

STRATEGY AND ENTREPRENEURSHIP: OUTLINES OF AN UNTOLD STORY

Saras D. Sarasvathy
University of Washington

S. Venkataraman
University of Virginia

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In his book “Invention,” Professor Norbert Wiener (1993), commenting on the relative importance accorded to individuals and institutions in historical narratives of science and inventions, asks us to imagine Shakespeare’s “Romeo and Juliet” without either Romeo or the balcony.¹ The story is just not the same. He likens much of the study of the economic history of science and accounts of inventions as “all balcony and no Romeo.” The balcony for Norbert Wiener captures the context in which the story unfolds – the culture, the institutions, the constraints and the catalysts that move the plot forward and thicken it. Romeos, for Wiener, play the leading parts in the story, because there is a strong fortuitous element to inventions and there is no inevitability that a possible discovery will be made at a *given time and space*. Take away either one, Romeo or the balcony, and the whole story falls apart. In a similar vein, we would liken studies of strategic management to “all balcony and no Romeo.” But if we accuse strategic management of being “all balcony and no Romeo,” strategic management scholars could legitimately accuse entrepreneurship of being “all Romeo and no balcony.”

In this chapter we wish to suggest a point of view from entrepreneurship that will allow strategic management scholars to accommodate more Romeos in their stories. Although these two fields have much to offer each other (trade in balconies and Romeos), they have developed largely independent of each other. We wish to suggest that entrepreneurship has a role to play in strategic management theory and that strategic management theory enriches our understanding of the entrepreneurial process, although this latter aspect will not be the focus of this chapter.

One useful way of thinking about entrepreneurship is that it is concerned with understanding how, in the absence of markets for future goods and services, these goods and services manage to come into existence (Venkataraman, 1997). To the extent value is embodied in products and services, entrepreneurship is concerned with how the opportunity to create

¹ Wiener took his inspiration from the work of the English writer, Rudyard Kipling.

“value” in society is discovered and acted upon by some individuals. As Wiener has noted (Wiener, 1993: 7), at the beginning stages of a new idea, the effectiveness of the individual is enormous: “Before any new idea can arise in theory and practice, some person or persons must have introduced it in their own minds... The absence of original mind, even though it might not have excluded a certain element of progress in the distant future, may well delay it for fifty years or a century.”

The field of strategic management can be usefully described as having to do with the “methods” used to create this “value” and the ensuing struggle to capture a significant share of that “value” by individuals and firms. Thus, if we understand entrepreneurship and strategic management as the fields that together seek to describe, explain, predict and prescribe how value is discovered, created, captured, and perhaps destroyed, then there is not only much that we can learn from each other, but together we represent two sides of the same coin: the coin of value creation and capture.

One side of the coin, namely strategic management, has to do with the achievement of ends – obtaining market share, profit, and sustained competitive advantage. The other side of the coin, namely entrepreneurship, has to do with the achievement of beginnings – *creating* products, firms, and markets. But the clarity and complexity with which an author connects beginnings and ends is what makes a great story. We believe the really interesting story between strategic management and entrepreneurship has not yet been told. The main reason for this is that in general, creation calls for very different modes of thinking and behavior than capture and sustenance over time. Yet the creation process not only determines certain powerful tendencies for survival and growth, but some elements of it also persist over long periods of time, subtly and substantially influencing the selection and achievement of later ends. Carefully bearing in mind

that large expanses of strategic management may have no overlap with entrepreneurship², this chapter nevertheless focuses exclusively on where entrepreneurship and strategic management overlap.

In the preface to their 1994 book, Rumelt, Schendel, and Teece identify the subject matter of strategic management as "the purposeful direction and natural evolution of enterprises." (Rumelt, et. al., 1994) They further identify four fundamental issues that comprise a research agenda in strategic management:

1. Firm Behavior³

How do firms behave? Or, do firms really behave like rational actors, and, if not, what models of their behavior should be used by researchers and policy makers?

2. Firm Differentiation

Why are firms different? Or, what sustains the heterogeneity in resources and performance among close competitors despite competition and imitative attempts?

3. Firm Scope

What is the function of or value added by the headquarters unit in a diversified firm? Or, what limits the scope of the firm?

