THE NEED FOR AN ENTREPRENEURIAL THEORY OF THE FIRM

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ABSTRACT

Entrepreneurship and the theory of the firm are two of the fastest-growing fields in economics and management. The two fields developed largely in isolation and are only now beginning to be brought together. We argue that each field has much to learn from the other and that combining them yields a better theory of the firm and a fuller understanding of the nature and effects of entrepreneurship in the economy. Specifically, the Knightian concept of entrepreneurship as judgment, combined with the Austrian approach to capital heterogeneity, leads to a number of unconventional insights about the nature, boundaries, and internal organization of the firm. The judgment perspective also shifts attention from the discovery or recognition of entrepreneurial opportunities to the exploitation of those opportunities through the acquisition, combination, and recombination of resources, adding to our understanding of the causes and consequences of entrepreneurship.

KEYWORDS: Entrepreneurship, theory of the firm, organizational economics, opportunities, judgment, capital heterogeneity, asset ownership.

INTRODUCTION

The economic theory of the firm—also known as the economics of organization or organizational economics—is one of the fastest-growing areas of applied economics. In the management literature the resource-based and knowledge-based views of the firm have come to dominate the analysis of competitive advantage. Transaction cost economics, agency theory, mechanism design, the nexus-of-contracts approach, and the property-rights theory of the firm are now part of the standard discourse among students and practitioners studying firms and markets. In short, the economic and managerial analysis of the firm is a vibrant area of research and application characterized by a diversity of competing theories and approach and a robust empirical literature.

Of course, the "firm" has long been central to economics, in the theory of production and exchange and the analysis of industry structure. Introductory textbooks all contain a section on the "theory of the firm" containing the familiar equations and diagrams describing the firm's production possibilities set, its cost and revenue curves, and equilibrium pricing and production decisions. However, the theory of the firm as a legal entity—the literature on the existence, boundaries, and internal organization of the enterprise (Coase, 1937)—is, in the history of economics, a relatively recent development. Indeed, the economics of business organization emerged as a distinct field only in the 1970s with the pathbreaking contributions of Alchian and Demsetz (1972), Hurwicz (1972), Marschak and Radner (1972), Williamson (1975, 1979), Klein, Crawford, and Alchian (1978), Jensen and Meckling (1976) Holmström (1979), and others. However, once economists recognized a need for a theory of economic organization, the theory of the firm in this Coasian sense became established as an important distinct research field and as one of the theoretical and empirical success stories of economics.

More recently, another applied topic—the analysis of entrepreneurship—has seized the spotlight in economics. The last decade witnessed an explosion of university courses, faculty positions, research and educational centers, journals, publications, and grant funding dedicated to the study of entrepreneurship. Entrepreneurship is increasingly seen as a key to technological progress, and (therefore) an important part of the growth process (Aghion and Howitt, 1992; Baumol, 1993; Wennekers and Thurik, 1999; Blau, 1987; Blanchflower, 2000).

Recognition of the entrepreneur's importance predates even the *Wealth of Nations* (Cantillon, 1755) and entrepreneurship has long been stressed by "heterodox" economists, notably Austrian (e.g., Mises, 1949; Hayek, 1968; Kirzner, 1973) and Schumpeterian (Futia, 1980; Nelson and Winter, 1982). However, despite the appearance of two important papers nearly three decades ago (Lucas, 1978; Kihlstrom and Laffont, 1979), mainstream economists have only recently become interested in the entrepreneur. While it is widely recognized that formal modeling cannot do full justice to entrepreneurship, at least some aspects of entrepreneurship can be captured in the standard equilibrium framework. One issue that has received a lot of attention is the analysis of occupational choice under uncertainty (e.g., Holmes and Schmitz, 1990) and its implications for a host of policy issues (e.g., the incentives of minority groups to become entrepreneurs, access to credit as an entry barrier, the relative contribution to innovation of small and large firms, etc.). Some work has also considered issues of direct relevance to management research, such as entrepreneurial learning (e.g., Parker, 1996). Overall, entrepreneurship is becoming more mainstream in economics (Parker [2005] provides an excellent overview).

The situation in management is similar. Entrepreneurship has long been an established field in management studies, but research in this area has been substantially transformed in the last decade, particularly in strategic management.[1] While early research was mainly taken up with the management of small and family business, more recent research has drawn on insights from the psychology, economics, and sociology to arrive at clearer and more general conceptualizations of the phenomenon, well-defined research questions, and accepted procedures for analysis (see Shane [2002] for a compilation). Much early work on entrepreneurship (e.g., Schumpeter, 1911; Knight, 1921) was purely functional in the sense that entrepreneurship was invoked as a necessary step to explaining other phenomena such as economic development (Schumpeter) or the existence of the firm and profit (Knight). These approaches did not pay much attention to the (multi-level) antecedents of entrepreneurial activity (Bjørnskov and Foss, 2008). However, the management literature has concentrated on antecedents such as individual cognitive structures, heuristics and biases, network position, and much else. Because of this emphasis, the literature has been drawn to Kirzner's concept of entrepreneurship as "opportunity discovery" (Shane and Venkataraman, 2000).

The main purpose of this book is to show how the research literatures on the theory of the firm and r entrepreneurship can be brought together to form a better theory of the firm and a fuller understanding of the nature and economic effects of entrepreneurship, Baumol's (1986: 68) oft-cited quip that "[t]he theoretical firm is entrepreneurless—the Prince of Denmark has been expunged from the discussion of *Hamlet*" (Baumol, 1968: 68), still rings true, even if the meaning of the "theoretical firm" has changed in the meantime. However, questions about the relationship between entrepreneurship and the firm arise very naturally. Do entrepreneurs need business firms to carry out their function? Are business firms run by entrepreneurs, or rather by hired managers? How does firm organization (e.g., the allocation of use and income rights)

[1] Evidence for the spread of entrepreneurial ideas to strategic management research includes the 2008 launch of the *Strategic Entrepreneurship Journal*, a sister journal to the highly prestigious *Strategic Management Journal.*

impact the prevalence and quality of entrepreneurial ideas? Can entrepreneurship be a property of a managerial team—or is it strictly an individual phenomenon?

