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**Two Theories of Entrepreneurship:
Alternative Assumptions and the Study
of Entrepreneurial Action**

by

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The field of entrepreneurship continues to struggle with the development of a modern theory of entrepreneurship (Gartner, 2001). In the past 20 years development of the current theories of entrepreneurship have centered on either opportunity recognition (Gaglio and Katz, 2001; Baron, 2004) or the individual entrepreneur (McClelland, 1961; Collins and Moore, 1964; Busenitz and Barney, 1997). During this same time period many theoretical insights also came from those in other fields such as economics Kirzner (1979), Casson (1982) and a rediscovery of the work of Schumpeter (1934, 1939).

However, despite the attempts of many entrepreneurship scholars to develop theory in this field there continues to be a lack of consensus about what constitutes entrepreneurship theory and no generally accepted theory of entrepreneurship has emerged. This lack of consensus is in large part due to the lack of clarity that entrepreneurship scholars have about the unstated assumptions of entrepreneurship. As Gartner (2001) suggests we in the field of entrepreneurship are unconscious about the assumptions that we make in our theoretical perspectives.

While different explanations of entrepreneurship have adopted sometime radically different theoretical assumptions, most of these concern three central features of entrepreneurial phenomena: the nature of entrepreneurial opportunities (Kirzner, 1979, Shane and Venkatraman, 2000; Gaglio and Katz, 2001), the nature of entrepreneurs as individuals (McClelland, 1961; Collins and Moore, 1964; Busenitz and Barney, 1997), and the nature of the decision making context within which entrepreneurs operate (Knight, 1921; Alvarez and Barney, 2005).

That most efforts to develop theoretically rigorous explanations of entrepreneurship adopt assumptions with respect to these characteristics does not suggest that they have

adopted the same assumption. Indeed, as is shown here, different theoretical traditions in the field sometimes adopt radically different assumptions with respect to these attributes of entrepreneurial phenomena, and thus develop sometimes radically different explanations of these phenomena.

Unfortunately, with few exceptions (Shane, 2003), most entrepreneurship scholars are not explicit about the assumptions they are using (Gartner, 2001). Moreover, when developing their particular theoretical perspective, many authors tend to adopt the view that the only reasonable assumption that can be made, say, about the nature of opportunities or the nature of entrepreneurs, is the assumption they are making (Sarasvathy, 2001). A failure to be explicit about these critical assumptions, and an unwillingness to entertain alternative assumptions has hampered the development of theory in the field of entrepreneurship (Gartner).

The purpose of this paper is to investigate two sets of assumption about the nature of opportunities, the nature of entrepreneurs, and the nature of the decision making context within which entrepreneurs operate. It is suggested that these two sets of assumptions constitute two logically consistent theories of entrepreneurship. Moreover, these two theories—far from being contradictory—are complementary in nature, since each applies in very different settings. Finally, these two complementary perspectives are applied to widely studied entrepreneurial phenomena, the organization of the entrepreneurial firm. These applications demonstrate both the differences between these two theories and how they can be complementary in nature.

Theory One:
The Discovery Theory
Individual/Opportunity Nexus Theory

The theoretical work in the discovery theory which is typically called the individual/opportunity nexus view has focused on the existence, discovery, and exploitation of opportunities and the influence of individuals and opportunities (Kirzner, 1973; Shane and Venkataraman, 2000; Shane, 2003). This section will discuss how this theory approaches the three theoretical assumptions in entrepreneurship. The Individual/Opportunity Nexus suggests that opportunities are objective, individuals are unique, and third that entrepreneurs are risk bearing.

Assumption One
Objective Opportunities

In the individual/opportunity nexus view opportunities have an objective component and these opportunities exist whether or not an individual recognizes them (Shane and Venkataraman, 2000; Shane, 2003). Opportunities are derived from the attributes of the industries (or markets) within which an entrepreneur is contemplating action. Thus, if an entrepreneur understands the attributes/structure of an industry, he or she will be able to anticipate the kinds of opportunities that exist in that industry. For example, the primary opportunity in fragmented industries is to exploit economies of scale in order to consolidate these industries (Porter, 1980). The primary opportunities in mature industries are to refine products and engage in process innovations to improve quality and lower costs (Porter, 1980). This view contends that understanding entrepreneurial opportunities is important because the characteristics of an opportunity influence the very value that the opportunities might create.

Assumption Two:
Unique Individuals

The second assumption of the individual/opportunity nexus is that entrepreneurship requires differences in people and these differences manifest themselves in the ability to recognize opportunities (Shane, 2003). Individuals in this view are “alert” to existing opportunities (Kirzner, 1973; Shane and Venkataraman, 2000).

Entrepreneurial alertness is an attitude (emotional state with a pre-disposition for action) of receptiveness to available – but currently overlooked by human actors - opportunities in a market (Kirzner, 1997). From Kirzner, this assumption recognizes that the entrepreneurial nature of human action refers to more than just the action taken, but additionally refers to the human agent that is at all times spontaneously on the lookout for unnoticed market imperfections that might inspire new activity. Entrepreneurial alertness is not a deliberate search, but the constant scanning of the environment by an entrepreneur who notices market imperfections. The recognition of these market imperfections are accompanied by a sense of “surprise” that the imperfection had not previously been recognized.

These alert individuals are on the lookout for imperfectly distributed information about potentially mis-priced resources that they may have access to before others. However, while these opportunities may exist independent of economic actors, an economic actor must act on the opportunity since the opportunity lacks agency, and individuals can only earn profits if they recognize the opportunity and its value.

Assumption Three
Entrepreneurs are Risk-bearing

The third assumption of this theory is that, “risk-bearing is a necessary part of the entrepreneurial process” (Shane, 2003, p7). An analysis of assumptions one and two further supports the conclusion that the individual/opportunity nexus assumes conditions of risk. The notion that opportunities are objective by definition assumes risk. In order for the assumption that an opportunity is objective to hold true the existence of the opportunity is merely a matter of some economic actors having differential information. The assumption of imperfectly distributed information is based in neo-classical economics and assumes all relevant information about technologies, demand, and other determinants of market competition are known to be available, but may be costly to acquire. The economic actor in this view is simply able to acquire the information at a lower cost than other economic actors and this becomes the source of profit.

How are these assumptions related?