4. Firm Performance

² It is worth pointing out here that when discussing creative processes in the economic domain, strategy is a sub-set of entrepreneurship. For example, for any given new technical invention there are, at least in theory, an infinite number of product possibilities that may flow out of that invention. But, in practice, only a finite sub-set of those possibilities will come into existence. Of those new products that come into existence, only a sub-set is introduced by existing firms. Indeed, a large number of new products are introduced into the economy by new firms. Strategy essentially focuses on existing firms and the activities of existing firms. Entrepreneurship, on the other hand, has been focusing attention on the creative process, particularly of new firms. Where they overlap is at the nexus of the creative process of existing firms. Thus, each field has vast terrains that do not overlap.

³ The choice of the term *firm* and the choice of *focusing on the pre-existing firm* by Rumelt, Schendel, and Teece (1994) only affirm our assertion in the previous footnote.

What determines success or failure in international competition? Or, what are the origins of success and what are their particular manifestations in international settings or global competition?

In answering the four questions stated above, economics and strategic management theories generally tend to focus on rational decision making (whether unbounded or bounded and linear or non-linear) based on causal reasoning and the logic of prediction. Our explication of entrepreneurship, however, rests upon creative action based on effectual reasoning and the logic of control.

We have elsewhere identified the subject matter of entrepreneurship as having to do with the exploitation of opportunities for creating hitherto non-existent economic artifacts (Venkataraman, 1997; Shane and Venkataraman, 2000; Sarasvathy and Simon, 2000; Sarasvathy, 2001). Depending upon the completeness and/or consistency of the larger environment, entrepreneurial opportunities may have to be recognized or discovered or created. In this chapter, we first examine these three types of action connected with entrepreneurial opportunities through a framework based on the preconditions for their existence. Thereafter, we explore the four fundamental issues of strategic management listed above from an "entrepreneurial opportunity" perspective.

ENTREPRENEURIAL OPPORTUNITIES⁴

The Oxford English Dictionary defines opportunity as “a time, juncture, or condition of things favorable to an end or purpose, or admitting of something being done or effected.” As is clear from this definition, at the minimum, an opportunity involves an end or purpose, and things favorable to the achievement of it. An entrepreneurial opportunity consists of the opportunity to

create future economic artifacts and as such, involves a demand side, a supply side and the means to bring them together. Therefore, in the case of an entrepreneurial opportunity, the “things favorable” consist of two categories: (a) beliefs about the future; and (b) actions based on those beliefs. In sum, an entrepreneurial opportunity consists of:

1. Supply side: New or existing idea/s or invention/s;
2. Demand side: One or more ends – may be subjective (endogenous) aspirations or objective (exogenous) goals or both;⁵
3. Beliefs about things favorable to the achievement of those ends; and,
4. Possible implementations of those ends through the creation of new economic artifacts.

At this point, it is important to note that entrepreneurial opportunities exist at all levels of the economy – individual, corporate, and macroeconomic. For example, the invention of the internet not only led to the identification and creation of entrepreneurial opportunities for individuals and firms, but also opportunities for the US economy as a whole in terms of more effective globalization. Similarly, Adam Smith's exposition of the "invisible hand" guided both economic policy at the government level as well as the decisions of individual economic agents and firms in the creation of "free market" institutions.

But entrepreneurial opportunities are extremely context specific. What might be an opportunity today in the Ukraine may not be an opportunity at all in the US today or even in the Ukraine tomorrow. This means that entrepreneurial opportunities do not necessarily lie around waiting to be discovered by the serendipitous entrepreneur who stumbles upon them or even to be “divined” by entrepreneurial geniuses, if any such geniuses exist. Instead, entrepreneurial

⁴ This section summarizes our more detailed exposition titled "Three views of entrepreneurial opportunity."

⁵ The entrepreneur not only has an idea for a product or firm, but also has some personal aspirations and/or goals in pursuing the opportunity. Goals could be as specific as making an IPO in five years to creating a legacy for their

opportunities are often residuals of human activities in non-economic spheres and emerge contingent upon conscious actions by entrepreneurs who continually strive to transform the outputs of those non-economic activities into new products and firms and in the process fulfil and transform human aspirations into new markets.

In other words, before there are products and firms, there is human imagination; and before there are markets, there are human aspirations. Creative outputs of the human imagination in every realm of human action be it the arts or the sciences, sports or philosophy, become inputs for the economic domain. It is an empirical fact that profits for the individual and the firm, and welfare for the economy come as much from Jerry Seinfeld's jokes and Michael Jordan's baskets, as from great technological inventions and the tearing down of the Berlin wall. Similarly, human aspirations may range from career goals and individual prosperity to freedom and justice and the good life for all and peace on earth. These aspirations have to be transformed into demand functions and markets for specific economic artifacts such as particular goods, services and firms. Entrepreneurship consists in matching up the products of human imagination with human aspirations to create markets for goods and services that did not exist before the entrepreneurial act.