These questions concern the *locus* of entrepreneurial activity. Entrepreneurial action does not take place in a vacuum. Entrepreneurs, like other economic actors, must employ scarce means to achieve their objectives, must economize on these means, must evaluate trade-offs at the margin, and so on. Moreover, as both entrepreneurship and the theory of the firm deal with business ventures, new firm formation, new as well as sustained value creation, etc., it would be natural to expect very substantial cross-fertilization to take place. As we will argue, many important research questions with considerable practical relevance appear at the intersection of these two fields.

Our objective is to explain, in this context, why entrepreneurs choose certain ways and not others for organizing their activities. These are questions that are becoming increasingly pertinent, and, indeed, some of them are, to a limited extent, considered in the recent economics and management literature on entrepreneurship. Consider, for example, some of the founding contributions to the recent economics literature on occupational choice. Lucas' (1978) general equilibrium model examines the matching of firms and entrepreneurial talent, essentially collapsing entrepreneur, manager and owner, given that entrepreneurial talent is unequally distributed. He reaches the conclusion that there is a matching between the size of firms and entrepreneurial talent, the most able entrepreneurs running the largest firms. Thus, there is clearly an association between firm organization and entrepreneurship here. One may question whether making entrepreneurship a factor of production and conceptualizing it solely as a coordinating function is really in the spirit of the classics of entrepreneurship (cf. Bianchi and Henreksson, 2005: 358), but, more to the point, it is unclear in Lucas' treatment why entrepreneurs would need firms at all. Why can't they perform their coordinating function simply by using contracts? Why is the governance structure of the firm required? A similar critique may be directed at another classic treatment, namely that of Kihlstrom and Laffont (1979): It is not clear why the firm is needed to share risks in the way envisaged by the authors. Per implication much of the subsequent research that is based on these two papers (and on Holmes and Schmitz, 1990) fails to address the issue of the locus of entrepreneurship in the proper comparative-institutional (Williamson, 1985) terms.

Relatedly, most of the economics of entrepreneurship deals with entrepreneurship as start-ups, and implicitly claims that entrepreneurship evaporates beyond the start-up phase. However, established firms may act in a highly entrepreneurial way, discovering and seizing new opportunities, for example, through mergers and acquisitions. Analytically, this involves the boundaries of the firm, one of the key issues in the Coasian theory of the firm. Or, established firms may wish to stimulate a kind of behavior inside their corporate hierarchies that can properly be called "entrepreneurial." They may do by means of incentive pay (Jensen and Meckling, 1992) or other devices, such as "access" (Rajan and Zingales, 1998). This involves another key issue in the Coasian theory of the firm, namely that of internal organization.

Management scholars in organization, strategic management, international business, etc. have for a long time been drawing eclectically on the theory of the firm. For example, many issues of strategic management (e.g., vertical integration or diversification decisions) are now routinely framed as problems of efficient governance. And among the most cited scholars in the top business administration journals is Oliver Williamson, perhaps the best known flag-bearer of the modern theory of the firm (Williamson, 1975, 1985, 1996). However, if we turn our attention to recent management literature on entrepreneurship, we see little on the *locus* of entrepreneurship, though two of the architects of the recent reorientation of entrepreneurship studies clearly identify this as a key research issue (Shane and Venkataraman, 2000).

In short, while there is no obvious reason for a strong separation between entrepreneurship and the theory of the firm, these two literatures have not yet exploited the potential gains from trade. There is a certain historical irony in this separation because one of the key early contributions to the economic theory of entrepreneurship, Frank Knight's *Risk, Uncertainty and Profit* (1921), is also the first contribution to raise some of those fundamental questions about the existence and scope of the firm that contemporary economists view as the foundational questions of the theory of the firm. However, both the theory of the firm and the theory of entrepreneurship historically developed in such a way that the original Knightian program of providing a unified treatment to the firm and the entrepreneur has not been furthered. Our basic aim is to revitalize this Knightian program. In the remaining part of this paper, we further detail the need for such an integrated undertaking, describe some of the historical and disciplinary reasons why it hasn't yet happened, and provide a summary of our positive argument.

WHY THE FIELDS NEED TO BE BROUGHT INTO CONTACT

The theory of entrepreneurship and the economic theory of the firm have much to learn from each other. A good theory of entrepreneurship should explain the conditions under which entrepreneurship takes place, the manner in which entrepreneurship is manifested, and the interaction between entrepreneurial activity and the firm, industry, and environmental characteristics. In the contemporary entrepreneurship literature, entrepreneurship is typically seen as a theory of firm creation; once created, however, the firm ceases to be "entrepreneurial" and is explained by the conventional, neoclassical theory of the firm. But the process of firm formation, growth, and ongoing operation is a continuous one, and the factors that are relevant at the early stages do not disappear overnight. For this reason, a holistic view of the entrepreneurial process requires an understanding of the managerial and organizational aspects of the entrepreneurial function. Similarly, the economic theory of the firm can be improved substantially by taking seriously the entrepreneurial aspects of firm organization and strategy.

Advancing the Theory of Entrepreneurship

Entrepreneurship has been defined as innovation, alertness, uncertainty-bearing, adaptation, creativity, and leadership. Chapter 2 surveys these various theories and definitions and argues that one particular approach, the Knightian conception of entrepreneurship as judgmental decision-making, provides an explanation of the entrepreneurial function that can be smoothly integrated with the economic literature on the firm. While the dominant approach in entrepreneurship studies focuses on the identification or discovery of profit opportunities, less attention is paid to the means by which such opportunities are exploited. The former focuses on the cognitive and behavioral characteristics of individuals who establish new enterprises; the latter focuses on the resources and capabilities necessary to transform opportunities into realized profits. Analyzing the resources used by entrepreneurs, both for the establishment of new ventures and the operation of existing ventures, sheds important light on the manner in which opportunities are transformed into value-creating activities.

