HOW DO FIRMS COME TO BE?
TOWARDS A THEORY OF THE ENTREPRENEURIAL PROCESS

D. K. Sarasvathy, Carnegie Mellon University

ABSTRACT

This paper challenges the basic assumption of microeconomics that firms and households are the primitive entities in the economic process.

The paper presents a model of the pre-firm -- defined here as the entity that transforms an idea into a firm. The entrepreneur who undertakes the pre-firm process creates the firm through a set of entrepreneurial decisions that arise out of four interconnected decision domains. Every pre-firm, whether it aborts early or creates a firm, provides the economy with an opportunity to create economic novelty and discover/create new demand -- and leads to constraints and consequences that influence economic realities down the road. Developing a theory of the pre-firm should enhance our understanding of a variety of economic phenomena in terms of their initial conditions.

1. INTRODUCTION

For most of the twentieth century, economics has begun with the assumption that firms are the economy's basic units of production -- i.e., an irreducible primitive in the economic process -- just as households are its basic units of consumption. Even today's standard textbooks on economics begin the same way. Starting in the 70's, however, economists increasingly began to acknowledge that firms are composite entities -- a nexus of contracts between individual agents (Alchian & Demsetz, 1972; Jensen & Meckling 1976) whose self-interests might lead to conflicting purposes, and hence challenge received economic theories of maximization, equilibria, etc.

Acknowledgment of the composite nature of the firm has led to important insights about the boundaries of the firm, its interactions with the environment, and the role of knowledge in dealing with dynamic changes in the environment. Central to understanding the boundaries between firms and markets is Coase's seminal idea of the "price discovery process" (Coase 1937; 1960): this is the idea that the economy cannot operate merely as a set of bilateral market interactions between factors of production because the interacting parties would have to re-negotiate contracts and set new terms of exchange every time there is a change in market conditions or new knowledge (technology) becomes available. This idea was later expanded to explain why a firm is organized as a partitioned hierarchy consisting of a framework of ongoing relations between an accepted authority -- who, as new

contingencies arise, re-assigns tasks between employees, and resources between tasks -- and the employees who are the factors of production (Cheung, 1983; Demsetz, 1983; Williamson, 1985).

The recognition that prices have to be *discovered* and that there are costs attached to the discovery process raises the issues of discovery of new supply and new demand and the dependencies between the two. For, if the economy consisted only of a relatively fixed set of products, then the problem of price discovery would be reduced to a triviality. All future demand would depend primarily on past demand with minor adjustments needed for changes in population; competition would be limited to direct substitutes; and profits would depend largely on simple cost minimization.

It is the continual development of new supply (i.e., new products, technologies, etc.) that makes the price discovery process complex, costly, and interesting. Competition then, as Schumpeter puts it, becomes a process of creative destruction through innovation (Schumpeter, 1934). The question of the discovery of new supply has been further advanced elegantly by Hayek (Hayek, 1978). His striking insight is in that competition is a discovery process that leads to an increase in the dimensionality of the commodity space. This is in stark contrast to the view of classical economics that competition merely allocates demand between a fixed set of products, mostly direct substitutes at that.

All the same, this leaves unanswered the question: Does the development of a new product automatically lead to its production and supply? Or are there unexplained lags between supply and demand? Furthermore, could it be that both demand and supply exist, but no firm arises to actually carry out the production to fulfill the demand? Several examples come to mind. Xerox had long had the technology to produce a user-friendly personal computer -- but the Macintosh was created by Apple much later, after Jobbs and Wozniak had visited Xerox. A more recent example is the commercialization of the internet. This required the development of a browser such as the one developed by Netscape -- several years after the development of the internet. But in transforming the idea into Netscape, not only new technology had to be developed, but also new ways of marketing and financing had to be discovered. Subtler examples of unexplained lags between supply and demand exist; and they compellingly demonstrate the need for an explicit mechanism to overcome such lags. One such example, U-Haul, is discussed in detail in Section 6 of this paper.

Examples such as these and the conspicuous lack of discussions in the literature about dependencies between demand and supply bring us to a very important question: If competition is the discovery procedure for new supply, what is the economic mechanism for the discovery of new demand?

