dynamic resource-based theory and entrepreneurship research there needs to be a theoretical unpacking of the concept of resource heterogeneity. For example, Alvarez and Busenitz (2001) consider heterogeneity in terms of entrepreneurial cognition (Barr, Stimpert and Huff, 1992), entrepreneurial discovery (Kirzner, 1997; Witt, 2000), changing market opportunities (Shane and Venkatraman, 2000), and differential capabilities in the coordination of knowledge (Conner and Prahalad, 1996). Looking at resource-based theory through an entrepreneurial lens can extend the boundaries of resource-based theory beyond strategy content research and towards research of strategy processes.

## **Conclusions and Directions for Future Research**

In this paper, we have emphasized the need for a subjectivist theory of entrepreneurship that focuses on the interrelationships among the subjective visions of entrepreneurs, firm-specific experiences and knowledge, and perceived economic opportunities. We see high potential for new theoretical insights emanating from intellectual connections between strategy and entrepreneurship research. We have built our theoretical arguments on the seminal work of Penrose (1959), who in important ways anticipated a subjectivist theory of entrepreneurship. Penrose's (1959) rejects the standard concept of a production function in which inputs are assimilated as factors of production, in favor of an analytical scheme in which resources become a distinct subject of economic analysis and their application (i.e., deployment) is problematic (Loasby, 2002: 52). Creative deployment of a firm's resources can be problematic not only because the economic opportunities to their use have to be perceived or imagined (Shackle,

1967), but also because the effectiveness of a resource to a particular application can never be guaranteed in advance.

Future research on entrepreneurship can benefit substantially from a richer conceptualization of the entrepreneur that is not limited to a certain position or title, but recognizes the potential that entrepreneurial insight and creativity can be provided by all individuals in the organization. A subjectivist theory of entrepreneurship embraces a key proposition from resource learning theory: “Managing involves a[n entrepreneurial] discovery procedure in which heterogeneous mental models of managers using heterogeneous firm-specific resources are involved in an ongoing competition” (Mahoney, 1995: 97).

Further, we see merit in researching the sources of knowledge-based resources that spur entrepreneurial renewal. Unlike property-based resources, which are typically most economically valuable in stable environments, knowledge-based resources (e.g., creative and coordinative skills) can be most useful in changing and unpredictable environments to maintain flexibility and adaptation. One can distinguish between experiences leading to tacit knowledge versus experiences leading to explicit/codified knowledge. It is also useful to distinguish specific versus general knowledge (Hayek, 1945), where specificity of the entrepreneur’s knowledge with respect to time and place matter in understanding origins of subjective entrepreneurial vision. For example, systemic knowledge-based resources such as coordinative and team-based capabilities tend to have high asset specificity compared to discrete knowledge-based resources such as functional and creative skills (Miller and Shamsie, 1996). The specificity of the knowledge-based resource may limit the scope of this resource’s application while increasing the difficulty of its imitation.

In addition, future management research studies can examine how human and social capital of entrepreneurs influence the subjective productive opportunity set. The first phase of this examination involves a study of how the subjective opportunity set of a *person* comes about. The second phase would be to develop a theory concerning how a team can create a subjective opportunity set. Interdisciplinary research, examining psychological processes by which opportunities are evaluated for their economic potential, or noting that what individuals perceive in their utility function is to some extent influenced by social interactions and social forces, would be promising approaches. This research would also reveal how an entrepreneurial firm can change or renew the productive opportunity of the team by adding and subtracting members to the founding team.

Such research may require a diverse set of methodological techniques. Thoughtful histories are likely to be helpful (Schumpeter, 1947). Histories and taxonomies are reasonable beginnings for a new direction of analysis; indeed, it is how most sciences begin. Narrative, textual, and rhetorical analysis can also help us understand the versatile and ambiguous use of linguistics by organizational actors to verbalize entrepreneurial activities (Lado, Boyd, Wright, and Kroll, 2005). However, an historical approach is not sufficient to produce empirical statistical significance; therefore, some technique of aggregation, such as multi-level methods or meta-analysis, may be essential.