The individual opportunity nexus explains entrepreneurship by considering the nexus of special individuals and objective opportunities. In this view every price, invention, and information has within it objective opportunities. Individuals discover and give opportunities agency, but they do not create opportunities. What entrepreneurs do in this view is to apply a new means-ends framework for recombining resources.

While it is not known with certainty at the time the opportunity is discovered whether or not it will be successful, because of the nature of the discovery used in this view it can be

estimated probabilistically what the outcome will be. Thus the entrepreneurship process in this view is about risk and not uncertainty.

Theory Two: The Creative Theory

The theoretical work in the creative theory has focused on the entrepreneur and the creation of the firm (Venkataraman, 2003; Schumpeter, 1934; Loasby, 2002; Casson, 1982; Langlois and Cosgel, 1993). Similar to individual/opportunity nexus, there are three major theoretical assumptions in the creative theory. First that opportunities are subjective, second that individuals are ordinary, and third that entrepreneurs are uncertainty bearing.

Assumption One Subjective Opportunities

The first assumption is that opportunities are created through a series of decisions to exploit a potential opportunity. The creative Theory suggests that it is difficult to separated the ex ante and ex post Theory of opportunities. For example ex post it might be easy to say that the drug Viagra was waiting for an economic actor to recognize it and then exploit it. However, if Viagra had been discovered – instead of by Lilly - by a tribe of isolated humans on a yet unknown island who have a short life expectancy - would it still be an opportunity?

Opportunities in this Theory do not exist independent of economic actors, but are created by economic actors. Whatever the source of opportunities, their existence, per se, often only holds the potential for generating profit.

The creative Theory which assumes uncertainty and not risk, argues that under conditions of uncertainty, the attributes of an industry are either not knowable or changing in difficult to predict ways. In these settings, knowledge about industry structure cannot be used

to anticipate opportunities. In such settings, opportunities must be created and refined through a process of hypothesizing what an opportunity might be, trying to exploit this hypothesized opportunity, revising one's hypothesis, testing this revised hypothesis until, at some point in the future, one's hypothesis roughly correlates with what turns out to be objective opportunities in an industry, but opportunities that could not have been known or anticipated *ex ante*.

Consider, for example, opportunities in the consumer electronics business. Firms like Sony cannot ask customers or suppliers to give them guidance in developing new products, since any new products they develop will be beyond the experience of customers. Instead, Sony must go through a process where it generates numerous new products, tries these out in the market place, discovers which of these new products are reasonably successful, refines those new products to improve their marketability, and so forth. As these new products mature, it is tempting to say that Sony always knew that there was a particular market opportunity out there—the walk man or the portable CD player. But this kind of post hoc justification is quite inconsistent with the hypothesis formation and testing process that firms like Sony go through to “discover” new product opportunities.

In short, in the IO model, opportunities are “discovered” by analyzing market and industry structures, in this, opportunities are “created” through hypothesis testing and learning. In this sense, in the new model, opportunities do not have an existence independent of the actions of entrepreneurs to “discover” them but instead are created.

Assumption Two

Individuals do not recognize opportunities they create them.

The creative Theory suggests that entrepreneurship does not require differences in people but instead differences in decision-making under entrepreneurial conditions of uncertainty. In this Theory the entrepreneur is not examined as an individual autonomous

from the opportunity, but instead as the creators of the opportunity. The entrepreneur in this Theory is someone who coordinates resources before the value of these outcomes can be known with probability. Decision making in this Theory often occurs when there are no obviously correct procedures in existence for exploiting these resources.

This Theory differs from the IO nexus – once again – in the sense that it is difficult to understand ex-ante what is known ex-post. In the IO nexus Theory the two main differences that unique individuals possess over non-unique individuals are that these unique individuals possess relevant prior knowledge about an opportunity and or personal characteristics. While this approach is certainly easy to use and understand ex-post, ex-ante it is less clear whether individuals have special knowledge or traits prior to exploiting an opportunity or is the process of exploiting the opportunity what makes these individuals unique? In other words these special traits of these special individuals are a result from the experience of exploiting an opportunity.

Assumption Three Entrepreneurs Bear Uncertainty

The third assumption of this Theory is that uncertainty and not risk is a necessary condition for entrepreneurship. Just as assumptions one and two in the individual/opportunity nexus relied on conditions of risk, assumptions one and two in the creative Theory rely on assumptions of uncertainty. While many theoreticians have confounded the differences between risk and uncertainty (Shane 2003, p7), there are significant differences which yield significantly different outcomes (Knight, 1921; Alvarez and Barney 2005). In order to understand the differences between these two conditions it is important to define each term¹.

¹ Ambiguity exists between risk and uncertainty and is defined as Ambiguity is closely related to risk. A decision making situation is defined as ambiguous if the possible outcomes are known, but the ex ante probabilities for each of these outcomes is not known (Dequech, 1999). In the die example, decision making by

Risk and Uncertainty

Risk

A decision-making situation is defined as risky when two conditions exist: first, when all possible future outcomes of a decision are known at the time a decision is made and, second, when the probability of each of these outcomes are also known at the time a decision is made (Wald, 1950). The outcomes of these decisions are governed by well defined probability distributions. A well defined probability distribution has three characteristics (Triola, 2003): (1) all possible future outcomes are known before a decision is made, (2) the probability of any one of these outcomes occurring is less than or equal to one, but greater than zero, and (3) the probability of all these outcomes occurring sums to one.

For example in the case of rolling a die, it is known that there are six sides to the die and that with a balanced and fair die, each of the six faces has an equal chance of occurring. Each side of the die is a known possible outcome of rolling the die, each outcome has a known probability (1/6) that is less than or equal to one but greater than zero, and the probability of any of these outcomes occurring sums to one. Decision making by rolling a die is thus risky in the sense defined here.

rolling a die would be ambiguous when it was known, ex ante, that the die had six sides, but it is not known whether or not the die is unbalanced, and if it is, how it is unbalanced.

An ambiguous decision making setting existed in the competition between Sony Beta and the Matsushita VHS formats for home video tape players. Before this competition unfolded, it was reasonably clear that either the Beta format or the VHS format would end up dominating this market. However, ex ante, which of these formats would emerge as the “winner” was not obvious. Indeed, since Sony and Matsushita executed very different strategies in this market - Sony focused on video quality while Matsushita focused on licensing their standard broadly (Abernathy and Utterback, 1978) - it was clear that these two firms each had very different expectations about the likely outcome of this competition.