In fact, most entrepreneurial opportunities, be they supply based or demand based, do not originate in the economic domain at all. For example, the internet was developed as a way to facilitate communication between defense scientists and remained out of the economic domain for several years. The mere existence of the internet did not guarantee the development of e-commerce. Rather, this artifact created to solve a political problem (namely, defense), had to be transformed through several intentional and unintentional activities to become a universe of

children. And aspirations could range from making money to enjoying an independent lifestyle to changing the world. Furthermore, these aspirations and goals could change and new ones could emerge over time.

entrepreneurial opportunities in the economic domain. To cite another example, entrepreneurs such as Robert Lucas transform literary and artistic endeavors into the Star Wars marketing empire by matching up creations of the human imagination with human aspirations such as the desire to participate in the triumph of good over evil. That is why if we are to understand entrepreneurial opportunities, we have to delve into the preconditions for their existence -- i.e., the preconditions for the existence of demand and supply combinations that constitute entrepreneurial opportunities. This leads us to a simple typology of entrepreneurial actions in relation to opportunities as follows:

1. Opportunity Recognition

If both sources of supply and demand exist rather obviously, the opportunity for bringing them together has to be "recognized" and then the match-up between supply and demand has to be implemented either through an existing firm or a new firm. Examples include arbitrage and franchises. For example, through its first successful coffee shop, Starbucks proved the existence of a demand for specialty coffees as also a viable and effective way to satisfy that demand. Thereafter, each Starbucks franchisee only has to *recognize* potential geographic locations for extending that demand and supply combination. They do not have to invent sources of supply, or induce demand for a completely new product.

2. Opportunity Discovery

If only one side exists in an obvious manner and the other side either does not exist or is so latent as to be virtually non-existent for most people -- i.e., demand exists, but supply does not, and vice versa -- then, the non-existent side has to be "discovered" before the match-up can be implemented. In other words, when demand exists; supply has to be discovered. An example of this is Ron Popeil and his inventions for more convenient and health conscious kitchen

devices. On the other side of the coin, supply might exist; then demand has to be discovered. The history of technology entrepreneurship is strewn with solutions in search of problems. Xerox had the technology for the Macintosh computer, but it took Jobs and Wozniak to discover and exploit its potential demand.

3. Opportunity Creation

If neither supply nor demand exist in an obvious manner, one or both have to be "created", and several economic inventions in marketing, financing, management etc. have to be made, for the opportunity to come into existence. Examples include Wedgwood Pottery, Edison's General Electric, U-Haul, AES Corporation, Netscape, Beanie Babies, and the MIR space resort.

Historically, opportunities have been supposed to exist -- and the entrepreneur either is alert to them (Kirzner, 1979) or somehow goes about "discovering" them (Hayek, 1945 and Schumpeter, 1976). But the idea we will explore in this chapter is that entrepreneurial opportunities often have to be "created" by using the entrepreneurial imagination to *embody* human aspirations in concrete products and markets.

THE CREATIVE ENTREPRENEURIAL ASPECTS OF FUNDAMENTAL ISSUES IN STRATEGIC MANAGEMENT

1. Firm Behavior -- Emphasizing the creativity of human action

How do firms behave? Or, do firms really behave like rational actors, and, if not, what models of their behavior should be used by researchers and policy makers?

Rational Action

Economics has long rested on foundations of rational action; and it has long been criticized for it. For example, studies have shown that there are severe limits -- lack of knowledge, computational ability, and ability to consider more than a few factors simultaneously -- that place an upper bound on human objective rationality (Simon, 1959; Payne, Bettman & Johnson, 1993; Bar-Hillel, 1980; Tversky & Kahneman, 1982). Although this does not imply that decision makers are irrational, it shows that they must usually use heuristics and approximate inductive logics -- that nevertheless often lead to very effective decisions (Gigerenzer, Hell & Blank, 1988). They seldom have the luxury of behaving like utility maximizers.