This paper proposes an answer to that question through an entity called the pre-firm. The pre-firm transforms an idea into a firm. Every inventor or entrepreneur who failed at building a company to commercialize his/her invention or idea has gone through the pre-firm process. Every firm that exists today, or has ever existed in the past, has successfully completed the pre-firm process. Every pre-firm, whether it results in the creation of a firm or not, provides the economy with an opportunity to learn what works and does not work -- the pre-firm is the mechanism through which the economy discovers/creates future demand. Yet economics is eerily silent on the subject of the pre-firm.

One could argue that as conscientious economists, it is incumbent upon us to recognize that an economics that begins with firms, excluding pre-firms from the economic process, might make a

good story, but it is bad science. An analogy from biological evolution serves to illustrate this point. Stephen Gould, the noted evolution theorist uses Kipling's "Just so stories"[1] (Kipling, 1995) to bring into focus a subtle but insidious problem: a historical bias towards stories of successful adaptation. Such a bias leads evolutionary biologists to ignore "the nonadaptive consequences of inherited structure in systems of change that affects all parts in integrated and unanticipated ways" (Gould, 1980). Economics too proceeds with "Just so stories" explaining a wide range of economic phenomena such as firm diversity, organizational capabilities, feasible contracts and optimal resource allocations, without taking into account the constraints and consequences chosen and inherited through decisions made in the pre-firm. Pre-firm activity has always been a substantial portion of economic activity in toto and in recent decades it has been increasing at an increasing rate (Timmons, 1994). Yet, by completely ignoring the pre-firm, economics creates the illusion that firms spring into existence full grown from the womb, as it were.

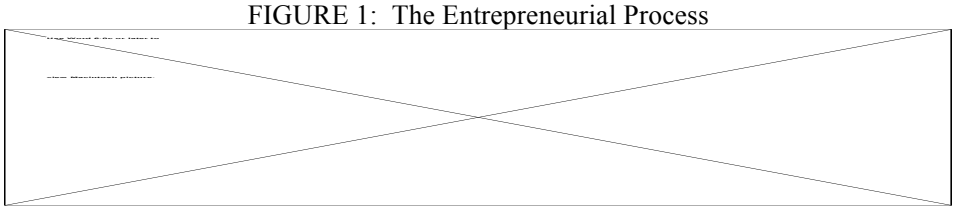
But firms do *not* come into existence automatically to fulfill pre-existing demand -- if they did, all pre-firms would become firms. If we are to meaningfully discuss the kinds of issues presented above, we need to make a further conceptual leap in our understanding of the nature of the firm: viz., firms are not only composite entities, they are also *artificial* entities in the sense that they have to be *created*.

Given that firms are artificial entities, the role of the entrepreneurial process becomes vital in explaining how firms come to be. In fact, it is the thesis of this paper that the central question for research in entrepreneurship should be: *How do firms come to be?* Furthermore, the paper presents a model of the entrepreneurial process in which the entrepreneur as the primary decision maker is inextricably intertwined with the answer to that question.

2. THE ENTREPRENEURIAL PROCESS -- DEFINITIONS

The **entrepreneurial process** transforms an idea into a firm.

FIGURE 1: The Entrepreneurial Process



The key insight here is that the entrepreneurial process is a *pre-firm* process.

An **idea** is any one or a combination of the following:

- ¥ A product or a service

[1] *Just so stories* are stories that explain why things are the way they are. Such stories also tend to celebrate things the way they are -- subscribing to the fallacy that because certain things came to be, there is some element of "optimality" or "correctness" attached to their origin and structure. This approach leads us to discount the significance of pre-histories because if existence by itself is the starting point of theory building, almost *any* story could ex-post serve as sufficient explanation for the pre-history. One delightful example is the story of an arbitrage struggle between an elephant and a crocodile that explains how the elephant came to have a long trunk!

- ¥ A technology/innovation
- ¥ A market need

TABLE 1: Examples of an "idea"

Concept	**Example**
Product	Plastic containers
Service	Packaging design
Technology	Blow molding
Innovation	Stretch blow molding
Market need	Packaging of liquids

The idea is modeled as a problem with an initial problem space (consisting of domain variables and their relationships) bounded by initial constraints -- for which a solution (or multiple solutions) may or may not exist. The **firm** is a feasible solution for the problem.