Furthermore, we argued that entrepreneurs' subjective knowledge and intuition are strongly shaped by their experiences within the firm, the team, and the business environment. Essentially, we subscribe to a pragmatic theory of knowledge where the content of knowledge and the process of learning (i.e., knowledge acquisition) are inextricably intertwined (Mahoney, 1995). We further argue that many other forms of business experience can also notably

influence managerial perceptions of viable alternatives concerning strategy development and entrepreneurial renewal. Managers' past assignments in international business contexts, for example, can shape their imagination about future growth opportunities for the firm as well as their capability to pursue them successfully (Carpenter, Sanders, and Gregersen, 2001; Tan and Mahoney, 2006). For better or worse, past strategy-specific experiences such as experience with alliances, mergers and acquisitions, diversification, and downscoping influence managers' inclination to adopt such strategies in their current firms (Carpenter, Geletkanycz, and Sanders, 2004). Thus, studying the past individual and shared experiences of managers can be fundamental in understanding a firm's *current* entrepreneurial choices. Alternatively, one can study managers' past and current experiences with specific resource bundles, strategies, markets, technologies, and stakeholders to predict a firm's *future* directions and patterns of growth. Uncovering the complex origins of subjective managerial perceptions, beliefs, value systems, mental models, and heuristics would help us to better understand the conditions that may nurture entrepreneurial creativity and/or cognitive biases in decision making (Adner and Helfat, 2003; Amit and Schoemaker, 1993; Huff, 1990).

Future entrepreneurship research could also productively utilize Penrose's (1959) insight concerning the distinction between resources and their services, where resources are static while their services are dynamic and specific to the task at hand. Resources can be applied in multiple ways. A resource that substantially contributes to a firm-level capability may provide economically valuable reputational capital to attract investors, particularly in smaller firms. Past research has focused largely on the acquisition and protection of resources, but for the most part has neglected managerial processes that lead to the creation of new resource combinations for current and future product applications. Future research can examine firm-level heterogeneity



with respect to accumulating and leveraging resources and to matching the services of these resources to the emerging opportunities in the environment. We suggest that there are at least five major sources of entrepreneurial success that merit future research: the individual, the entrepreneurial team, the entrepreneurial opportunity, the (dynamic) fit between the individual and the opportunity, and the business environment.

In conclusion, we anticipate that better integration of entrepreneurship and strategic management research literatures will contribute greatly to the evolving science of organization (Hitt, Ireland, Camp, and Sexton, 2000). We can do better. Bringing together strategic management and entrepreneurship research can enable us to advance a dynamic and integrated subjectivist theory of how entrepreneurship functions for individuals, for firms, and for the economy at large.

## References

- Adner R. and Helfat, C.E. (2003). Corporate effects and dynamic managerial capabilities. *Strategic Management Journal*, **24**: 1011-25.
- Ahuja, G. and Lampert, C. M (2001). Entrepreneurship in the large corporations: A longitudinal study of how established firms create breakthrough innovations. *Strategic Management Journal*, **22** (6): 521-544.
- Allison, G.T. (1971). *Essence of Decision: Explaining the Cuban Missile Crisis*. Boston, MA: Little Brown and Company.
- Alvarez, S. A., Agarwal, R. and Sorenson, O. (Eds.) (2005). *Handbook of Entrepreneurship Research: Disciplinary Perspectives*. New York, NY: Springer.
- Alvarez, S.A. and Barney, J. B. (2000). Entrepreneurial capabilities: A resource-based view. In G. D. Meyer and K. Heppard (Eds.), *Entrepreneurship as Strategy: Competing on the Entrepreneurial Edge*, pp. 63-81. Thousand Oaks, CA: Sage Publications.
- Alvarez, S.A. and Barney, J. B. (2002). Resource-based theory and the entrepreneurial firm. In M. A. Hitt, R. D. Ireland, S. M. Camp and D. L. Sexton (Eds.), *Strategic Entrepreneurship: Creating a New Mindset*, pp. 89-105. Oxford, UK: Basil Blackwell.
- Alvarez, S. A. and Barney, J. B. (2004). Organizing rent generation and appropriation: Toward a theory of the entrepreneurial firm. *Journal of Business Venturing*, **19**: 621-635.
- Alvarez, S.A. and Busenitz, L.W. (2001). The entrepreneurship of resource-based theory. *Journal of Management*, **27**: 755-75.
- Amason, A.C. (1996). Distinguishing the effects of functional and dysfunctional conflict on strategic decision making: Resolving a paradox for top management teams. *Academy of Management Journal*, **39**(1): 123-48.
- Amit, R., Glosten, L. and Mueller, E. (1990). Entrepreneurial ability, venture investments and risk sharing. *Management Science*, **36**: 1232-1245.
- Amit, R., Glosten, L. and Mueller, E. (1993). Challenges to theory development in entrepreneurship research. *Journal of Management Studies*, **30**: 815-834.
- Amit, R. and Schoemaker, P. J. (1993). Strategic assets and organizational rent. *Strategic Management Journal*, **14**: 33-46.
- Ancona, D.G. and Caldwell, D.F. (1992). Demography and design: Predictors of new product team performance. *Organization Science*, **3**: 321-341.