More generally, entrepreneurship scholars in management are beginning to realize that entrepreneurship is closely linked to central issues of firm organization and strategy, and not just to the particular management problems of small businesses.[2] Thus, in an influential and programmatic statement, Shane and Venkataraman (2000: 218) argued that management scholars in strategy and organization are fundamentally concerned with three sets of research questions, namely why, when and how 1) entrepreneurial opportunities arise; 2) certain individuals and firms and not others discover and exploit opportunities, and 3) different modes of action are used to exploit those opportunities. These issues include the issue of "how the exploitation of entrepreneurial opportunities are organized in the economy" (p. 224).

[2] It is perhaps telling that one of the key entrepreneurship journals is (still) called *Small Business Economics.*

A key point in the following is that all three questions relate closely to fundamental issues in the economic theory of the firm.[3] Since Coase (1937) these have conventionally been taken to be the issue of why firms *exist* (when non-firm, contractual means of allocating resources are available), what determines their *boundaries* (i.e., the allocation of productive activities across firms), and the determinants of their *internal organization* (i.e., organizational structure, reward systems, etc.). Thus, entrepreneurial opportunities may be directly tied to why firms exist, because firms may be formed to exploit opportunities, and the allocation of ownership and property rights in firms may influence opportunity discovery within and across firms.

At the time they wrote their paper, Shane and Venkataraman could cite little work moving the field forward along these lines. Nearly a decade later the situation is little different, though the need for integration is increasingly realized. This is unfortunate because questions about the locus of entrepreneurship remain central to the analysis of entrepreneurship and its causes and effects.

Advancing the Theory of the Firm

The theory of the firm—here taken to mean agency theory (Holmström, 1979), property rights theory á la Grossman-Hart-Moore (Grossman and Hart, 1986; Hart and Moore, 1990), and transaction cost economics (Williamson, 1975, 1985, 1996)—has often been criticized for its static nature (Boudreaux, 1989; Langlois, 1992; Furubotn, 2001). While there are important, subtle differences between these theories (Foss, 1993; Gibbons, 2005), for instance concerning the role of unanticipated contingencies and process features (e.g., the "fundamental transformation" in Williamson, 1985), these approaches share a largely static and "closed" ontology, in that they focus on solutions to given optimization problems, avoiding questions about the origin of the problem at hand, or indeed of the firm itself. They build on the assump-

[3] Shane and Venkataraman (2000) only hinted at this; however, the link to the traditional issues in the theory of the firm has been more fully recognized since their paper emerged (e.g., Alvarez and Barney, 2004).

tion of a given means-ends framework, a framework criticized by writers on entrepreneurship (Kirzner, 1973). A strict insistence on the features often associated with entrepreneurship, such as process, genuine uncertainty, ignorance, complexity, etc., is difficult to reconcile with established theories of the firm.

However, one can offer more pragmatic critiques of the static approach of the contemporary theory of the firm that do not imply a fundamental rejection of the theory. Agency theory, for example, has generated important insights on the effects of incentives on effort and the relationship between incentive pay and risk. In explaining how a principal gets an agent to do something, however, the theory overlooks the more fundamental question of *what* the principal should want the agent to do, or indeed, how the principal got to be a principal in the first place. But it may be possible to tell an economics-based story about how and why the principal ended up as principal rather than agent (Foss, Foss, and Klein, 2007). Likewise, one could accept the basic Coasian explanation for firm boundaries (based on minimization of transaction cost) while adding behavioral, experimental, or cognitive elements to broaden the scope and applicability of the theory (Foss and Klein, 2008).

The Broader Management Context

Our approach also has implications for firm strategy, particularly in context of the resource-based approach to the firm. In our perspective entrepreneurship is not simply another resource, like physical and financial capital, reputation, human capital, technical know-how, and the like, but a higher-level, coordinating factor—the source of what we shall later call "primary" or "original" judgment. In this sense, the basic explanation for systematic differences in firm-level performance is that entrepreneurs differ in their abilities to exercise original judgment and to delegate "derived judgment" to subordinates. Here our approach complements the conventional resource-based literature, which focuses on the returns to individual factors but neglects the returns to the firm, i.e., the idiosyncratic combinations of factors selected by particular entrepreneurs (cite). The ability to organize resources is itself a capability, an ability to create and recognize strategic opportunities in the language of Denrell, Fang, and Winter (2003).

While firms may “empower” employees partly because employees increasingly demand a certain level of autonomy, and partly because leaving decision rights with better informed employees may make much economic sense, empowerment, delegation, etc. are arguably also undertaken in order to stimulate initiative in a way that is best called “entrepreneurial.” Such localized entrepreneurial efforts may contribute to the many process improvements that together add up to the “learning curve” phenomenon (Zangwill and Kantor, 1998), may lead to interaction with outside parties who control potentially important knowledge (Foss, Laursen and Pedersen., 2007), can assist in product improvements, and may in some cases lead to important breakthrough innovations. Thus, the exercise of entrepreneurship inside corporate hierarchies can have important implications for competitive performance.

WHY THERE IS NOT (YET) AN ENTREPRENEURIAL THEORY OF THE FIRM

Bringing entrepreneurship and the theory of the firm together requires us to convince scholars in both fields that there are significant gains from trade. For historical reasons (among other reasons) this recognition has been slow to emerge. Perhaps the most obvious reason is that economics, and with it the economic theory of the firm, developed throughout the twentieth century in a particular way, a way that effectively excluded a concern with the entrepreneur. However, entrepreneurship research shares some of the blame, as it largely ignored problems of economic organization, as explained below and in chapter 2. .

The Theory of the Firm Literature

As mentioned, within the last few decades, the theory of the firm has become one of the fastest growing areas in applied microeconomics, and has had significant ramifications for management research. However, it has not been at all influential in entrepreneurship research in management (although it has not been entirely neglected either, cf. Jones and Butler, 1992; Mosakowski, 1998; Alvarez and Barney, 2005). The lack of contact between two fields that seem to overlap so naturally results partly from the development of economic thought.