But most criticisms of the "rational" foundations of economics attack and try to relax assumptions of rationality rather than provide an overarching alternative framework. In 1991, however, Buchanan and Vanberg called for more drastic measures, particularly for our understanding of entrepreneurship (Buchanan & Vanberg, 1991). In that paper, they argue for the usefulness of a perceptual construct of the market as a *creative* process, rather than as a *discovery* process, or the more familiar *allocative* process. Their arguments are based on a fundamental assumption of the future that is not merely unknown, but essentially unknowable. Only speculations and conjectures are possible about the future because the future is *created* by the choices that human beings make: "Entrepreneurial activity, in particular, is not to be modeled as discovery of that which is "out there." Such activity, by contrast, *creates* a reality that will be different subsequent on differing choices. Hence, the reality of the future must be shaped by choices yet to be made, and this reality has no existence independent of these choices.

With regard to a “yet to be created” reality, it is surely confusing to consider its emergence in terms of the discovery of “overlooked opportunities.” (178)

Creative action

Pursuant to the detailed arguments advanced by Buchanan and Vanberg, we propose the following answer to the first fundamental issue in strategic management: *Firms behave creatively*. Firms not only use rational and analytical decision making, they also use creative action as a way to figure out both goals and strategies in an intrinsically dynamic process. If we are to build theories of strategic management and entrepreneurship based on *creative* rather than *rational* action⁶, we need to first examine what we know so far about creative action.

In a powerful theoretical exposition, Joas (1996) has argued in considerable detail for the fundamentally creative nature of all human action. “All theories of action which proceed from a type of rational action – irrespective of whether they are based on a narrower or broader, a utilitarian or a normative concept of rationality – make at least three assumptions. They presuppose firstly that the actor is capable of purposive action, secondly that he has control over his own body, and thirdly that he is autonomous vis-à-vis his fellow human beings and environment. ... The proponents of such conceptions are well aware that the preconditions assumed by the model of rational action are frequently not to be found in empirically observable action. However, these writers are forced to claim that the limited degree to which these preconditions obtain is not a deficiency of their particular theory but a fault of the actors themselves. ... I am not in any way denying the empirical usefulness of rational models of action when it comes to analyzing certain social phenomena. What I do question, however, is the claim

⁶ We use the terms “rational action” and “creative action” in their precise philosophical/sociological meanings – such as those used by Parsons and Joas respectively (Parsons, 19xx; Joas, 1996). We want to stress that we do not mean creative action to be “irrational”, nor do we suggest that rationality cannot lead to creative outcomes in the colloquial sense.

that because of its usefulness this model of rational action, with all its tacit assumptions, can be applied to an ever increasing number of fields of study without a thorough reflection of precisely those intrinsic presuppositions.” (147) Joas then goes on to analyze *the intentional character, the specific corporeality and the primary sociality of all human capacity for action*, with a view to developing a theory of creative action that could form a basis for the social sciences.

Creative action and endogenous goals

Both works cited above (Buchanan & Vanberg, 1991; Joas, 1996) explicitly question the pre-existence of goals. Both exhort the necessity for developing a theory of human intentionality in which human purposes emerge *within* the processes studied and are not given a priori. For example, economics imposes utility maximization as the sole purpose or *telos* on the individual; profit maximization on the firm; and, welfare maximization on the economy. But others, such as psychologists and historians have argued that individuals and firms and even economies may have a variety of purposes that are not given a priori and that are born, change, and die over time. While Buchanan and Vanberg decry the economist’s imposition of an exogenous *telos* on the phenomena they study, Joas brings to bear a wide variety of authorities from the pragmatist philosophers to expressivist anthropologists to develop a theory of creative action in which *telos* is neither ignored, nor imposed externally, nor assumed as a precondition for action. Within management literature, March too has called for theories that do not assume pre-existent goals (March, 1982): “To say that we make decisions now in terms of goals that will only be knowable later is nonsensical – as long as we accept the basic framework of the theory of choice and its presumptions of pre-existent goals. I do not know in detail what is required, but I think it will be substantial. As we challenge the dogma of pre-existent goals, we will be forced to reexamine some of our most precious prejudices. ... We should indeed be able to develop better

techniques. Whatever those techniques may be, however, they will almost certainly undermine the superstructure of biases erected on purpose, consistency, and rationality. They will involve some way of thinking about action now as occurring in terms of a set of unknown future values.”

The first step in building a strategic management based on creative action, therefore, would call for theories that explain the selection of goals as *endogenous* to the strategic management process. In strategic management, researchers such as Mintzberg have called for a research program to examine strategies that were intended as well as those that were realized despite intentions (Mintzberg, 1978). One such theory, the theory of effectual (as opposed to causal) reasoning has recently been developed in entrepreneurship and as will be seen in the following sections, will bring additional new answers to the other three fundamental questions in strategic management. While creativity in causal reasoning consists in generating alternative means for the achievement of pre-specified goals, creativity in effectual reasoning involves the generation of possible goals, given limited means and constraints within dynamic and interactive environments. The theory of effectuation suggests that the solution to goal ambiguity need not lie in random and equivocal efforts or in dumb luck.