Of course, after this competition played out, it was possible to explain why the winning technology – VHS - was certain to win. However, while such ex post explanations of decision outcomes are always possible, a decision making situation is ambiguous if, ex ante, the probability associated with known outcomes is not known.

Most economic and finance models of business decision making are applicable to risky decisions (Cyert and DeGroot, 1987; Brealey and Meyers, 1988). For example, to calculate the present value of a new investment, both the possible outcomes associated with this investment and the probability of these outcomes must be known. These concepts find their analogues in the net cash flow an investment is expected to generate (i.e., possible investment outcomes) and the discount rate applied to that projected net cash flow (i.e., the likelihood that this outcome will occur).

Uncertainty

Finally, decision making settings are uncertain when the possible outcomes of a decision and the probability of those outcomes, are not known, *ex ante* (Knight, 1921). In these situations, decision makers are often ignorant of their ignorance of possible future outcomes (Shackle, 1972; 1979). Continuing with the example of decision making by rolling a die, these decisions would be uncertain if the number of sides on the die - is it 2, or 6, or 8, or an infinite number of sides - and the balance of the die are not known, *ex ante*. Indeed, in conditions of uncertainty, decision makers may not even know for sure that they are playing with dice and not with a deck of cards.

Research investments in the drug Viagra turned out to be uncertain. Pfizer originally invested in Viagra as a cardiovascular drug. This investment decision was based on Pfizer's knowledge about its mechanism of action. Unfortunately, Viagra did not have the cardiovascular effects that Pfizer expected. However, during its evaluation, Pfizer became aware that Viagra had some wholly unexpected side effects - it had the potential for treating

male impotency.² This possible outcome of Viagra research was not known at the time the decision to invest in this drug was made. Certainly, the probability that Viagra might turn out to be a blockbuster drug could not be known when Pfizer was examining its efficacy as a cardiovascular drug.

Under conditions of uncertainty, decisions are not governed by well defined probability distributions: while the probability of these decision outcomes, by definition, are between zero and one, inclusive, all possible future outcomes of this decision are not known, *ex ante*, and thus it is not known if the probability of all these outcomes occurring sums to one (Shackle, 1949).

How are these assumptions related?

The creative Theory explains entrepreneurship by considering how economic actors coordinate resources under conditions of uncertainty. In the discovery Theory similar to neo-classical theory, all relevant information about technologies, demand, and other determinants of market competition are known to be available, but may be costly to produce. In the creative Theory the actions that need to be taken to exploit opportunities are not knowable, *a priori*, and must be discovered over time through efforts to exploit these imperfections (Hayek, 1948; Mises, 1949). However, the act of learning what actions need to be taken to exploit a potential market imperfection often have the effect of changing the very economic actor that is pursuing the potential opportunity and perhaps even changing the very nature of the opportunity.

Clearly, the Creation Theory assumes that the decisions made by entrepreneurs are usually uncertain, although they can sometimes be ambiguous. In the emergent search process assumed by the Creation Theory, the end cannot be known from the beginning.

² While doing early studies on Viagra different study sites reported that the drug did not have the heart benefits

Possible outcomes of a stream of decisions can generally not be known over time, and even if they can be known, the probability of obtaining these different outcomes cannot be anticipated.

Are These Theories Contradictory or Complementary?

At first glance, it may seem that the two broad theories identified here—the Discovery Theory and the Creation Theory—are contradictory. After all, these two theories adopt radically different sets of assumptions. However, from another perspective, they are highly complementary in nature. This complementarity reflects the fact that each can be applied to the analysis of very different ways of attempting to create superior economic performance. Both these approaches can be applied to the study of what might be called entrepreneurial behaviour—although the specific nature of that behaviour appears to be quite different.

Rather than debating as to which of these theories constitutes the “real theory of entrepreneurship,” a more reasonable approach seems to be to recognize the value, and the limitations, of each of these theories, and to specify the conditions under which each should be applied. More fundamentally, going forward, entrepreneurship scholars need to be clear about which of these—or other—theories of entrepreneurship they are testing. The assumptions these alternative theories make about the nature of opportunities, the nature of entrepreneurs, and the nature of the decision making context within which entrepreneurs operate may be a helpful framework to describe these theories, and avoid ambiguous theoretical and empirical conclusions.

that had been hoped. One site however requested that they continued to receive the drug. When asked why, the

Entrepreneurship Phenomena

The list of phenomena that entrepreneurship scholars study is large and varied and includes the creation of new organizations (Gartner, 1985; Alvarez and Barney, 2005). However, with few exceptions (Alvarez and Barney, 2005) most theory of the firm work has assumed that opportunities are objective and their value is known ex-ante, economic agents are special and able to exercise managerial fiat with few problems, and the conditions are those of risk and not those of uncertainty. The second part of this paper takes two currently popular theories of the firm - transactions cost economics and incomplete contracts theory- which have the assumptions of the discovery Theory and examines these assumptions using the creation Theory. Finally the paper addresses the issue of entrepreneurial rents and how the conditions under which these rents are created might affect their potential appropriation.

What is a Firm?

Any theory of the firm must first deal with a difficult definitional problem—what is a firm? A variety of definitions of the firm have been used in the literature. For example, some have emphasized common goals as a defining characteristic of a firm (Thompson, 1967). Others have emphasized common cultural attributes as the defining characteristic of a firm (Deal and Kennedy, 1982). Still others have used legal reporting requirements to define a firm (Coleman, 1974).

The approach to defining a firm adopted in this paper builds on the notion that a firm is a “nexus of contracts” (Alchian and Demsetz, 1972; Jensen and Meckling, 1976). These

include contracts between people, around the use of tangible assets, compensation contracts, implicit and explicit contracts, and so forth (Foss, 1996).

However, if firms are just “bundles of contracts,” then firms are no different than markets or other forms of contracting. To avoid losing the firm as a distinctive theoretical construct, it is necessary to specify the kinds of contracts that constitute a “firm” versus the kinds of contracts that constitute a “non-firm.”

One approach to describing contracts that constitute a firm focuses on how residual rights of control are defined in a contract (Grossman and Hart, 1987; Williamson, 1985; Conner and Prahalad, 1996). Residual rights refer to all aspects of a contract that are not otherwise specified in a contract, by custom, or by law. An important question in contracts is: Who controls these residual rights, i.e., who makes decisions in an exchange about issues that were not specified, *ex ante*? One definition of the firm suggests that a firm exists when these residual rights are controlled by one party to an exchange to whom all other parties defer when decisions that were not anticipated, *ex ante*, are made.