The entrepreneurial process can end in one of two ways. If a feasible solution is found, the firm comes into existence; otherwise, the entrepreneurial process aborts. It is important to distinguish between the success or failure of a firm and the success or failure of the entrepreneurial process. This means that it is entirely possible within this model that the entrepreneurial process successfully creates the firm but that the firm thereafter fails at a future date. The success of the entrepreneurial process does not ensure the success of the firm -- it merely provides the initial conditions for the firm's future development.

Since the entrepreneurial process is essentially a pre-firm process, it is exceedingly important to develop criteria for the end of the entrepreneurial process and the beginning of the firm. These criteria are modeled as constraints to the initial problem for which the firm is the solution. The following three definitions of the firm have been used to develop the criteria in the model for the cut-off point at which the firm comes into being:

1. Production function: The firm is a production function that transforms inputs into outputs through a technology.

2. Nexus of contracts: The firm is a nexus of contracts between individual agents.

3. Core competency: The firm is a set of core capabilities that enable it to deal with changes in its environment.

These definitions in their turn have been developed through a detailed review of the theories of the firm (Sarasvathy, 1997). Following is a representative sample of theories reviewed as part of this exercise in definition development:

A. Theories that deal with resources

Formal economic theories, beginning with Alfred Marshall (Marshall, 1948) and continuing till today's standard textbooks on micro-economics emphasize the firm as the basic unit of production in the economic process. These theories view the firm as a production function involving profit maximization subject to resource and technological constraints. The firm is modeled as a single irreducible entity with no separation of ownership and control.

Variants of this classical economic model of the firm have been made by the managerial theories of the firm. These theories typically involve the maximization of objective functions other than profits by managers in large corporations. For example, in Baumol's model (Baumol, 1959), managers seek to maximize sales revenue of the firm subject to earning an acceptable level of profits for the firm. Williamson (Williamson, 1964) examines many variants of a general model in which managers seek to maximize a utility function subject to reported profits exceeding some minimum acceptable level. Marris (Marris, 1964) expounds a theory in which managers maximize the market value of the firm under the threat of take-overs.

B. Theories that deal with stakeholders

Beginning with Cyert & March in 1963, behavioral theories of the firm view the firm as a coalition of groups and managers who *satisfice* rather than maximize (Simon, 1959). The interests of the competing groups are mutually reconciled through a willingness to live with acceptable solutions. Provided the situation is perceived as satisfactory, the satisficing economic agent does not seek to make any changes to the situation. The idea that firms are not the efficient maximizers that classical economic theory makes them out to be has also been examined through the concept of X-inefficiency developed by Leibenstein (Leibenstein, 1976). This theory emphasizes that firms do not achieve technical efficiency (X-efficiency) due to variations in individual efforts of agents within the organization.

A separate approach based on the composite nature of the firm has been developed as a result of Coase's differentiation between firms and markets. In this approach, the firm is posited as an alternative to the price mechanism and is modeled as a hierarchical organization involving a nexus of contracts between individual agents. Costs of renegotiating contracts, called transaction costs, are the focus of these theories. While Coase emphasizes the costs of price discovery and negotiation, Williamson highlights the importance of investments in assets specific to a given venture and the allocation of those assets among the contracting parties (Williamson, 1985). Alchian and Demsetz, however, emphasize the costs of monitoring within a firm where workers have incentives to withhold promised effort (Alchian & Demsetz, 1972). An interesting variation based on the composite nature of the firm is examined through the lens of agency theory -- the countervailing benefits and problems arising from the separation of ownership and management, and has been studied by Fama and Jensen & Meckling (Fama, 1980; Jensen & Meckling, 1976).

C. Theories that deal with the environment

Strategic theories of the firm (Andrews, 1980) examine the alignment between what the firm *can* do (organizational strengths and weaknesses) and the universe of what it *might* do (environmental opportunities and threats). Two streams of research have arisen here -- both of which have Edith Penrose's theory of the growth of the firm as antecedent (Penrose, 1959).