2. Firm Differentiation -- Emphasizing effectuation rather than causation

Why are firms different? Or, what sustains the heterogeneity in resources and performance among close competitors despite competition and imitative attempts?

Differentiating between generalized aspirations and specific goals

The issue of differentiation is even an issue only if we assume homogeneity of goals, especially goals that are determined prior to choice. In reality, however, human beings do not begin with specific goals – only with vague and generalized aspirations, that are themselves contingent upon a host of situational and temporal factors. This intrinsically pluralizing role of

contingent aspirations affects both demand-side and supply-side choices. For example, on the demand side, most hungry customers do not start with the “need” for a specific food such as hamburgers. Instead they start with a generalized hunger for something to eat. The entrepreneur induces the customer to transform that generalized aspiration into a concrete demand for a specific product such as the hamburgers manufactured by a particular company.

There are two types of choice here. The first one involves the transformation of a vague aspiration such as hunger into the specific desire for a hamburger. The second one involves the choice between possible hamburger joints, *given the desire for a hamburger*. As proponents of the resource-based theory of the firm have pointed out, in mainstream economics and management, we tend to model the latter type of choice (i.e., choice between means to achieve a particular goal) rather than the earlier one – i.e., the choice between possible ends, given particular means and very generalized aspirations (Ulrich & Barney, 1984).

Similarly, on the supply side, most entrepreneurs do not set out to build a particular company for a particular product within a particular market (Ex: to create a profitable company for manufacturing and selling razor blades). Instead, when setting out, the entrepreneur only has some very general aim, such as the desire to make lots of money, or to create a lasting institution, or more commonly, just an interesting idea that seems worth pursuing. For example, Gillette started with the idea of making some product that would need to be repurchased repeatedly. Moving from that relatively vague starting point to actually designing and manufacturing the disposable razor involved a very different set of choices than after he had determined the particular product that he wanted to make and sell. The type of reasoning involved when specific goals have to be created from contingent aspirations is necessarily different from the type of reasoning involved in attaining that specific goal once it is finalized. Given a specific

goal, selecting between alternative means involves causal reasoning. Transforming contingent aspirations into possible specific goals and choosing between them involves effectuation.

Effectuation finds its theoretical antecedents in researchers such as March who investigated exploration and exploitation in organizational learning. Organizational learning involves decisions that allocate scarce resources (including attention) between the exploration of new possibilities and the exploitation of old certainties. These decisions are complicated by the fact that their costs and benefits may be dispersed over time and space, and that they are subject to the effects of ecological interaction. Yet, balancing the allocation between exploration and exploitation is crucial to the survival and sustenance of the organization. March argues that understanding the relationship between these two horns of a continuing dilemma in organizational evolution leads us away from a linear approach to concepts such as “success” and “sustainable competitive advantage”. For example, introducing a new technology such as computerized decision support systems, while improving the organization’s chance of avoiding being the worst competitor, may reduce it’s chance to be the overall winner in the game (March 1991: 84).

But effectuation goes beyond the dichotomies of exploration and exploitation, or the distinction between linear and non-linear thinking. Effectuation is useful in domains where there is no pre-existent universe of possibilities to explore – instead, such a universe gets *created*, often unintentionally, by acts of human imagination. These acts of the imagination may occur in the normal course of human activity in a wide variety of domains, most of which may not be driven by any immediate economic goal. For example, the theory of effectuation would argue that no exploration of any relevant economic domains could have led to the “discovery” of the internet and its e-commerce possibilities. Instead, an artifact created to solve a particular

problem in an unrelated domain (in the internet example, the communication problem for defense scientists) was eventually transformed into a universe of possible economic opportunities by internet entrepreneurs. This transformation did not happen overnight. The mere existence of the internet did not inevitably imply the creation of e-commerce. Instead, that creation had to await several fortuitous inventions (such as the web browser), serendipitous insights (such as Netscape's marketing strategy), and arduous institutional developments (such as security procedures, privacy laws, etc, that continue even as this chapter is being written). It is this transformation process that involves entrepreneurial effectuation and is ignored in many economic and management theories of strategic management and so-called opportunity *recognition*.