Interestingly, three separate theoretical traditions have adopted this approach to defining a firm. Transactions cost economics has adopted this definition, although it assumes that the only aspects of an exchange that are not specified, *ex ante*, through contracts, custom, or by law have to do with sources of opportunism (Madhok, 2002). Incomplete contract theory in economics also adopts this definition of a firm (Maskin and Tirole, 1999b), as do some efforts by resource-based theorists to develop a resource-based theory of the firm (Conner and Prahalad, 1996).

Ultimately, a definition of a concept is not “right or wrong,” it is either “fruitful or unfruitful” (Merton, 1957). Fruitful definitions enable the development of theories with testable implications. That this contractual definition of the firm has been found fruitful in

three separate theoretical traditions, suggests that it has significant potential if it were more broadly applied in management research.

Current Theories of the Firm

Questions about the scope and boundaries of the firm have interested scholars for the better part of a century (Coase, 1937). While several “theories of the firm” (Holmstrom and Tirole, 1989) have been proposed in the literature, two particular theories—transactions cost economics and incomplete contracts theory—have come to dominate firm scope and boundary discussions.

Transactions cost theories of the firm begin by recognizing that the completion of many economic exchanges requires parties to that exchange to make transaction specific investments, i.e., investments that have much more value in a particular exchange than they do in alternative exchanges (Klein, Crawford, and Alchian, 1978). Once a party has made such investments, they may be subject to any of a wide variety of opportunistic behaviors on the part of those that have not made specific investments in that exchange (Williamson, 1985). The firm, in transactions cost economics, is a solution to this threat of opportunism. By bringing an exchange within the boundaries of a firm, a third party (“the boss”) has the ability to monitor parties to this exchange, to insure that they do not behave opportunistically. Thus, in transactions cost economics, the essential purpose of a firm is to facilitate the use of managerial fiat to solve opportunism problems associated with transaction specific investments (Williamson, 1991).

Though similar to transactions cost logic in several ways, incomplete contracts theory is, nevertheless, seen as a distinct theory of the firm in the literature (Hart, 1995). Building on the notion that a firm is a nexus of contracts between factors of production (Jensen and Meckling, 1976; Simon, 1947), incomplete contract theory suggests that a firm exists when

one party to an exchange obtains the residual rights of control in that exchange. Residual rights of control enables this party to make all decisions in this exchange that are not otherwise specified by contract, by law, or by custom (Grossman and Hart, 1986). Incomplete contract theory also identifies who in an exchange should have these residual rights—the party in the exchange who has the most to gain from that exchange (Hart and Moore, 1988). Thus, incomplete contract theory suggests that firms are created when the person who has the most to gain from a particular exchange obtains the residual rights of control associated with that exchange.

Both these theories of the firm have received substantial theoretical development in the literature (Williamson 1975, 1985; Hart, 1995). However, while transactions cost economics has received broad empirical support (Williamson and Masten, 1999), the empirical implications of incomplete contract theory have yet to be as thoroughly examined (Hart, 1995).

Despite the dominance of these two theoretical perspectives on theory of the firm discussions, the central thesis of this paper is that an important boundary condition that applies in both of these theories as they have been currently developed has not been fully appreciated. That boundary condition is that these theories have so far only been applied under conditions of risk, i.e., where the probability distribution of possible performance outcomes associated with an exchange is known. In their current form, transactions cost economics and incomplete contracts theory cannot be applied when this probability distribution is not known—a condition defined as uncertainty (Knight, 1921). Moreover, there is some reason to believe that uncertainty is a relatively common context within which decisions about firm governance need to be made, especially by entrepreneurs looking to create and exploit new and untested technological and market opportunities.

Risk and Uncertainty

As suggested in the assumptions section of this paper there is a difference between risk and uncertainty. Knight (1921) was the first scholar to recognize that some decisions about investments are made under conditions of uncertainty. Moreover, he distinguished between risky and uncertain decision making settings. Knight distinguished between risk and uncertainty on the basis of whether or not the probability distribution of outcomes associated with a decision is known or not before a decision is made. According to Knight (1921), a decision making situation is *risky* when those making a decision know the probability distribution of possible outcomes associated with that decision. A decision making situation is *uncertain* when an individual's decision-making is based on their own expectations about market imperfections rather than probability and statistical calculation from actual historical data (Knight, 1921). Thus, while the specific outcome of a decision is not known in both risky and uncertain situations, the distribution of possible outcomes is known under conditions of risk³ but unknown under conditions of uncertainty.

Casual observation suggests that, far from being uncommon, early stage entrepreneurial business decisions are made under conditions of uncertainty (Simon, 1947). This is especially true for entrepreneurial decisions having to do with exploiting new and untested technologies and new and unexplored market opportunities (Schumpeter, 1934)—conditions in which at least some essential information about future events cannot be known at the moment of the decision because this information does not exist and cannot be inferred from any existing data set.

³ High risk may have wide variation around an uncertain mean.

Uncertainty and Prior Theories of the Firm

Both transactions cost and incomplete contracts theories of the firm, as currently developed in the literature, have limited implications for those looking to make decisions about whether or not they should organize a firm under conditions of uncertainty. The limitations of these two theories in this decision making context will be considered in turn.

Uncertainty and Transactions Cost Economics

Among others, Williamson (1991: 274) has argued that managerial “fiat is the distinguishing feature of internal organization.” That is, the essential purpose of the firm is to facilitate the use of managerial fiat to manage opportunism problems stemming from transaction specific investments.

However, in order for the party exercising managerial fiat to do so in a way that will be acceptable to parties to an exchange, this person must anticipate that the expected value of these investments will actually receive a return that is above a certain threshold. That is, this person must know the probability distribution of the value of each of the specific investments parties to an exchange have made. Armed with this information, this person can decide what level of return those investing in an exchange should obtain and whether or not they are receiving their “fair return” for their investments. If someone is not receiving this fair return, the person exercising managerial fiat can identify who in an exchange is behaving opportunistically, and appropriate remedies can be implemented.