One stream emphasizes the development of knowledge-related resources within the firm. Knowledge-related resources develop through a firm's experience in dealing with a particular competitive environment and exist as a combination of its assets and stakeholders (Rumelt, 1984).

Concepts used to describe the manner in which a firm develops and stores its knowledge include (a) routines -- path-dependent knowledge bases that help explain evolutionary change in an industry population through selection arguments such as those found in the theories of biological evolution (Nelson & Winter, 1982); (b) absorptive capacity -- a concept that combines an evolutionary perspective with ideas from cognitive science and enables a firm to successfully incorporate new technologies into its strategy (Cohen & Levinthal, 1990). Other related concepts include organizational capabilities and core competencies.

The second stream of strategic theories uses an industry level perspective and is associated with concepts such as "market power" based on Bain's entry-barrier model (Bain, 1956) and imported into strategy by Porter (Porter, 1980). The idea of market power examines how markets are structured and how a particular firm can take advantage of that structure. These theories have been extended by game theorists mainly to incorporate standard formal theories of the firm into the industrial organization perspective.

A combination of the above two streams also exists: Organizational ecology theories focus on the inertia of firms in adopting new strategies. This inertia is attributed to the effort and time involved in implementing strategic changes. A fundamental strategic change involves the search and decision processes that lead to a new configuration of the firm's resources. The larger the proportion of the firm's resources that are up for grabs in implementing the changes, the more resistance the firm will have to face and overcome in order to make those changes (Freeman, 1995).

As mentioned previously, the literature review outlined above has been used to develop three definitions of the firm that are then used to identify the cut-off point between the pre-firm and the firm. These three definitions are operationalized as three constraints in the model presented in Section 4. Before moving from these definitions to the model, further details about the entrepreneurial process are described in Section 3.

3. THE ENTREPRENEURIAL PROCESS -- ENTREPRENEURIAL DECISIONS

The entrepreneurial process involves the selection or creation of a combination of resources, stakeholders and an environment that transforms the idea into a firm. This selection/creation occurs through a set of interconnected entrepreneurial decisions. Entrepreneurial decisions should not be confused with mundane decisions such as how many pencils to buy or what color telephones to install. Entrepreneurial decisions arise out of four interconnected decision domains, the first three of which correspond to the categories of theories of the firm discussed in the previous section:

1. *Resources*
   This domain has to do with non-human resources. Decisions arising out of this domain typically lead to the selection/creation of a production function with relevant inputs, and technological constraints. Financing issues and issues of information systems and flows including accounting could also arise in the context of this domain.

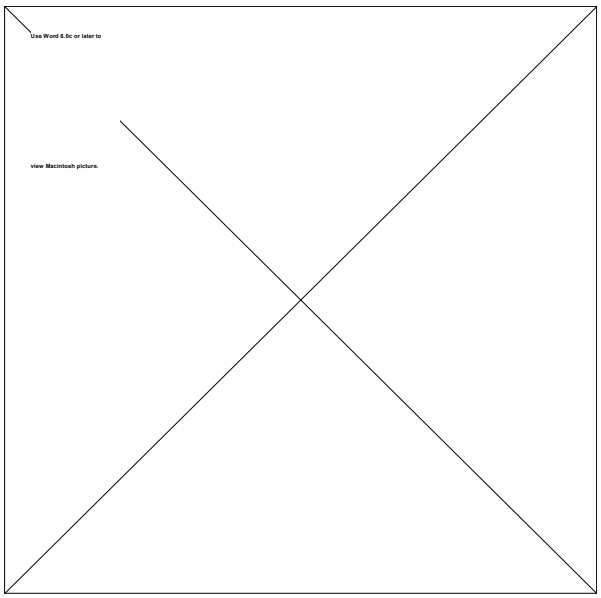
2. *Stakeholders*

This domain involves all stakeholders internal to the firm except the entrepreneur. Decisions arising out of this domain typically lead to the selection/creation of a set of feasible contracts between stakeholders within the firm. Issues of corporate culture and social responsibility are examples of other issues that arise in the context of this domain.