- Andrews, K. (1980). *The Concept of Corporate Strategy*. New York: McGraw-Hill.
- Arrow, K. J. (1974). *The Limits of Organization*. New York, NY: W. W. Norton.
- Arthur, W. B. (1994). *Increasing Returns and Path Dependence in the Economy*. Ann Arbor, MI: University of Michigan Press.
- Audretsch, D. B. (1995). *Innovation and Industry Evolution*. Cambridge, MA: MIT Press.
- Barnard, C.A. (1938). *The Functions of the Executive*. Cambridge, MA: Harvard University Press.
- Barney, J.B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, **17**: 99-120.
- Barr, P. S., Stimpert, J. L. and Huff, A. S. (1992). Cognitive change, strategic action, and organizational renewal. *Strategic Management Journal*, **13** (Summer): 15-36.
- Barreto, H. (1989). *The Entrepreneur in Microeconomic Theory: Disappearance and Explanation*. New York, NY: Routledge.
- Barringer, B. R. and Bluedorn, A. C. (1999). The relationship between corporate entrepreneurship and strategic management. *Strategic Management Journal* **20**: 421-444.
- Barzel, Y. (1987). The entrepreneur's reward for self-policing. *Economic Inquiry*, **25**: 103-116.
- Baumol, W. J. (1968). Entrepreneurship in economic theory. *American Economic Review*, **58**: 64-71.
- Baumol, W. J. (1990). Entrepreneurship, productive, unproductive and destructive. *Journal of Political Economy*, **98**: 893-919.
- Baumol, W. J. (1993). Formal entrepreneurship theory in economics: Existence and bounds. *Journal of Business Venturing*, **8**: 197-210.
- Boulding, K.E. (1956). *The Image*. Ann Arbor, MI: University of Michigan Press.
- Boulding, K.E. (1966). The economics of knowledge and the knowledge of economics. *American Economic Review*, **56** (May): 1-13.
- Bourgeois, L.J. III and Eisenhardt, K.M. (1988). Politics of strategic decision making in high-velocity environments: Toward a midrange theory. *Academy of Management Journal*, **31**(4): 737-70.
- Brusoni, S. Prencipe, A. and Pavitt, K. (2001). Knowledge specialization, organization coupling and the boundaries of the firm: Why do firms know more than they make? *Administrative Science Quarterly*, **46**: 597-621.
- Buchanan, J. M and V. J. Vanberg (1991). The market as a creative process. *Economics and Philosophy*, **7**: 167-186.

- Bull, I. and Willard, G. (1993). Towards a theory of entrepreneurship. *Journal of Business Venturing*, 8: 183-196.
- Busenitz, L. W. and Barney, J. B. (1997). Biases and heuristics in strategic decision-making: Differences between entrepreneurs and managers in large organizations. *Journal of Business Venturing*, 12 (1): 9-30.
- Camerer, C. and Lovallo, D. (1999). Overconfidence and excess entry: An experimental approach. *American Economic Review*, 89: 306-318.
- Carpenter, M.A. (2002). The implications of strategy and social context for the relationship between top management team heterogeneity and firm performance. *Strategic Management Journal*, 23: 275-284.
- Carpenter, M.A., Geletkanycz, M.A., and Sanders, W.G. (2004). Upper-echelons research revised: Antecedents, elements, and consequences of top management team composition. *Journal of Management*, 30(6): 749-79.
- Carpenter, M.A., Sanders, W.G., and Gregersen, H.B. (2001). Bundling human capital with organizational context: The impact of international assignment experience on multinational firm performance and CEO pay. *Academy of Management Journal*, 44: 493-512.
- Casson, M. (1982). *The Entrepreneur: An Economic Theory*. Oxford: Martin Robertson.
- Cohen, W. M. and Levinthal, D. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35 (1): 128-52.
- Cole, A. H. (1968). Meso-economics: A contribution from entrepreneurial history. *Explorations in Entrepreneurial History*, 6 (1): 3-33.
- Conner, K. R. and Prahalad, C. K. (1996). A resource-based theory of the firm: Knowledge versus opportunism. *Organization Science*, 7 (5): 477-501.
- Cooper, A. C., Gimeno-Gascon, F. J, and Woo, C.Y. (1994). Initial human and financial capital as predictors of new venture performance. *Journal of Business Venturing*, 9(5) 371-95.
- Cyert, R.M. and March, J.G. (1963). *A Behavioral Theory of the Firm*. Englewood Cliffs, NJ: Prentice-Hall.
- Deeds, D. L. DeCarolis, D. and Coombs, J. (2000). Dynamic capabilities and new product development in high technology ventures: An empirical analysis of new biotechnology firms. *Journal of Business Venturing*, 15: 221-229.
- Demsetz, H. (1983). The neglect of the entrepreneur. In J. Ronen (Ed.), *Entrepreneurship*, pp. 271-280. Lexington, MA: Lexington Press.
- Dierickx, I. and Cool, K. (1989). Asset stock accumulation and sustainability of competitive advantage. *Management Science*, 35: 1504-11.