Notice that if the person who is supposed to exercise managerial fiat to manage an exchange threatened by high levels of opportunism cannot do so in a way that parties to that exchange will find acceptable, these parties will be very reluctant to make significant

transaction specific investments (Klein, Crawford, and Alchian, 1978). Without such investments, transactions cost theory suggests that hierarchical forms of governance will not be required. Thus, current transactions cost theory suggests that when “the boss” cannot engage in managerial fiat in ways that are acceptable to the parties in an exchange, firms will not be necessary, and thus not created.

Of course, the very thing that a person needs to exercise managerial fiat in ways that parties to an exchange will find acceptable—information about the distribution of the value associated with specific investments that parties to an exchange have made—cannot be known under conditions of uncertainty. That is, under uncertainty, managerial fiat is not a credible solution to opportunism problems created by specific investments. Transactions cost theory thus seems to suggest that under uncertainty, parties to exchanges will avoid specific investments and firms will not be organized.

And yet, even casual observation suggests that transaction specific investments do seem to be made under conditions of uncertainty, and firms do seem to be organized under these conditions—by entrepreneurs and others seeking to exploit new and untested technological and market opportunities. Therefore, in situations where firms are formed around untested technologies or market opportunities, how are these organizing decisions being made when those who are supposed to exercise managerial fiat to control the threat of opportunism are unable to value the specific investments made by parties to that exchange?

One potential solution to this problem is that while managerial fiat cannot be effectively exercised under conditions of uncertainty that these conditions are likely to evolve over time. In particular, over time, as decision makers engage in experiments that evaluate the relationship between their individual probability distributions and a market determined probability distribution, uncertainty becomes replaced by risk, and under conditions of risk, transactions cost arguments concerning governance apply (Alvarez and Barney, 2004).

These are reasonable observations. However, it will often be the case that at least some decisions about firm governance will have to be made before uncertainty evolves into risk. In this pre-risk setting, extant transactions cost arguments provide limited guidance concerning whether or not a firm should be created.

Uncertainty and Incomplete Contracts

Current formulations of incomplete contract theory face similar difficulties in the face of uncertainty. One of the central propositions of this theory is that it is most efficient for those parties to an exchange who have the most to gain from the exchange to have the residual rights of control in that exchange. The individual who has the most to gain from the residual rights has the greatest incentives to invest in this transaction in a way that maximizes its total value (Grossman and Hart, 1986). Moreover, those who benefit less from specific investments in an exchange will find it in their self interest to delegate residual rights of control to those who have the most to gain from an exchange, for these individuals have the strongest incentives to create the most value in an exchange. By assigning residual rights to those who will most benefit from an exchange, all parties to that exchange will be benefited when it is managed in a way that maximizes its value.

Of course, the information that is needed ex-ante to make a decision about who should have residual rights of control—information about who will benefit the most from an exchange—is not known under conditions of uncertainty. When parties to an exchange cannot know who should control residual rights in that exchange, how can they know how to organize a firm in this setting? And yet, as was observed earlier, decisions about firms—including decisions about who should hold residual rights of control—are sometimes made under conditions of uncertainty.

One possible solution to this problem is to think of a firm as nothing more than an institutional framework through which the identity of the most appropriate holder of residual control rights can be identified over time. Thus, as parties to an exchange learn more about the value of that exchange for themselves and each other, renegotiation can occur within the firm until the most efficient form of governance is obtained. So, under uncertainty, parties initially “guess” about who should have residual control rights, but over time, as uncertainty evolves into risk, the identity of the person who should actually have those rights is revealed, and contracts in the firm can be renegotiated appropriately.

This solution depends, of course, on the assumption that the cost of renegotiation in a firm is low, at least lower than the cost of renegotiation in other forms of governance. This may not be the case. For both economic and personal reasons, an individual granted residual rights of control under uncertainty may be unwilling to relinquish those rights when that uncertainty evolves into risk and it becomes apparent that someone else in this exchange should have residual rights of control.

Residual rights of control often come with high levels of compensation that individuals with these rights may not be willing to relinquish—even if the total value of an exchange would be greater if someone else controlled these residual rights. In addition to this compensation, social status is often attached to controlling residual rights in an exchange. For these personal reasons, those with these rights may be unwilling to relinquish them, even if doing so might create more total value in an exchange.

More subtly, what may be an arbitrary choice about who initially will have residual rights of control under uncertainty can have a significant impact on who ultimately should have these rights ex-post. Once a person obtains these residual rights, he/she can exercise them in ways that affect the evolution of the value created in an exchange in a way that insures that they will have the most to gain from an exchange once uncertainty evolves into

risk. In this setting, parties to an exchange may be very reluctant to allocate residual rights of control to a particular individual knowing that this decision may foreclose value creating opportunities for them that may have otherwise existed. That is, this theory—again—predicts that parties to an exchange will be very reluctant to organize a firm— where residual rights of control are granted to a particular party— under conditions of uncertainty.

Organizing a Firm under Uncertainty

Thus, both transactions cost and incomplete contract theories of the firm as currently constituted have limited implications for decisions about whether or not to organize a firm under conditions of uncertainty. This would not be an important limitation of these theories if uncertainty was not an important setting within which decisions about firm governance are made.

Behavioral Uncertainty and Market Uncertainty

The assertion that transactions cost economics has been applied primarily to decisions about whether or not to use a firm to exploit risky market opportunities may seem ironic since one of the most influential proponents of this theory places the concept of uncertainty at a central position in the theory (Williamson, 1975; 1985). However, the uncertainty that is part of transactions cost economics is not uncertainty about the economic value that exploiting an opportunity may create. Rather, this uncertainty has to do with the inability to anticipate whether or not an exchange partner will behave opportunistically, and all the different ways that an exchange partner may behave opportunistically. While transactions cost theory clearly incorporates what might be called behavioral uncertainty into its theoretical

framework, it is less obvious that it incorporates uncertainty about the economic value that might be created by investing in a market opportunity.

Indeed, some transactions cost theorists acknowledge that transactions cost theory takes the economic gains from an exchange as given, and instead focuses on how hierarchical and other forms of governance are used to allocate the gains from this exchange to parties to that exchange (Riordan and Williamson, 1985: 366; Williamson, 1986: 81). While entrepreneurs clearly must concern themselves with threats of opportunism in any exchanges they engage in, they also face a prior uncertainty—uncertainty about the value these exchanges create in the first place.