3. *Environment*
This domain forms the interface between the firm and its external environment including competitive (market/strategic) environment and macroeconomic environment. Decisions arising out this domain typically lead to the development of the firm's core competencies. Issues of market identification, positioning, and strategy development are some other areas that involve this domain.

4. *Entrepreneur*
This domain is particularly unique to the pre-firm and brings in issues of leadership, vision and the subjective theories of the entrepreneur who makes the selection/creation decisions arising out of all the domains. Decisions arising out of this domain typically lead to the overall *identity* of the firm in terms of its organizational structure, form, and purpose -- i.e., they lead to either the creation of the firm or the premature demise of the pre-firm. Issues of firm diversity and differentiation, and the future trajectory of the firm including exit strategies for the entrepreneur and other stakeholders are some of the issues that arise in the context of this domain.

FIGURE 2: Interconnected causal domains for entrepreneurial decisions



The four entrepreneurial decision domains have the following characteristic interconnections:

1. Every instance of an entrepreneurial process involves all four domains. Or in other words, every pre-firm is faced with decisions originating from all four domains.

2. While every entrepreneurial decision may originate in one or more of the four domains, each of those decisions involves elements of all four domains. Therefore, no entrepreneurial decision can be non-trivially studied or modeled without reference to all four domains.

3. There is no order or seriality to the four domains -- that is, none of the four domains have primacy or priority over the other three. There is no pre-specified order in which the pre-firm may be faced with its entrepreneurial decisions.

Figure 2 illustrates the pre-firm as a set of entrepreneurial decisions arising out of the four interconnected decision domains. This figure is not a set of boxes connected by arrows as most process models are. Instead a topological object from Knot theory called a Brunnian 4-Link (Rolfsen, 1976) is used to capture the interconnectedness of the four domains as explained above.

4. THE ENTREPRENEURIAL PROCESS -- THE MODEL

In summary, the pre-firm can be modeled as a meta-problem that the entrepreneur has to solve in order to bring the firm into existence. The model presented here is *not* a mathematical model -- it is merely a succinct picture of the entrepreneurial process.

Select/create $\boldsymbol{f}_{\mathbf{a}}(\mathbf{x})$
where **x** pertains to resources (material resources, money and information)
f pertains to the stakeholders (individuals and organizations)
and **a** pertains to the environment (competitive, strategic and economic)
s.t. Profit $\geq$ 0 (Resources domain)
Feasible separation of ownership and management (Stakeholders domain)
Market Share $\geq M$ (Environment domain)
and at least two of the three constraints are met.

The M is a pre-determined percentage of market share needed to ensure that the firm is a real player in its environment. For the most part, every industry has a rule-of-thumb for M. For example, while for most manufacturing industries, M is considered to be 20%, it could be as low as 5% in the case of an industry such as telecommunications or as high as 60% in the case of internet companies.

$\boldsymbol{f}_{\mathbf{a}}(\mathbf{x})$ is the combination of resources, stakeholders, and an environment that implements the idea and transforms it into a firm. The reason this is set up as a meta-problem and not merely an objective function is that the entrepreneurial process is a dynamic, iterative process that can go through several cycles of selection and creation before the meta-problem converges into a particular objective function which forms the stable combination of f, a, and x that is the firm.

The three constraints in the model are the operationalization of the three definitions of the firm developed from the existing theories of the firm in Section 2. The firm does not come into existence until at least two of the three constraints are satisfied.

Profit $\geq$ 0 (Resources domain)
The first constraint simply stipulates financial break-even.

Feasible separation of ownership and management (Stakeholders domain)
The second constraint stipulates a feasible separation between ownership and management. It does not require the *actual* separation. This distinction is important because in the pre-firm, ownership (in the sense of residual claims) is inseparable from management. As the pre-firm develops into a firm, although it becomes *feasible* to separate the two, this separation may not actually occur -- the entrepreneur might continue to both own and manage the firm.

Market Share $\geq M$ *(Environment domain)*
The third constraint stipulates a minimum market presence. As mentioned in the note about M, what is a minimum market presence differs from industry to industry and is therefore left for specific future investigations into the pre-firm.

5. THE ENTREPRENEURIAL PROCESS -- THE ENTREPRENEUR

Three of the four entrepreneurial decision domains are tightly linked to the received theories of the firm as set out in Section 2. The fourth link, however, is unique to the pre-firm.