Although the economics of entrepreneurship dates back to Cantillon (1755), and important later contributions have been made by Schumpeter (1911), Knight (1921), Kirzner (1973), and, more recently, Lucas (1978), Kihlstrom and Laffont (1979), Holmes and Schmitz (1990), Baumol (1993), Lazear (2004), and others, entrepreneurship has been notoriously difficult to integrate with the mainstream of economics. A case can be made that the mainstream of economics works with very watered-down conceptualizations of the phenomenon and is therefore still fundamentally "entrepreneurless" (Bianchi and Henreksson, 2005). Whatever that may be, entrepreneurship captures interest among economists primarily because it is seen as an essential component of the process of economic growth and change (Aghion and Howitt, 1992; Baumol, 1993), in itself one of the hottest research areas in economics over the last two decades (Romer, 1986; Lucas, 1988).

The economic theory of the firm emerged and took shape as the entrepreneur was being banished from microeconomic analysis, first in the 1930s when the firm was subsumed into neoclassical price theory (O'Brien, 1984), and then in the 1980s as the theory of the firm was reformulated in the language of game theory and the economics of information (e.g., Holmström, 1979; Grossman and Hart, 1986). The gradual "hardening" of the neoclassical approach in economics, including the mainstream approach to the theory of the firm, left, little room for the entrepreneurship; Baumol (1993: 17) calls it "the specter which haunts economic models." Indeed, the terms "entrepreneur" and "entrepreneurship" do not even appear in the indexes of leading texts on the economics of organization and management such as Brickley, Smith, and Zimmerman (2004) or Besanko, Dranove, Shanley, and Schaefer (2004).[4]

In modern contributions to the theory of the firm (Williamson, 1975, 1985, 1996; Milgrom and Roberts, 1992; Hart, 1995) reference to entrepreneurship is passing at best. As we suggested earlier, this does not mean that crucial insights of the economic theory of the firm are somehow irrelevant or cannot be integrated with ideas on entrepreneurship; in fact, we argue that the exact opposite is the case. However, the specific *form* in which the economic theory of firm is nowadays increasingly cast may be difficult to align with entrepreneurship. For example, a dominant paradigm in the economic theory of contracts is that of complete contracting which effectively rules out the possibility of unanticipated contingencies and fundamental uncertainty in contractual relations. While this does not necessarily rule out an economic treatment of aspects of entrepreneurship (e.g., Barzel, 1987), it flies in the face of the fundamental idea that entrepreneurship is exercising judgment about essentially *new* resource uses.

The neglect of entrepreneurship in the theory of the firm has much to do with fundamental heuristics for formal modeling. Theorists of the firm, like most other model-builders in mainstream economics, consistently adopt an "on-off" approach in which, for example, agents are either fully informed about some variable or not informed at all, property rights are either perfectly enforced or not enforced at all, actions are either fully verifiable or not verifiable at all, etc. Thus, as a matter of modeling convention extreme values are chosen for many choice variables, because some (usually unspecified) information and/or transaction costs are supposed to prohibit agents from choosing certain actions. Of course, theorists do this in order to be able to isolate the working of a certain mechanism; for example, how exactly ownership

[4] Two British surveys of economics principles textbooks (Kent, 1989; Kent and Rushing, 1999) confirm a similar absence of the concept. A review of graduate textbooks used in Sweden (largely the same books used in the US and elsewhere (Johansson, 2004) confirms the absence of the concept of the entrepreneur.

affects investment incentives when it is impossible to contract over investments. The insight derived under extreme conditions may yield insights in investment incentives under less extreme conditions.

It is, however, possible to criticize the specific approach to developing theory followed in the theory of the firm, and to argue that it tends to exclude entrepreneurship. One critique is that the particular isolations performed in theorizing mean that a number of margins that would be relevant to real-world decision-makers are suppressed, and agents are not allowed to exercise entrepreneurship to somehow circumvent the interaction problems caused by the suppression of margins. Writing from such a perspective, Furubotn (2003: 75) argues that if we are to take bounded rationality, a key assumption in certain parts of the theory of the firm (Williamson, 1996) seriously, then this has profound implications for theorizing:

> [G]iven the constraints affecting the availability of information and human cognitive capacity, each decision-maker has only *partial* understanding of the options extant in society and it is no longer possible to assume that each person knows everything about current technological alternatives, the nature and availability of all productive resources, the existence of and true properties of every commodity in the system, etc.

In other words, we cannot portray the relevant decision problems as combining inputs known to everyone in the production of outputs known to everyone in a transaction cost minimizing manner. As decision-makers are only aware of, or least knowledgeable about, a small subset of the many possible input combinations and cannot perfectly foresee future preferences, "… the individual guiding the … firm policies has to make hard decisions and act as an *entrepreneur* rather than as a fully informed manager routinely implementing clear-cut marginal rules" (Furubotn, 2003: 75). Indeed, Furubotn argues that this logically implies that transaction costs cannot be the sole cause of governance and contractual choice and that overall profitability must enter as a determinant.

Disconnecting Entrepreneurship and the Firm

A second reason for the lack of contact between the theory of the firm and the entrepreneurship literatures is that many entrepreneurship scholars have implicitly or explicitly dissociated entrepreneurship and the firm. The entrepreneurial act is often conceived as an independent, free-floating cognitive act, divorced from subsequent processes of exploiting the entrepreneurial insight by assembling resources and producing goods and services. .

This comes through in the literature on the personal, psychological characteristics of individuals who become entrepreneurs (i.e., who start new businesses). It is common, particularly within the management literature, to associate entrepreneurship with boldness, daring, imagination, or creativity (Begley and Boyd, 1987; Chandler and Jansen, 1992; Aldrich and Wiedenmayer, 1993; Hood and Young, 1993; Lumpkin and Dess, 1996). Entrepreneurship, in this conception, is not a necessary component of all human decision-making, as stressed by, for example, Knight (1921) and Mises (1949), but a specialized activity that some individuals are particularly well equipped to perform. If these characteristics are the essence of entrepreneurship, then entrepreneurship has no obvious link to the theory of the firm; the relevant personal characteristics can presumably be acquired by contract on the market by purchasing consulting services, project management, and the like. In other words, the locus of entrepreneurship fundamentally doesn't matter.