Introducing Market Uncertainty into Transactions Cost Economics

Of course, the reason that transactions cost economics cannot be used to analyze how organizing a firm can create new economic value is that this theory is built entirely around understanding how the firm helps resolve transactional problems associated with behavioral uncertainty. The ability to create new economic value in an exchange depends on the existence of what might be called “market uncertainty,” or the inability of parties to an exchange to know the full future value of investments in that exchange, *ex ante*. Any theory of the firm that examines how the creation of a firm might create new economic value must focus on how the firm helps resolve transactional problems associated with high market uncertainty.

Value Creation and Market Uncertainty

It is not hard to show that when there is no market uncertainty, it is unlikely for an exchange to create new value (Barney, 1986). In such settings, the future value of any current investments in an exchange are fully known, and parties to an exchange will receive payments based on these expectations. In such exchanges, there are no “surprises,” either positive or negative.

When market uncertainty is high, however, the actual value created from an exchange may vary significantly from any value that might be anticipated at the time an investment is made. If that value is greater than what was expected, at least some parties to an exchange may receive payments for investing in that exchange greater than what they would otherwise have expected. These payments are economic rents (Rumelt, 1987), and are an indication that new value has been created in an exchange.

Of course, the value realized in an exchange characterized by high market uncertainty may be lower than what was expected, in which case parties to an exchange may experience a real economic loss. The existence of this possibility, together with the possibility of new value creation in high market uncertainty settings, can create strong incentives for at least some parties to an exchange characterized by high levels of market uncertainty to carefully monitor and control that exchange, in ways that are discussed in more detail below.

Also, even though the creation of new economic value under conditions of high market uncertainty cannot be fully anticipated at the time investments in an exchange are made, it does not follow that any such value that is actually created represents only an economic entity’s good luck (Barney, 1986). These issues will also be explored in more detail later.

Transactions Problems Under High Market Uncertainty

Just as conditions of high behavioral uncertainty can create transactional problems for those looking to engage in economic exchanges, so too can high market uncertainty create transactional problems for those looking to engage in economic exchanges under these conditions. At least two such problems exist. Since at the time investments in these exchanges are made, their future value is not fully known, the first important issue that must be addressed in order for an exchange of this type to go forward is: “who in this exchange will have the incentives to invest to create the potential for generating new economic value?” Second, assuming these investments are made and turn out to be valuable, another important question that must be resolved before this exchange goes forward is: “who will appropriate any new economic value created from an exchange?”

The Creation Problem. Transactions cost theory takes the economic value that is to be created from an exchange as given, and focuses only on how to realize this full value. However, under conditions of high market uncertainty, the value created by an exchange is not given, it must be created by investments that are made and nurtured by parties to an exchange over time.

Note that it is rarely the case that these investments to create new economic value are made all at once. Rather, they typically require the systematic nurturing of investments over time, as parties to an exchange monitor how the value in an exchange is evolving and increase, decrease, or modify their investments in that exchange accordingly. In this sense, the ability of an exchange under conditions of high market uncertainty to actually create

economic value depends, at least in part, on the willingness and ability of parties to that exchange to monitor and adjust their investments in this exchange over time.

It is in this sense that any value created in an exchange operating under conditions of high market uncertainty does not necessarily have to be attributed entirely to an economic entity's good luck. While the full value of these investments cannot be known at the time they are initially made, their value can become known over time. Moreover, the skillful monitoring and nurturing of these investments can increase the chances that they will generate new economic value.

The Appropriation Problem. Of course, parties to an exchange will be unwilling to make and nurture these uncertain investments unless they can be assured of receiving some payment from doing so. This payment would be drawn from any economic rents that an investment in an exchange under these conditions might generate. And while the willingness and ability of parties to this type of exchange to monitor and nurture an investment can increase the chances that it will actually generate new economic value, such value is far from certain. Thus, in addition to knowing how any new economic value created by an investment would be appropriated, parties to an exchange will also want to know how any economic losses associated with that exchange will be allocated before they would be willing to engage in these kinds of transactions.

Governance

It is not hard to see that market contracts, and even most forms of intermediate market contracts, will usually not solve these two transactional problems under conditions of high market uncertainty. Both these types of contract fail because, under conditions of high market uncertainty, it is not possible, ex ante, to specify the kinds of investments—including

their nature, their timing, and how they will need to be adjusted over time—that will be required to actually create value. And because the nature of these investments cannot be known, *ex ante*, who should receive what level of compensation for investing in an uncertain exchange can also not be known. That is that entrepreneurial rents that are created in these firms may or may not be appropriable. Thus a discussion and distinction regarding rents and their appropriability is needed.

Rents, Quasi-rents, and Entrepreneurial Rents

Rents

An economic rent can be defined in a number of economically equivalent ways. However, the most general definition of an economic rent is a payment to a factor of production in excess of that factor's payment in its next best alternative use. Two types of economic rents are particularly important in this paper: quasi-rents and entrepreneurial rents.

Quasi-rents

Quasi-rents are created when parties to an exchange make transaction specific investments, and when the value created by those investments is either known with certainty or known probabilistically. Suppose, for example that a particular exchange, without any transaction specific investments, will create \$10,000 in value, but with transaction specific investments, it will create \$17,000. The \$7,000 difference is the quasi-rent created by transaction specific investments.

Competition about who will appropriate this quasi-rent—the party who made the specific investment that created this rent or some other parties – is what drives governance

choices in transactions cost economics. That is, because parties to the exchange mentioned above know that these specific investments created \$7,000 worth of quasi-rents, they begin to act opportunistically in an effort to appropriate more than their “fair share” of these rents. As will be discussed in more detail later, controlling this threat of opportunism is the central driving force behind governance choices in traditional transactions cost logic.

Entrepreneurial Rents

Entrepreneurial rents are also a type of rent. Entrepreneurial rents are created when economic actors combine resources in new and different ways, and when the value of these resource combinations are not known, *ex ante* (Rumelt, 1987).⁴ Once the value of an entrepreneurial rent is determined *ex-post* in the market, it becomes a quasi-rent, and the problems with appropriation described earlier begin. However, as we shall see, there are important transactional issues in the creation of entrepreneurial rents that have yet to be addressed in the transactions cost literature.

As was the case with quasi-rents, entrepreneurial rents are created when economic actors make transaction specific investments. However, these investments are made before the market value of these investments is known, either with certainty or probabilistically. That is, these investments are made under conditions of Knightian uncertainty (Knight, 1921: 225), where there is “no valid basis of any kind for classifying instances to determine probability from past experience or statistical calculation.”