- Dosi, G. (1982). Technological paradigms and technological trajectories: A suggested interpretation of the determinants and directions of technical change. *Research Policy*, 11: 147-162.
- Eisenhardt, K.M. and Schoonhoven, C.B. (1990). Organizational growth: Linking founding team, strategy, and growth among U.S. semi-conductor ventures, 1978-1988. *Administrative Science Quarterly*, **35**: 504-29.
- Eliasson, G. (1990). The firm as a competent team. *Journal of Economic Behavior and Organization*, **13**: 275-298.
- Finkelstein, S. and Hambrick, D. C. (1996). *Strategic Leadership: Top Executives and Their Effects on Organizations*. St. Paul, MN: West Publishing Company.
- Foss, K. and Foss, N. J. (2005). Resources and transaction costs: How property rights economics furthers the resource-based view. *Strategic Management Journal*, 26: 541-553.
- Foss, N. and Klein, P. G. (2005). Entrepreneurship and the economic theory of the firm: Any gains from trade? In S. A. Alvarez, R. Agarwal and O. Sorenson (Eds.) (2005). *Handbook of Entrepreneurship Research: Disciplinary Perspectives*, pp. 55-80. New York, NY: Springer.
- Garud, R., Jain, S. and Kumaraswamy, A. (2002). Institutional entrepreneurship in the sponsorship of common technological standards: The case of Sun Microsystems and Java. *Academy of Management Journal*, 45 (1): 196-214.
- Geletkanycz, M.A., and Black, S.S. (2001). Bound by the past? Experience-based effects on commitment to the strategic status quo. *Journal of Management*, **27**: 3-21.
- George, G. (2000). Development and financial institutions as catalysts of entrepreneurship in emerging economies. *Academy of Management Review*, 25 (3): 620-629.
- Goodman, P.S., and Leyden, D.P. (1991). Familiarity and group productivity. *Journal of Applied Psychology*, **76**(4):578-86.
- Hagedoorn, J. (1996). Innovation and entrepreneurship: Schumpeter revisited. *Industrial and Corporate Change*, 5 (3): 883-896.
- Hambrick, D.C. (1995). Fragmentation and the other problems CEOs have with their top management teams. *California Management Review*, **37**(3) 110-27.
- Hambrick, D. C., Cho, S. T., and Chen, M-J. (1996). The influence of top management team heterogeneity on firms' competitive moves. *Administrative Science Quarterly*, **41** 659-684.
- Hambrick, D.C., Geletkanycz, M.A., and Fredrickson, J.W. (1993). Top executive commitment to the status quo: Some tests of its determinants. *Strategic Management Journal*, **14**: 401-18.
- Harris, D. and Helfat, C. (1997). Specificity of CEO human capital and compensation. *Strategic Management Journal*, **18**: 895-920.
- Hayek, F.A (1945). The use of knowledge in society. *American Economic Review*, **35**: 519-30.