Schumpeter's legacy has arguably also played an unfortunate role in separating the theory of entrepreneurship from the theory of economic organization. Schumpeter is without any doubt the best known economics contributor to the entrepreneurship field. He is certainly *the* entrepreneurship scholar that non-specialist economists or management scholars are likely to associate with the field (e.g., Nordhaus, 2004). However, Schumpeter not only explicitly dissociated the firm and the entrepreneur; he also casted the latter in heroic terms as an almost genial *Gründer,* so that entrepreneurship tended to become an exceptional occurrence of massive importance; the entrepreneur is a person who by introducing "new combinations"— new products, production methods, markets, sources of supply, or industrial combinations — shakes the economy out of its previous equilibrium, starting a process Schumpeter termed "creative destruction." However, as we shall argue, entrepreneurship is usually something much more mundane, and, moreover, something that is closely tied to firm organization. In contrast, Schumpeter's entrepreneur need not own capital, or even work within the confines of a business firm at all. This suggests a rather tenuous relationship between the entrepreneur and the firm he owns, works for, or contracts with. Moreover, because Schumpeterian entrepreneurship is *sui generis,* independent of its environment, the nature and structure of the firm does not affect the level of entrepreneurship.

Entrepreneurship can also be conceived as "alertness" to profit opportunities, a notion usually associated with the work of Israel Kirzner (1973, 1979, 1992) which is probably only overshadowed by Schumpeter's in terms of its impact on social science research. In particular, Kirzner's work has become increasingly prominent in management work on entrepreneurship, directly inspiring the tendency in the field to move away from a conception of entrepreneurship as centered on small-business management to a conception of entrepreneurship as a general phenomenon, centering on opportunity discovery (Shane and Venkataraman, 2000; Shane, 2003). As we shall discuss in greater detail later, there is something paradoxical about the fascination of management scholars with Kirzner's work, for Kirzner's entrepreneurs do not own capital, they need only be alert to profit opportunities. Because they own no assets, they bear no uncertainty. For this reason, the link between Kirznerian entrepreneurship and the theory of the firm is weak. Owners, managers, employees, and independent contractors can all be alert to new profit opportunities; Kirzner's entrepreneur does not need a firm to exercise his function in the economy. Kirzner is not interested in the antecedents of entrepreneurship other than profit opportunities; in fact, Kirzner is not interested in entrepreneurship for its own sake, but only as an equilibrating force. His is a purely functional concept. In contrast, the entrepreneurship literature in management tends to paint a much less anonymous portrait of the entrepreneurship and to explicitly associate entrepreneurship with firms.

Other notions of entrepreneurship (e.g., entrepreneurship as charismatic leadership, Witt, 1998) can similarly be shown to have been actively disconnected from the issue of the locus of entrepreneurship by their proponents. We provide a fuller discussion of these issues later. Suffice it to be said here that the sole exception in the entrepreneurship literature is the notion of entrepreneurship as judgment, a notion put forward in the first economics contribution to entrepreneurship, Richard Cantillon's *Essai sur la nature de commerce en géneral* (1755). While the view of entrepreneurship as judgment appears in many writers, it is most often associated with Knight (1921). For Knight, firm organization, profit, and the entrepreneur are closely related. In his view, these arise as an embodiment, a result, and a cause, respectively, of commercial experimentation (Demsetz, 1988). As signaled already, much of what we are up to in this work may be seen as a reinterpretation, restatement, refinement, and updating of Knight's vision.

Identifying and Exploiting Opportunities

A third and perhaps more subtle reason for the disconnect between the two fields lies in a conceptualization of entrepreneurship—dominant in the economics as well as in the management literature—in which the identification or imagination of profit opportunities is separated from the process of exploiting or realizing such opportunities. In fact, many contributors to the entrepreneurship literature put all the emphasis on the discovery of opportunities and suppress the exploitation aspects, neglecting the assembling of resources, learning about resource attributes, putting conjectures about resources to the test, etc. The process of resource deployment to seize opportunities is implicitly treated as the domain of established theories in strategy, organizational behavior, the economics of organization, etc. rather than something that belongs to the entrepreneurship field. For example, Kirzner (1973, 1979, 1985) thinks of entrepreneurial discovery as simultaneously discovering and seizing an opportunity. This may well fit Kirzner's paradigm example—the discovery of a dollar bill lying on the sidewalk—and it may be an innocuous assumption in the context of the purpose Kirzner's theory of entrepreneurship: to explain the equilibrating market process. However, in general it misconstrues the nature of entrepreneurship, and disconnects entrepreneurship from the firm.

Likewise, management theories of economic organization and strategy, while paying substantial attention to the cognitive aspects of the discovery process (Lumpkin and Dess, 1996; Shane, 2003), tend to treat opportunities as given once the process of assembling resources begins. In other words, established approaches both in entrepreneurship theory and in management treat opportunity discovery as a discrete event separating two distinct stages of the value creation process, giving rise to a separation into two sets of literatures, one on the processes by which plans are made, opportunities are perceived, etc., and another in which plans, once formulated, are executed through the deployment of resources.

We argue that the separation of the value creation process into distinct discovery and exploitation phases is artificial and misleading. In our perspective, opportunities for entrepreneurial gain do not exist, objectively, waiting to be discovered and exploited; rather, opportunities come into existence only as they are manifested in action. Of course, objective *indications* of an opportunity may exist, such as consumer research that reveals that consumers may demand certain not yet existing functionalities in certain products. However, such indicators do not automatically translate into opportunities, for two reasons. First, the objective indicators require *interpretation;* survey results may be objective data, but the knowledge embodied therein contains an essential subjective element (Foss, Klein, Kor, and Mahoney, 2007). Second, unmet market demands, once perceived, do not become opportunities without substantial commitment of resources on the part of the entrepreneur, including his own work. In other words, opportunities are largely created through forward-looking entrepreneurial action.