⁴When an economic actor can create and appropriate economic rents without employing the resources of others, this act is called arbitrage. When the resources needed to create and appropriate a rent are controlled by multiple economic actors, the act of combining these resources is called entrepreneurship (Alvarez and Barney, 2004).

Of course, most economic actors will not make specific investments of this type if they do not have strongly held beliefs about the value of those investments going forward⁵. That is, each of these economic actors may have a probability distribution about the return associated with making an investment in their mind at the time they combine resources in new ways⁶. However, these resources are combined before any market determination of the value of these combinations is made—thus there is *ex-ante* uncertainty about the future value of the resource combinations.

It is the uncertainty about whether or not these new resource combinations will yield greater rents than applying these resources in alternative uses that distinguishes entrepreneurial rents from quasi-rents. Once the value of specific investments is known—even if only probabilistically—any value created by those investments takes the form of quasi-rents. These quasi-rents generate the appropriation issues described earlier. One empirical assertion from the creation Theory is that governance choices that solve appropriation problems associated with quasi-rents will not always solve governance problems associated with creating entrepreneurial rents.

Governance Problems

Notice that these problems exist with market and intermediate market contracts even if there is no behavioral uncertainty associated with this exchange. Imagine, for example, that two parties to an exchange have a history of cooperative relations, and thus that the threat of opportunism in this exchange is quite low (Barney and Hansen, 1994). In this setting, it is still difficult, if not impossible, to write a contract specifying who should make what kinds of investments, and when, in an exchange characterized by high levels of market uncertainty.

⁵ See Busenitz and Barney (1997) for a description of entrepreneurial cognition.

The answers to these questions are simply not known when an exchange of this type is first being contemplated. And if such contractual details cannot be specified *ex ante*, then it is also impossible to know what an appropriate allocation of any economic value or loss that might be created should be.

Of course, it may very well be the case that a particular exchange is characterized by both high market and high behavioral uncertainty. How governance choices will be made in this setting will be discussed in more detail below.

Assuming that parties to an exchange under conditions of high market uncertainty cannot anticipate all that must be anticipated if they are to write a market or intermediate market contract to manage this exchange, what alternatives do they have? Obviously, these parties can agree to write a contract that specifies those details of the relationship that can be specified, and leaves the remaining details to be worked out over time. This contract could also specify how these remaining details will be worked out, *i.e.*, who will make the decision, how the decisions will be implemented, and so forth.

Of course, such a contract is, at its heart, a firm. Recall the definition of a firm discussed earlier in this paper: a contract that gives some people associated with an exchange the right to monitor and control the behavior of other people associated with that exchange, as long as those behaviors are not controlled by other contracts, by custom, or by law. Thus, under conditions of high market uncertainty, parties to an exchange will prefer hierarchical forms of governance to market or intermediate forms of governance, because hierarchical governance enables parties to an exchange to monitor and adjust the investments in such exchanges in ways that maximize the probability that this exchange will actually create value.

These hierarchical contracts can vary along several dimensions. Differences in these contracts might suggest different kinds of firms. For example, some of these contracts might

⁶ Decision making in this scenario can be thought of as a Bayesian update model of decision making under

not specify in very much detail the process through which decisions about how to invest in an uncertain exchange over time should be made. The firms that are created by such contracts will be managed in a very different way than firms that are based on contracts that detail explicitly how investment decisions are going to be made. However, despite these differences, both these contracts can be thought of as firms in the sense defined earlier.

Who Should Control Decision-Making in a Firm?

While firms may vary in the extent to which they specify who in an exchange has the right to make and implement decisions about continuing investment in that exchange, some obvious patterns are likely to emerge. For example, the costs of negotiating each and every decision between two equally powerful parties in a firm can be very high. Moreover, these costs can be high even if there is virtually no behavioral uncertainty in an exchange. Such costs reflect the cost of collecting and analyzing information about how an investment is evolving, and then agreeing about what this information means for decision-making. Even well informed, non-opportunistic economic entities can legitimately disagree about the implications of information that has been collected about the evolution of a transaction under conditions of high market uncertainty. This is even more likely when different parties to an exchange bring different resources to that exchange. To avoid these ongoing negotiation costs, it would not be surprising for one party to an exchange accept more responsibility in directing ongoing investment decisions than another party.

But which party to this type of exchange should adopt this role? Incomplete contracts theory suggests that that party to an exchange who has more to gain if an uncertain investment actually generates new economic value should have the responsibility for making

non-contractually specified decisions in a transaction (Hart and Moore, 1988). Not only does this solution avoid serious negotiation costs, it also helps address the creation and appropriation transactions problems identified with these uncertain exchanges earlier.

In particular, by giving the entity with the most to gain from an exchange residual rights of control in that exchange, the party who has the strongest incentive to ensure that that exchange actually generates value is also in the position to most completely influence how investment decisions are made in that transaction. They are also in the best position to ensure that they are able to appropriate the value they should appropriate if value is successfully created.

Incomplete contract theory is somewhat less clear about how to identify which parties to an uncertain exchange stand to gain the most from that exchange (Maskin and Tirole, 1999a). Indeed, if the answer to this question could be known with great certainty, then it is not clear how much market uncertainty actually exists in an exchange.

Recent work in strategic management can help resolve this dilemma. In particular, while the resource-based Theory (Barney, 1991) cannot specify, with certainty, whether or not a particular exchange characterized by high market uncertainty will create value, it can be used to answer a related question: Which parties to such an exchange are more likely to enjoy sustained competitive advantages should this uncertain exchange turn out to be valuable? The party who would enjoy the largest sustained competitive advantage should a uncertain investment turn out to be valuable would have the most to gain from insuring that this investment's potential value be realized. Thus, this logic suggests that residual decision rights in a firm should be allocated to those entities that are most likely to gain and sustain competitive advantages should this uncertain investment actually create value.

Resource-based logic also suggests the kinds of resources that are likely to generate such sustained competitive advantages if they turn out to be valuable. These are the rare and

costly to imitate resources described in Dierickx and Cool (1989) and Barney (1991), and include socially complex, causally ambiguous, and path dependent resources and capabilities. Those who control these kinds of resources in a firm should have residual decision rights in a firm.