- Hayek, F.A. (1948). *Individualism and Economic Order*. Chicago, IL: Chicago University Press.
- Hayek, F.A. (1978). Competition as a discovery procedure. *In New Studies in Philosophy, Politics, Economics and the History of Ideas*, pp. 179-190. London, UK: Routledge & Kegan Paul.
- Hitt, M. A., Ireland, R. D., Camp, S. M. and Sexton, D. L. (2000). Strategic entrepreneurship: Entrepreneurial strategies for wealth creation. *Strategic Management Journal*, 22 (6): 479-492.
- Huff A.S. (1990). Mapping strategic thought. *In Huff A.S. (Ed.), Mapping Strategic Thought*, pp.11-49. New York: Wiley.
- Hwang, H. and Powell, W. W. (2005). Institutions and entrepreneurship. In S. A. Alvarez, R. Agarwal and O. Sorenson (Eds.) (2005). *Handbook of Entrepreneurship Research: Disciplinary Perspectives*, pp. 201-232. New York, NY: Springer.
- Itami, H. and Roehl, T. (1987). *Mobilizing Invisible Assets*. Cambridge, MA: Harvard University Press.
- Jacobson, R. (1992). The 'Austrian' school of strategy. *Academy of Management Review*, 17 (4): 782-807.
- Janis, I.L. (1972). *Victims of Groupthink: A Psychological Study of Foreign-Policy Decisions and Fiascoes*. Boston: Houghton Mifflin Company.
- Kahneman, D., Slovic, P. and Tversky, A. (1982). *Judgment Under Uncertainty: Heuristics and Biases*. Cambridge, MA: Cambridge University Press.
- Kerr, J.L. and Jackofsky, E.F. (1989). Aligning managers with strategies: Management development versus selection. *Strategic Management Journal*, 10: 157-70.
- Kirzner, I.M. (1973). *Competition and Entrepreneurship*, Chicago, IL: Chicago University Press.
- Kirzner, I.M. (1979). *Perception, Opportunity, and Profit: Studies in the Theory of Entrepreneurship*. Chicago, IL: University of Chicago Press.
- Kirzner, I.M. (1997). Entrepreneurial discovery and the competitive market process: An Austrian approach. *Journal of Economic Literature*, 35 (March): 60-85.
- Klein, P. G. and Klein, S. K. (2001). Do entrepreneurs make predictable mistakes? Evidence from corporate divestitures. *Quarterly Journal of Austrian Economics*, 4 (2): 3-25.
- Knight, F.H. (1921). *Risk, Uncertainty and Profit*. Chicago, IL: Chicago University Press.
- Kogut, B. and Zander, U. (1992). Knowledge of the firm, combinative capabilities, and the replication of technology. *Organization Science*, 3 (3): 383-397.
- Kor, Y.Y. (2003). Experience-based top management team competence and sustained growth. *Organization Science*, 14 (6): 707-19.

- Kor, Y.Y. and Mahoney, J.T. (2000). Penrose's resource-based approach: The process and product of research creativity. *Journal of Management Studies*, **37** (1): 109-39.
- Kor, Y.Y. and Mahoney, J.T. (2004). Edith Penrose's (1959) contributions to the resource-based view of the firm. *Journal of Management Studies*, **41** (1): 183-91.
- Lado, A.A., Boyd, N.G., Wright, P., and Kroll, M. (2005). Paradox and theorizing within the resource-based view. *Academy of Management Review*, forthcoming.
- Loasby, B.J. (2002). The significance of Penrose's theory for the development of economics. In C. Pitelis (Ed.), *The Growth of the Firm: The Legacy of Edith Penrose*, pp. 45-59. Oxford: Oxford University Press.
- Low, M. and MacMillan, I. (1988). Entrepreneurship: Past research and future challenges. *Journal of Management*, **14** (2): 139-161.
- Mahoney, J.T. (1995). The management of resources and the resource of management. *Journal of Business Research*, **33**: 91-101.
- Mahoney, J.T. (2005). *Economic Foundations of Strategy*. Thousand Oaks, CA: Sage Publications.
- Mahoney, J. T. and Michael, S.C. (2005). A Subjectivist Theory of Entrepreneurship. In S. Alvarez, R. Agarwal, and O. Sorenson (Eds.), *Handbook of Entrepreneurship*, pp. 33-53. Boston, MA: Kluwer.
- Mahoney, Joseph T. and Pandian, J.R. (1992). The resource-based view within the conversation of strategic management. *Strategic Management Journal*, **13**: 363-80.
- Malmgren, H. B. (1961). Information, expectations and the theory of the firm. *Quarterly Journal of Economics*, **75**: 399-421.
- March, J.G., and Simon, H.A. (1958). *Organizations*. New York: John Wiley.
- McCain, B. E., O'Reilly, C., and Pfeffer, J. (1983). The effects of departmental demography on turnover: The case of a university. *Academy of Management Journal*, **26**(4): 626-41.
- McDougall, P. and Oviatt, B. (2000). International entrepreneurship: The intersection of two research paths. *Academy of Management Journal*, **43**: 902-908.
- McGrath, R.G. (1995). Advantage from adversity --- Learning from disappointment in internal corporate ventures. *Journal of Business Venturing*, **9**: 351-69.
- McGrath, R.G. (2001). Exploratory learning, innovative capacity, and managerial oversight. *Academy of Management Journal*, **44**: 118-31.
- Michael, S.C. (1996). Investments to create bargaining power. The case of franchising. *Strategic Management Journal*, **21**: 487-514.