The entrepreneur is the person/s who undertakes the entrepreneurial process: i.e., the entrepreneur selects/creates the $\boldsymbol{f}_{\mathbf{a}}(\mathbf{x})$ that creates the firm. The entrepreneur in a pre-firm is faced with very different decision problems than a manager/owner in a firm -- the decisions are different both in domain and constraints. For example, while the owner/manager inherits the benefits and burdens of the firm's history, the entrepreneur starts out with a clean slate, so to speak.

More importantly, the entrepreneur, if he/she so chooses (and there is evidence that most often does choose -- Sarasvathy, Simon & Lave, 1996), can bring in personal values, goals and motivations to influence the shape of the firm in a way that the later manager/owner cannot easily hope to do. In fact, the same individual who starts out as the entrepreneur in the pre-firm and later becomes the owner/manager of the firm typically finds it very difficult to make the transition precisely because the decision environment of the firm is very different from that of the pre-firm. What exactly are the differences is left as a research problem for future investigations into the theory of the pre-firm.

6. AN APPLICATION OF THE MODEL OF THE PRE-FIRM

In this section, the model of the pre-firm is applied to the case of the creation of U-Haul.

In 1945, Leonard Schoen started with the following idea: *One way rentals of moving vans/trucks*. In transforming this idea into U-Haul, he had to make the following entrepreneurial decisions:

1. Decisions involving resources

How many moving vans/trucks should he buy?
How many locations would he need to open?

2. Decisions involving stakeholders
How many employees should he hire? (One per location? Or more?)
Who should he raise the capital from?

3. Decisions involving the environment
Should he open a few locations regionally -- or go national at once?
How should he establish his market presence -- advertise? If so, how?
Putting it all together, how should he price the product?

If each of these entrepreneurial decisions is examined only within its own domain, the best theory and practice within the domain fail to lead to a good decision. That is why for many years, no firm arose to satisfy a growing demand during the high-production war years for this particular service. In fact, when this case is used in a class discussion in a business school, students typically come to the conclusion that this is not a viable project -- the resource constraints overwhelm any attempt to price the service viably.

Schoen's solution exchanges resource constraints for a variety of stakeholder constraints to create an almost instantaneous national presence. He convinced several friends and family members to individually make down payments on trucks and lend him the use of the trucks; he contracted with a national chain of gas stations for the use of their locations; the customers advertised U-Haul's existence through the name and the uniquely painted trucks; and with hardly any employees and a ridiculously small outlay of funds, U-Haul came into being .

The role of the entrepreneur is also starkly highlighted in this application of the model of the pre-firm -- because it brings out the importance of implementation in the entrepreneurial process. The conceptual solution of the problem of one way rentals of moving vans is no more than a necessary condition for U-Haul to come into existence. Sufficiency is provided by the *implementation* of the conceptual solution. In this case, implementation calls for very specific abilities from the entrepreneur in personally persuading each stakeholder and creating a feasible set of contracts.

The decisions that Schoen made in creating U-Haul also precluded a high concentration of ownership -- he had to considerably dilute his ownership in implementing the pre-firm. Understanding U-Haul's pre-firm decisions could presumably help us anticipate and explain possible agency problems in its future. U-Haul carries within its pre-firm the reason for its form, structure, scope and strategic potential.

7. THE PRE-FIRM -- EMPIRICAL INVESTIGATIONS

While a considerable body of literature -- both theoretical and empirical -- exists to inform our understanding of the three entrepreneurial decision domains of resources, stakeholders and the environment as they occur in a firm, very little work has been done to connect them with the domain of the entrepreneur and thereby understand the pivotal role of the pre-firm in economics.

The model of the pre-firm presented in this paper has been used by the author to construct a set of generic decision problems characterizing the entrepreneurial process. This set of decision problems is being used in an empirical study of 45 successful entrepreneurs in the US. The purpose of the study is to build a cognitive profile of the expert entrepreneur (the word expert is used here in the context of the cognitive science literature on experts and novices -- Ericsson & Simon, 1993) that can be used to develop historical, empirical and experimental research programs to study the pre-firm and build its theory. Preliminary results from a pilot study indicate that entrepreneurs do focus on constraints more than on expected outcomes; and tend to develop a purely subjective vision of future demand that influences most of their entrepreneurial decisions.