This is essentially the concept of entrepreneurship as judgmental decision making under uncertainty, a concept we trace through Cantillon (1755), Say (1803), Knight (1921), and Mises (1949). In this approach entrepreneurs are modeled as decision-makers who invest resources based on their expectations of future market conditions, investments that may or may not yield positive return. Here the focus is not on opportunities *per se*, but on investment and uncertainty. For these writers, opportunities do not exist, waiting to be discovered (and hence, by definition, exploited). Rather, entrepreneurs invest resources based on their expectations of future consumer demands and market conditions, investments that may or may not yield positive return. Here the focus is not on opportunities, but on investment and uncertainty. Expectations about the future are inherently subjective and, under conditions of uncertainty rather than risk, constitute judgments that are not themselves modelable. Put differently, subjectivism implies that opportunities are neither "discovered" nor "created" (Alvarez and Barney, 2007), but *perceived*. They may or may not exist, in an objective sense. Hence a research program based on formalizing and studying empirically the processes leading individuals to discover opportunities, whether based on economics or psychology, are misguided. Opportunities for entrepreneurial gain are thus inherently subjective, in the sense that they do not exist until profits are realized. Thus, the notion of "entrepreneurial opportunity" is in a sense an *ex post* concept.

A BRIEF OVERVIEW OF OUR BASIC NARRATIVE

The Centrality of Entrepreneurial Judgment

To examine the relationship between entrepreneurship and the theory of the firm, it may be useful to survey and sift through the various approaches to entrepreneurship, asking to what extent the entrepreneur needs a firm (a set of alienable assets he controls) to carry out his function. Based on such an exercise, we conclude that only the concept of entrepreneurship as judgment has a direct and natural link to the theory of the firm. Because markets for judgment are closed, the exercise of judgment requires starting a firm; moreover, judgment implies asset ownership. In Knight's formulation, entrepreneurship represents judgment that cannot be assessed in terms of its marginal product and which cannot, accordingly, be paid a wage (Knight 1921: 311). In other words, there is no market for the judgment that entrepreneurs rely on, and therefore exercising judgment requires the person with judgment to own productive assets. Of course, judgmental decision makers can hire consultants, forecasters, technical experts, and so on. However, in doing so they are exercising their own entrepreneurial judgment. Judgment thus implies asset ownership, for judgmental decision-making is ultimately decision-making about the employment of resources.[5]

New Combinations of Heterogeneous Capital Assets

Next, we review briefly the main themes in the modern theory of the firm (existence, boundaries, and internal organization) and show how the notion of entrepreneurship as judgment illuminates these issues in novel ways. To develop a judgment-based approach to economic organization, we also draw on ideas from Austrian economics (Mises 1949; Rothbard 1962; Kirzner 1973)—the body of economics that is perhaps most intimately connected to ideas on entrepreneurship—and on property rights economics (Hart 1995; Barzel 1997), an important part of modern organizational economics. In our approach, resource uses are not *data*, but are *created* as entrepreneurs envision new ways of using assets to produce goods. The entrepreneur's decision problem is aggravated by the fact that capital assets are *heterogeneous*, and it is not immediately obvious how they should be combined.

[5] Note that we define the firm here in terms of resource ownership, not the employment relation. A firm, in this sense, can consist of an individual resource owner—a craftsman who owns his own tools is a firm, while an identical craftsman who works with someone else's tools is an employee.

The entrepreneur's role, then, is to arrange or organize the capital goods he owns. In the words of Ludwig Lachmann (1956: 16), a key contributor to the Austrian theory of capital: "We are living in a world of unexpected change; hence capital combinations . . . will be ever changing, will be dissolved and reformed. In this activity, we find the real function of the entrepreneur." Austrian capital theory provides a unique foundation for an entrepreneurial theory of economic organization. Neoclassical production theory, with its notion of capital as a permanent, homogeneous fund of value, rather than a discrete stock of heterogeneous capital goods, is of little help here.[6] Transaction cost, resource-based, and property-rights approaches to the firm do incorporate notions of heterogeneous assets, but they tend to invoke the needed specificities in an ad hoc fashion to rationalize particular trading problems—for transaction cost economics, asset specificity; for capabilities theories, tacit knowledge; and so on. The Austrian approach, starting with Menger's (1871) concepts of higher- and lower-order goods and extending through Böhm-Bawerk's (1889) notion of roundaboutness, Lachmann's (1956) theory of multiple specificities, and Kirzner's (1966) formulation of capital structure in terms of subjective entrepreneurial plans, offers a solid foundation for a judgment-based theory of entrepreneurial action.

One way to operationalize the Austrian notion of heterogeneity is to incorporate Barzel's (1997) idea that capital goods are distinguished by their *attributes*. Attributes are characteristics, functions, or possible uses of assets, as perceived by an entrepreneur. Assets are heterogeneous to the extent that they have different, and different levels of, valued attributes. Attributes may also vary over time, even for a particular asset. Given Knightian uncertainty, entrepreneurs are unlikely to know all relevant attributes of all assets when production decisions are made. Nor can the future attributes of an asset, as it is used in production, be forecast with

[6] Ironically, the notion of capital as a homogeneous fund owes its popularity to Knight (1936).

certainty. Attributes are manifested in production decisions and realized only ex post, after profits and losses materialize.[7]

Ownership, the Boundaries of the Firm, and Internal Organization

Entrepreneurs who seek to create or discover new attributes of capital assets will want ownership titles to the relevant assets, both for speculative reasons and for reasons of economizing on transaction costs. These arguments provide room for entrepreneurship that goes beyond deploying a superior combination of capital assets with "given" attributes, acquiring the relevant assets, and deploying these to producing for a market: Entrepreneurship may also be a matter of experimenting with capital assets in an attempt to discover new valued attributes.

Such experimental activity may take place in the context of trying out new combinations through the acquisition of or merger with another firms, or in the form of trying out new combinations of assets already under the control of the entrepreneur. The entrepreneur's success in experimenting with assets in this manner depends not only on his ability to anticipate future prices and market conditions, but also on internal and external transaction costs, the entrepreneur's control over the relevant assets, how much of the expected return from experimental activity he can hope to appropriate, and so on.