- Miller, D. and Shamsie, J. (1996). The resource-based view of the firm in two environments: The Hollywood film studios from 1936 to 1965. *Academy of Management Journal*, **39**(3): 519-43.
- Mosakowski, E. (1993). A resource-based perspective on the dynamic strategy-performance relationship: An empirical examination of the focus and differentiation strategies in entrepreneurial firms. *Journal of Management*, **19** (4): 819-839.
- Mosakowski, E. (1998). Entrepreneurial resources, organizational choices, and competitive outcomes. *Organization Science*, **9**: 625-43.
- Mosakowski, E. (2002). Overcoming resource-disadvantages in entrepreneurial firms: When less is more. In Michael A. Hitt, R. Duane Ireland, S. Michael Camp and Donald L. Sexton (Eds.), *Strategic Entrepreneurship: Creating a New Mindset*, pp. 106-126. Oxford, UK: Basil Blackwell.
- Nelson, R.R. and Winter, S.G. (1982). *An Evolutionary Theory of Economic Change*. Cambridge, MA: Harvard University Press, The Belknap Press.
- North, D.C. (1990). *Institutions, Institutional Change and Economic Performance*. Cambridge, UK: Cambridge University Press.
- O'Driscoll, Gerald P. O. and Rizzo, M.J. (1985). *The Economics of Time and Ignorance*. Oxford, UK: Basil Blackwell.
- Patel, P. and Pavitt, K. (1997). The technological competencies of the world's largest firms: Complex and path-dependent, but not much variety. *Research Policy*, **26**: 141-156.
- Penrose, E.T. (1959). *The Theory of the Growth of the Firm*. New York, NY: John Wiley & Sons.
- Peteraf, M. (1993). The cornerstones of competitive advantage. *Strategic Management Journal*, **13**: 363-80.
- Phan, P. H. (2004). Entrepreneurship theory: Possibilities and future directions. *Journal of Business Venturing*, **19**: 617-620.
- Polanyi, M. (1962). *Personal Knowledge: Towards a Post-Critical Philosophy*. Chicago, IL: University of Chicago Press.
- Prahalad, C.K. and Bettis, R.A. (1986). The dominant logic: A new linkage between diversity and performance. *Strategic Management Journal*, **7**: 485-501.
- Prescott, E. C. and Visscher, M. (1980). Organizational capital. *Journal of Political Economy*, **88**: 446-461.
- Priem, R. L. (1990). Top management team group factors, consensus, and firm performance. *Strategic Management Journal*, **11**: 469-78.
- Rajagopalan, N. and Datta, D.K. (1996). CEO characteristics: Does industry matter? *Academy of Management Journal*, **39**(1): 197-215.