8. THE PRE-FIRM -- POSSIBILITIES FOR THEORETICAL LINKAGES

This section briefly sketches examples of possible payoffs that building a theory of the pre-firm could bring to existing theories of the firm.

Schumpeter and Kirzner -- precursors to the idea of the pre-firm

Every pre-firm is an opportunity for the economy to create novelty. Although they did not precisely articulate a theory of the pre-firm, Schumpeter and Kirzner recognized its potential for economic novelty from two complementary perspectives (Kirzner, 1992). While Schumpeter described the entrepreneur as the creator of disequilibrium, Kirzner saw him/her as a recognizer of disequilibrium who moves the economy back to equilibrium. Together they provide the seeds of the insight presented in this paper: viz., the entrepreneurial process is essentially a pre-firm process and differs substantially from the received concept of the "firm" in economics and consequently its relation to equilibrium processes also is different from that of the firm..

Profit maximization versus value creation in the pre-firm

Researchers in the area of entrepreneurship have long understood the importance of differences between profits and value -- especially in the macro-economic arena. While an individual firm can make profits by merely redistributing the wealth in an economy, true value creation involves an increase in the aggregate wealth of the economy as a whole (Venkatraman, 1996). A good theory of the pre-firm should tell us which entrepreneurial decisions lead merely to profit making and which ones lead to value creation.

The role of the pre-firm in the development of non-profit organizations

For-profit firms are only a small subset of social institutions in general. Is there, then, a theory of the pre-firm for social institutions other than economic firms? Even more interestingly, why are there non-profit enterprises? Or conversely, why are there for-profit firms? Questions such as these could be studied to lead to valuable insights through the development of a detailed theory of the pre-firm that is effectively generalized to include other types of social institutions. An example is the health-care industry where both non-profit and for-profit firms compete.

The pre-firm and the emergence of firm diversity

The issue of firm diversity is at the heart of strategic theories of the firm. An understanding of the pre-firm in general, and the role of the entrepreneur in particular, can lead to a meaningful understanding of firm diversity. For example, even in a mundane industry such as manufacturing ice cream, the role of the entrepreneur is crucial in explaining firm diversity -- the development of a firm such as Ben & Jerry's cannot be explained merely through arguments about strategic concepts or other economic artifacts.

In addition to the examples listed above, several questions in areas such as agency theory, contract theory, capital theory, theories of growth, etc., can be traced back to the pre-firm and understood in terms of the role of initial conditions and entrepreneurial decisions -- a perspective that has thus far been largely ignored by these areas.

9. CONCLUSION

This paper has identified a substantial gap in our understanding of economics and has set out a model of the pre-firm to bridge that gap. The pre-firm is posited as the mechanism through which the economy discovers future demand and creates firms that fulfill that demand. The entrepreneur who undertakes and completes the pre-firm process creates the firm through a set of interconnected entrepreneurial decisions, the constraints and consequences of which are inherited by the firm. It has been shown that the pre-firm provides the initial conditions for the structure and future trajectory of the firm -- and as such promises to enhance our understanding of firms and influence several aspects of our current theories about firms.

10. ACKNOWLEDGMENTS

I thank the Ewing Marion Kauffman Foundation for their financial support for my empirical work. I thank my advisors Herb Simon and Lester Lave for their conversation, their probing, worrisome questions, and their unwavering enthusiasm for the project. I thank Anil Menon for helping me turn a jumble of enthusiastic ideas into a readable paper and along with Jack Roseman, for influencing my thinking in special ways.

REFERENCES

Alchian, Armen, A., and Demsetz, Harold (1972) Production, Information Costs, and Economic Organization. American Economic Review. 62: 777-95.

Andrews, K. (1980) The Concept of Corporate Strategy. Homewood IL: Irwin

Aoki, Masahiko, Gustafsson, Bo and Williamson O. E. (1990) The Firm as a Nexus of Treaties. London: Sage Publications.