Of course, it may well be the case that more than one party to an exchange characterized by high market uncertainty could possess these kinds of resources and capabilities. In this setting, decision making power may have to be shared—despite the attendant negotiation costs—at least until the relative value of these sets of resources and capabilities in a particular exchange becomes better known.

The Governance Effects of Behavioral and Market Uncertainty

Of course, that market uncertainty can have an impact on governance choices does not suggest that behavioral uncertainty is unimportant in making these choices. A more complete model of governance must consider behavioral and market uncertainty simultaneously. A simple framework for doing so is presented in Table One.

[Insert Table One About Here]

Most of the governance choices in Table One come directly out of either opportunism-based transactions cost economics or the current analysis of governance choices under high market uncertainty. For example, under conditions of low behavioral uncertainty and low market uncertainty, both theories suggest that market forms of governance will be preferred over hierarchical forms of governance. Market contracts are sufficient to protect against potential problems with opportunism in this setting, and the extra expense of

hierarchical governance to monitor and nurture an uncertain investment is unnecessary when that investment is not uncertain.

Similar logic applies to exchanges that are characterized by high behavioral uncertainty and low market uncertainty. While hierarchy is not required to manage an investment of certain value over time, it is needed to solve potential opportunism problems. In this situation, transactions cost economics is closer to the discovery theory and the logic under conditions of market uncertainty are more closely related to creation theory. Both of these theories predict that hierarchical governance will be preferred under conditions of high behavioral uncertainty and high market uncertainty.

However, the two theories do make contradictory predictions under conditions of low behavioral uncertainty and high market uncertainty. Opportunism-based transactions cost economics and discovery theory suggest that, because of low behavioral uncertainty, market contracts will be sufficient to manage an exchange. However, the analysis in this paper suggests that the challenges associated with creating and appropriating value associated with a transaction that is characterized by high market uncertainty and thus creation theory require hierarchical governance.

The possibility that these two theories might make contradictory predictions in at least one setting depends, of course, on the possibility that a given transaction can be both low in behavioral uncertainty and high in market uncertainty. While the overall correlation between these types of uncertainty is ultimately an empirical question, at the very least, it is possible to point to examples of transactions that are characterized by low behavioral uncertainty and high market uncertainty.

Consider, for example, starting a new business in Silicon Valley of the 1990's. The efficient reputational network in Silicon Valley during this time period has been described in a variety of sources (Saxenian, 1996). As discussed originally by Klein, Crawford, and

Alchian (1978), these kinds of networks create strong disincentives for individuals to behave opportunistically, for to do so reduces the likelihood that an individual will be invited to join in future economic enterprises. Thus, the level of behavioral uncertainty in this setting is quite low. However, because starting a new business is a very uncertain enterprise, the level of market uncertainty in exchanges associated with starting this business is very high. This is precisely the situation identified in Table One where the two theories make contradictory predictions.

It is interesting to note that, in this specific Silicon Valley context, most efforts to create new businesses were organized through the creation of firms, despite the relatively low levels of behavioral uncertainty in this setting. While an interesting anecdote, these observations hardly constitute a rigorous test of these two theories. They do suggest, however, that behavioral uncertainty and market uncertainty need not always move together, and thus that the contradictory predictions of these two theories can, in principle, be examined.

Of course, any real tests of the empirical implications of these two theories will have to incorporate complexities stemming from adding intermediate forms of governance to the governance choices that are available to those looking to manage an economic exchange. Put differently, Table One adopts the simple markets versus hierarchies distinction originally developed by Williamson (1975).

Differences in Theoretical Predictions

The arguments suggested in this paper conclude that while entrepreneurial firms may exist under both discovery theory and creation theory the core purpose of these firms is different. Both discovery and creation firms are institutional frameworks that are created to

solve specific transaction difficulties. The transaction difficulties that discovery firms are designed to address are the threat of opportunism due to transaction specific investment (Williamson, 1985) and contractual incompleteness (Grossman and Hart, 1986). Discovery theory similar to transactions cost economics and incomplete contract theory take the value of an exchange as given, and then seek to organize these exchanges in the most efficient manner possible.

In the creation setting, it is this value of the exchange that is not known, and this uncertainty is the primary transaction difficulty that must be addressed. It is thus not surprising that theories of how to organize a firm that take the value of exchanges as given and examine the implications of other transaction hazards have little to say about exchanges with uncertain value outcomes in the first place.

Discussion

In an important sense, the Discovery and Creation Theories of entrepreneurial action contradict each other. That is, if the conditions of the Discovery Theory hold, then the conditions of the Creation Theory cannot hold, and vice versa. In a particular empirical setting, it would be unusual if the assumptions of both theories existed simultaneously for long periods of time.

This observation has important implications for theory development in the field of entrepreneurship. In their efforts to be inclusive, some entrepreneurship scholars have adopted assumptions from the Discovery Theory and have tried to integrate them with assumptions from the Creation Theory. The argument in this paper suggests that such efforts are unlikely to be successful in pushing theory development in the field.

On the other hand, that a situation is consistent with one of the theories at one point in time does not mean that it cannot be consistent with the other theory at another point in time. For example, it has already been suggested that an entrepreneur may begin their activities in conditions consistent with the Creation Theory such as conditions of uncertainty where individuals are learning from their pursuit of an opportunity but, over time, as more information is collected about possible opportunities, these conditions may evolve to be more consistent with the Discovery Theory such as when the uncertainty evolves into risk and the opportunity becomes more objective. This evolution could go the other way as well: A Discovery Theory situation could easily evolve into a Creation Theory situation. Such as found in the situation with the drug Viagra. The drug company in this case thought that it was pursuing a heart medication drug when it discovered that it really had a drug that was effective with impotency.

The analysis in this paper suggests that entrepreneurs in these different settings will behave differently—for example, in Discovery settings, they will put together plans that actually guide their business decisions, while in Creation settings, they will constantly be adjusting the fundamental assumptions of those plans. However, thus far, this analysis has had little to say about the period of transition between these two conditions. During these periods of time, it may well be the case that both conditions will hold to some degree, even though they are fundamentally contradictory.

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Table One

Governance Choices

When Behavioral Uncertainty and Market Uncertainty Can Both Vary

		Behavioral Uncertainty	
		Low	High
Market Uncertainty	Low	Markets	Firms
	High	TCE =Markets Creation = Firms	Firms