- Richardson, G.B. (2002). Mrs. Penrose and neoclassical theory. In C. Pitelis (Ed.), *The Growth of the Firm: The Legacy of Edith Penrose*, pp.37-44. New York: Oxford University Press.
- Rubin, P.H. (1973). The expansion of firms. *Journal of Political Economy*, 81: 936-949.
- Rumelt, R.P. (1984). Towards a strategic theory of the firm. In R. B. Lamb (Ed.), *Competitive Strategic Management*, pp. 556-70. Englewood Cliffs, NJ: Prentice Hall.
- Rumelt, R.P. (1987). Theory, strategy, and entrepreneurship. In David Teece (Ed.), *The Competitive Challenge*, pp. 137-58. Cambridge, MA: Ballinger.
- Saravathy, S. D. (2004). The questions we ask and the questions we care about: Reformulating some problems in entrepreneurship research. *Journal of Business Venturing*, 19: 707-717.
- Schumpeter, J.A. (1934). *The Theory of Economic Development*. Cambridge, MA: Harvard University Press.
- Schumpeter, J. A. 1991 [1947]. Comments on a plan for the study of entrepreneurship. In R. Swedberg (Ed.), *Joseph A. Schumpeter: The economics and sociology of capitalism*: 406-428. Princeton, NJ: Princeton University Press.
- Shackle, G.L.S. (1967). *The Years of High Theory*. Cambridge, MA: Harvard University Press.
- Shane, S. (2000). Prior knowledge and the discovery of entrepreneurial opportunities. *Organization Science*, 11: 448-69.
- Shane, S. and Venkatraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25 (1): 217-26.
- Shepherd, D.A. and DeTienne, D.R. (2005). Prior knowledge, potential financial rewards, and opportunity identification. *Entrepreneurship: Theory and Practice*, 29 (1): 91-112.
- Simon, H.A. (1947). *Administrative Behavior*. New York, NY: The Free Press.
- Smith, K.G., Smith, K.A., Olian, J.D., Sims, Jr., H.P., O'Bannon, D.P., and Scully, J.A. (1994). Top management team demography and process: The role of social integration and communication. *Administrative Science Quarterly*, 39: 412-38.
- Spender, J-C. (1996). Making knowledge the basis of a theory of the firm. *Strategic Management Journal* (Winter Special Issue): 45-62.
- Stevenson, H. and Gumpert, D. (1985). The heart of entrepreneurship. *Harvard Business Review*, 63: 85-94.
- Stevenson, H. and Jarillo, J. C. (1990). A paradigm of entrepreneurship: Entrepreneurial management. *Strategic Management Journal*, 11 (Summer): 17-27.

- Stuart, T. E. and Sorenson, O. (2005). Social networks and entrepreneurship. In S. A. Alvarez, R. Agarwal and O. Sorenson (Eds.) (2005). *Handbook of Entrepreneurship Research: Disciplinary Perspectives*, pp. 233-252. New York, NY: Springer.
- Tan, Danchi and Joseph T. Mahoney (2006). Why a multinational firm chooses expatriates: Integrating resource-based, agency, and transaction costs perspectives. *Journal of Management Studies*, 43 (3), forthcoming.
- Teece, D. J. (1982). Towards an economic theory of the multiproduct firm. *Journal of Economic Behavior and Organization*, 3: 39-63.
- Thornhill, S. and Amit, R. (2001). A dynamic perspective of internal fit in corporate venturing. *Journal of Business Venturing*, 16: 25-50.
- Tushman, M. and O'Reilly, C. A. (1997). *Winning through Innovation: A Practical Guide to Leading Organizational Change and Renewal*. Boston, MA: Harvard Business School Press.
- Vaughn, K. (1994). *Austrian Economics in America: The Migration of a Tradition*. Cambridge, Cambridge University Press.
- Wanous, J. P. and Youtz, M.A. (1986). Solution diversity and the quality of group decisions. *Academy of Management Journal*, 29(1): 149-59.
- Wiersema, M. F. and Bantel, K.A. (1992). Top management team demography and corporate strategic change. *Academy of Management Journal*, 35(1): 91-121.
- Wiklund, J. and Shepherd, D. (2003). Knowledge-based resources, entrepreneurial orientation, and the performance of small and medium-sized businesses. *Strategic Management Journal*, 24: 1307-1314.
- Witt, U. (2000). Changing cognitive frame-changing organizational forms: An entrepreneurial theory of organizational development. *Industrial and Corporate Change*, 9 (4): 733-755.
- Zahra, S. A. (2005). Entrepreneurship and disciplinary research: Return to the fountainhead. In S. Alvarez, R. Agarwal, and O. Sorenson (Eds.), *Handbook of Entrepreneurship*, pp. 253-268. Boston, MA: Kluwer.
- Zahra, S. A. and Flatochev, I. (2004). Governing the entrepreneurial firm: A knowledge based view. *Journal of Management Studies*, 41 (5): 885-898.
- Zahra, S.A., Ireland, R.D., Gutierrez, I. and Hitt, M.A. (2000). Privatization and entrepreneurial transformation: Emerging issues and a future research agenda. *Academy of Management Review*, 25: 509-24.
- Zenger, T.R. and Lawrence, B.S. (1989). Organizational demography: The differential effects of age and tenure distributions of technical communication. *Academy of Management Journal*, 32(2): 353-76.