IMPLICATIONS AND TAKEAWAYS

A number of unconventional insights of relevance for the theory of the firm and the theory of entrepreneurship emerge from the approach sketched above.

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[7] As Alchian and Demsetz (1972, p. 793) note, "[e]fficient production with heterogeneous resources is a result not of having better resources but in knowing more accurately the relative productive performances of those resources." Contra the production function view in basic neoclassical economics, such knowledge is not given, but has to be created or discovered. Even in the literature on opportunity creation and exploitation, in which entrepreneurial objectives are seen as emerging endogenously from project champions' creative imaginations, entrepreneurial means (resources) are typically taken as given (see, for example, Sarasvathy, 2001).

Overcoming the Schumpeterian Bias in the Entrepreneurship Literature

First, our approach suggests that the Schumpeterian model, while useful for understanding the nature and effects of disruptive technological change, does not constitute a general theory of entrepreneurship and its economic effects. Indeed, in our view the entrepreneurship field has been under a Schumperian spell. As mentioned above Schumpeter cast the entrepreneur in heroic terms, emphasized innovation, and argued that the entrepreneur ceased to be an entrepreneur once he began putting his entrepreneurial vision into action.

The judgment-based approach associated with Cantillon (1755), Say (1803), Knight (1921), and Mises (1949) is very different. These theorists all stressed that entrepreneurship is not a property that is reserved to a business elite, but is a general aspect of human action. This conception, rather than Schumpeter's, animates the present work. It is one, we argue, that is not only more generally correct for purely scientific reasons. It is also better suited to the understanding of entrepreneurship as we see it unfolding in the economy, in the form of "churning" or in the attempts of many modern firms to encourage entrepreneurial behavior—what we shall call "proxy entrepreneurship—inside their corporate hierarchies.

From Opportunity Discovery to Entrepreneurial Action

The best-known approach to entrepreneurship within the management literature focuses on opportunity discovery or opportunity identification, or what Shane (2003) calls the "individual–opportunity nexus." Opportunity identification involves not only technical skills like financial analysis and market research, but also less tangible forms of creativity, team building, problem solving, and leadership (Long and McMullan, 1984; Hills, Lumpkin, and Singh, 1997; Hindle, 2004). It can involve both the recognition of already existing opportunities and the creation, *ex nihilo*, of new opportunities (Alvarez and Barney, 2007). This conception makes opportunities, and their discovery and (potential) exploitation, the unit of analysis for entrepreneurship research. A precise definition of opportunities, however, has been elusive (McMullen, Plummer, and Acs, 2007: 273).

We argue that the unit of analysis should not be opportunities, but rather some action—in Knightian terms, the assembly of resources in the present in anticipation of (uncertain) receipts in the future. In other ways, what should be emphasized are not the psychological aspects of "discovery," but rather the *processes* by which entrepreneurial perceptions are translated into *action.*

Entrepreneurship, then, is essentially a particular kind of investment behavior (more specifically, investment under Knightian uncertainty). This implies that the theory of entrepreneurship should focus on the assembly of resources, the creation or discovery of resource attributes (i.e., the uses, functionalities, characteristics, etc. of resources), the processes by which agents learn about resource attributes, the impediments to and facilitators of such processes, and the interactions among resources.

The Locus of Entrepreneurship

In short, to answer the question posed at the beginning of this chapter, the locus of entrepreneurship is the firm, where the firm is understood in the sense of ownership of alienable assets.[8] We argue that the existence of the firm may be understood in terms of *limits of the market for judgment,* judgment about how heterogeneous assets may be combined to meet future wants. Second, we argue that the boundaries of the firm, as well as aspects of internal organization, may be understood as being responsive to entrepreneurial processes of experimentation.

[8] This is a conception of the firm that is based on property rights economics (Hart, 1995; Barzel, 1997) and is in line with the Coasian tradition in the theory of the firm (Coase, 1937). We later elaborate on this theory.

In the Knightian perspective, the effects of combining heterogeneous capital resources—the value, in other words, of particular resource bundles—is not known to the entrepreneur prior to action. Given the uncertainty inherent in all human endeavors, the entrepreneur must experiment with various combinations, which suggests that the process of finding the "optimal" boundary of a firm is not the result simply of a static optimization problem, but the complex, path-dependent result of processes of creativity and discovery. Firm boundaries will be continually changing (though internal growth, acquisitions and divestitures, ownership changes, and the like), not due to exogenous shocks to a previously stable equilibrium, but due to the process of experimentation itself.

Concerning internal organization, if entrepreneurship is judgment, then the firm can be conceived as a *hierarchy of nested judgment.* At the top of this hierarchy are the firm's owners, who exercise "original" judgment. They hold the ultimate decision rights over the use of the firm's assets, and they hire employees to whom they delegate specified decision authority. These employees exercise "derived" judgment over the use of the owner's assets. If the owners are entrepreneurs, these employees act as "proxy-entrepreneurs," exercising decision rights delegated to them by the firm's owners. The behavior of proxy-entrepreneurs, we show, is not fixed, but is affected by economic organization and governance. In other words, proxy-entrepreneurship can be fostered, channeled, manipulated by the firm's organizational architecture. Moreover, proxy entrepreneurship is not simply discovery, but exploitation. For this reason, policies designed to promote creativity, experimentation, etc. among employees can be counterproductive if they fail to treat proxy entrepreneurship in an integrated, holistic fashion. For example, if proxy entrepreneurs do not bear the full wealth effects of their actions, they have an incentive to engage in moral hazard, devoting resources to the discovery of opportunities without proper regard to the costs of the discovery process.

Venture Capitalism

Distinguishing between opportunity discovery and opportunity exploitation reminds us that the two do not always go hand-in-hand. Efforts to encourage the former do not necessarily encourage the latter. Generally, efficiency requires that entrepreneurs bear the full wealth effects of their actions. For this reason, efforts to promote experimentation, creativity, etc. within the firm (cites) encourages moral hazard unless rewards and punishments are symmetric. Outside the firm, strong intellectual-property protection, incentives for discovery such as SBIR awards, and the like may encourage overspending on discovery. The potential waste of resources on "patent races" is a well-known example (Gilbert and Newberry, 1982; Wright, 1983).