Bain, J. S. (1956) Barriers to New Competition. Cambridge MA: Harvard University Press

Baumol, W. J. (1959) Business Behavior, Value and Growth. Macmillan

Cheung, Steven (1983) The Contractual Nature of the Firm. Journal of Law and Economics. 26: 1-21.

Coase, R. H. (1937) The Nature of the Firm. Economica. 4: 386-405 reprinted, pp. 33-35 in Coase, The Firm, the Market, and the Law

Coase, R. H. (1960) The Problem of Social Cost. Journal of Law and Economics. 3: 1-44.

Cohen W., and Levinthal, D. (1990) Absorptive Capacity: A New Perspective on Learning and Innovation. Administrative Science Quarterly. 35: 128-152.

Cyert, R. M., and March, J. G. (1963) A Behavioral Theory of the Firm. Englewood Cliffs, NJ: Prentice Hall.

Demsetz, Harold (1983) The Structure of Ownership and the Theory of the Firm. Journal of Law and Economics. 26: 375-90.

Ericsson, K. A., and Simon, H. A. (1993) Protocol Analysis: Verbal Reports as Data. Cambridge MA: The MIT Press.

Fama, Eugene (1980) Agency Problems and the Theory of the Firm. Journal of Law and Economics. 88: 288.

Freeman, John (1995) Business Strategy from the Population Level. In Resource-based and Evolutionary Theories of the Firm: Towards a Synthesis. Cynthia Montgomery Ed., Boston: Kluwer

Gould, Stephen Jay (1980) The Evolutionary Biology of Constraint Daedalus. 109(2): 39-52

Hayek, Friedrich A. von (1978) New Studies in Philosophy, Politics, Economics and the History of Ideas Chicago: University of Chicago Press.

Jensen, Michael C., and Meckling, W. H. (1976) Theory of the Firm: Managerial Behavior, Agency Costs and ownership Structure. Journal of Financial Economics. 3: 305-60.

Kipling, Rudyard (1995) Just So Stories, For Little Children. New York: Oxford University Press

Kirzner, Israel M. (1992) Essays in the Development of Modern Austrian Economics. London: Routledge.

Sarasvathy, D. K., Simon, H. A., and Lave, L. (1996) Perceiving and Managing Business Risks: Differences between Entrepreneurs and Bankers. Journal of Economic Behavior and Organization.

Sarasvathy, D. K. (1997) Where does the Entrepreneurial Process End and the Firm Begin? Working Paper.

Leibenstein, Harvey (1976) Beyond Economic Man: A New Foundation for Microeconomics. Cambridge MA: Harvard University Press

Marris, R. (1964) The Economic Theory of Managerial Capitalism. Glencoe, IL: The Free Press.

Marshall, Alfred (1948) Principles of Economics, 8th ed. New York: Macmillan

Nelson, R. R., and Winter, S. G. (1982) An Evolutionary Theory of Economic Change. Cambridge, MA: Belknap Press.

Penrose, Edith (1959) The Theory of the Growth of the Firm. Oxford: Oxford university Press.

Porter, M. (1980) Competitive Strategy. New York: Free Press.

Rolfsen, Dale (1976) Knots and Links. Houston TX: Publish or Perish, Inc.

Rumelt, R. P. (1984) Towards a Strategic Theory of the Firm. In Competitive Strategic Management. New Jersey: Englewood Cliffs

Schumpeter, Joseph A. (1934) The Theory of Economic Development Cambridge, MA: Harvard university Press.

Simon, H. A. (1959) Theories of Decision Making in Economics and Behavioral Science. American Economic Review. 49: 253-83.

Timmons, Jeffrey (1994) New Venture Creation: Entrepreneurship for the 21st Century, 4th ed. Illinois: Irwin

Venkatraman, S. (1994) Associate Editor's Note. Journal of Business Venturing. 9: 3-6.

Williamson, O. E. (1964) The Economics of Discretionary Behavior: Managerial Objective in a Theory of the Firm. Englewood Cliffs, NJ: Prentice Hall.

Williamson, Oliver E. (1985) The Economic Institutions of Capitalism: Firms, Markets, and Relational Contracting. New York: The Free Press.