By contrast, if the essence of entrepreneurship is the assembly of resources under uncertainty, then the locus of entrepreneurship is not the generation of creative ideas, but the funding of projects. Financiers—venture capitalists, angel investors, banks, family members, even corporate shareholders—are entrepreneurs. Owners possess fundamental judgment rights that, by the nature of ownership, cannot be delegated, no matter how many proximate decision rights are delegated to subordinates. In this perspective even corporate shareholders are treated not as passive suppliers of capital, as they are treated both in neoclassical production theory and in contemporary entrepreneurship theory, but as critical decision makers.[9]

[9] Jensen (1989) famously distinguished "active" from "passive" investors. Active investors are those "who hold large equity or debt positions, sit on boards of directors, monitor and sometimes dismiss management, are involved with the long-term strategic direction of the companies they invest in, and sometimes manage the companies themselves." While not denying the importance of this distinction, Foss, Foss, and Klein (2007) argue that residual control rights make all resource owners "active,“ in the sense that they must exercise judgment over the use of their resources. In this approach, investors choose how "Jensen-active" they wish to be, which makes them "active" by definition.

Both Rothbard and Kirzner offer similar arguments. Writes Rothbard (1962: 538): "Hired managers may successfully direct production or choose production processes. But the ultimate responsibility and control of production rests inevitably with the owner, with the businessman whose property the product is until it is sold. It is the owners who make the decision concerning how much capital to invest and in what particular processes. And particularly, it is the owners who must choose the managers. The ultimate decisions concerning the use of their property and the choice of the men to manage it must therefore be made by the owners and by no one else."

Some applications, such as the staging of venture finance (Gompers, 1995), are obvious. Another application is the inherent uncertainty of the gains from corporate takeovers. In the absence of uncertainty, one can imagine an equilibrium in which the number of takeovers is suboptimal because shareholders will refuse to tender their shares for anything less than their share of the post-takeover value of the firm (Scharfstein, 1988). In a world of Knightian uncertainty, however, the post-takeover value of the firm is uncertain, and many shareholders, not wanting to bear this uncertainty, will tender their shares to the "raider" at a price above the pre-takeover share value but below the raider's expected post-takeover price. The raider's return to a successful takeover is thus a form of pure entrepreneurial profit (Klein, 1999: 36–38).

Group Entrepreneurship

Focusing on opportunity exploitation also responds to recent calls to link the theory of entrepreneurship more closely to the theory of group behavior (Stewart, 1989; Mosakowski, 1998; Cook and Plunkett, 2006). Some efforts to develop a theory of team entrepreneurship focus on shared mental models, team cognition, and other aspects of the process of identifying opportunities. Penrose's (1959) concept of the firm's "subjective opportunity set" is an obvious link to judgment-based theories of entrepreneurship (Kor, Michael, and Mahoney, 2007).[10] Entrepreneurs can also form networks to share expectations of the potential returns to projects (Greve and Salaff, 2003; Parker, 2008).

On the other hand, even if one views the perception of a (subjectively identified) opportunity as an inherently individual act, the exploitation of opportunities can be a team or group

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Kirzner (1973: 68) makes a similar point about alertness: it can never be fully delegated. "It is true that 'alertness" . . . may be hired; but one who hires an employee alert to possibilities of discovering knowledge has himself displayed alertness of a still higher order. . . . The entrepreneurial decision to hire is thus the ultimate hiring decision, responsible in the last resort for all factors that are directly or indirectly hired for his project." Kirzner goes on to quote Knight (1921: 291): "What we call 'control' consists mainly of selecting some one else to do the 'controlling.'"

[10] Spender (2006) argues that "Penrose's model of managerial learning [is] an accessible instance of the epistemological approach proposed by Austrian economists such as Hayek, Kirzner, and Schumpeter."

activity. Venture capital, later-stage private equity, and bank loans are often syndicated. Publicly traded equity is diffusely held. Professional-services firms and closed-membership cooperatives represent jointly owned pools of risk capital. Moreover, the firm's top management team—to whom key decision rights are delegated—can be regarded as a bundle of heterogeneous human resources, the interactions among which are critical to the firm's performance (Foss, Klein, Kor, and Mahoney, 2007).

This approach also suggests relationships between the theory of entrepreneurship and the theory of collective action (Olson, 1965; Hansmann, 1996). Once an entrepreneurial opportunity has been perceived, the entrepreneur may need to assemble a team of investors and/or a management team, raising problems of internal governance. Shared objectives must be formulated; different time horizons must be reconciled; free-riding must be mitigated; and so on. Cook and Plunkett (2006) and Chambers (2007) discuss how these problems are addressed within closed-membership, or "new-generation" cooperatives. Traditionally organized, open-membership cooperatives suffer from what Cook (1995) calls "vaguely defined property rights." Because their equity shares are not alienable assets that trade in secondary markets, traditional cooperatives suffer from a particular set of free-rider, horizon, portfolio, control, and influence costs problems.[11]

In response, a new type of cooperative began to emerge in the 1990s. These new-generation cooperatives required up-front equity investments (in traditional cooperatives, equity is generated ex post, through retained earnings), restricted patronage to member-investors, and allowed for limited transferability of investment and delivery rights.[12] One of the key challenges in developing new-generation cooperatives is the establishment of a founding investment team with shared objectives and constraints and an effective governing board. According

[11] See Cook and Iliopoulos (2000) and Cook and Chaddad (2004) for details.

[12] Cook, Klein, and Chambers (2005) document the emergence of a cluster of new-generation cooperatives in Renville County, Minnesota.

to project champions—those entrepreneurs who formulated the original vision of the organization—the biggest obstacle they faced was convincing other farmer-investors, with whom they had close social ties, to invest (Chambers, 2007). In other words, the successful movement from opportunity identification to opportunity exploitation depended critically on transaction cost and collective action considerations, social capital, and reputation. Team entrepreneurship, in the Knightian sense described above, is a subset of the general theory of economic organization.

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