Causation and effectuation

Just as exploration and exploitation are both essential to the continuing sustenance of firms, both causation and effectuation are important aspects of entrepreneurial and strategic decision making in individuals. To generalize the ideas illustrated in the Gillette example earlier into a theory of effectuation, we will use techniques in the received tradition of Edgeworth box economics – i.e., we will present an oversimplified example to clarify the *theoretical* distinction between the two types of reasoning and then continue to introduce complications that bring the theory back to empirical reality: We will begin by imagining a chef assigned the task of cooking dinner. There are two ways the task could be organized. In the first case the chef starts with a predetermined menu, lists the ingredients needed, shops for them and then actually cooks the meal. This is a process of causation. In the second instance, the chef looks through the cupboards in the kitchen for possible ingredients and utensils, and fashions a meal using them. This is a process of effectuation.

A variety of such simple examples can be imagined: A carpenter who is asked to build a desk, versus one who is given a toolbox and some wood, and asked to build whatever he or she chooses to; an artist who is asked to paint a portrait of a particular person, versus one who is given a blank canvas and some paints, and required to paint anything he or she chooses to; a scientist who is involved in developing and commercializing a new technology versus one who is developing the principles of basic science, an entrepreneur who begins with a specific business plan to develop a specific company versus one who wishes to be his own boss and has to figure out what business to go into, and so on. As cited earlier, all King Gillette knew when he set out was that he would like to create a product that had to be re-purchases repeatedly. From that to decide upon and develop the disposable razor involves a process of effectuation. Once an entrepreneur creates a product and establishes the existence of a market for it, others can use processes of causation to create similar products within the new marketplace brought into being by the effectuating entrepreneur.

These are obviously over-simplified examples *a la* the Edgeworth box. To bring the definitions closer to reality through, say, the dinner example, we would have to add elements of dynamism, and contingencies of various kinds including multiple interacting chefs and hosts and dinner guests. But the point here is that in each example, the *generalized* end goal or *aspiration* remains the same both in causation and effectuation – i.e., to cook a meal, to build some wooden artifact, to create a painting, to make an invention, etc. In fact, an effect is the objectification of an abstract human aspiration. The distinguishing characteristic between causation and effectuation is in the set of choices: Choosing between means to create a particular effect, versus choosing between many possible effects using a given set of means. While causation models consist of many-to-one mappings, effectuation models involve one-to-many mappings.

Existence proof for effectuation

Both causation and effectuation are integral parts of human reasoning that can occur simultaneously, overlapping and intertwining over different contexts of decisions and actions. Yet almost all of the literature in economics and management focuses exclusively on models embodying causal reasoning. The existence of effectuation processes in entrepreneurial decision making has recently been empirically confirmed by a study by one of us (Sarasvathy, 1998), gathering and analyzing think-aloud verbal protocols of 27 entrepreneurs who had founded and grown companies ranging in size from \$200 million to \$6.5 billion. The subjects consisted of founders with a wide variety of entrepreneurial expertise and the subject pool was drawn from a number of disparate industries including retail (such as teddy bears and razors), technology (such as semiconductors, telecommunications, and bio-tech), services (such as security), and old economy (such as steel and railroads). Each subject was presented with ten typical problems that arise in a startup (beginning with the exact same imaginary product – a computer game of entrepreneurship), and asked to think aloud continuously as they solved the problems. The logic behind the study was to discover commonalities in the decision processes used by expert entrepreneurs with a diverse background and experiences, and cull together a baseline model of *entrepreneurial* expertise.

The data show that the subjects' decisions conform overwhelmingly to a model of effectuation rather than a causation process of choosing between means toward predetermined ends. More precisely, 74% of the participants in the study behaved in accordance with the effectuation model at least 63% of the time, and 44% of them, at least 85% of the time (Sarasvathy, 1999). To summarize briefly, causation processes are effect-dependent -- focusing on expected returns, competitive analyses, pre-existent knowledge, and prediction; effectuation

processes are actor-dependent -- emphasizing affordable loss, strategic partnerships, contingent action, and control. For a detailed exposition of causation versus effectuation processes, see Sarasvathy (2001).

Means for effectuation

Entrepreneurs begin with three categories of what we have called "means." They know who they are, what they know, and whom they know – their traits, tastes and abilities, the knowledge corridors they are in, and the social networks they are a part of. Their marketing efforts, for example, focus not so much on structural and competitive analysis of a pre-selected market, as on imagined combinations of their abilities, expertise, experience, resources, and social networks that would lead to stable resource-stakeholder-market configurations. In the process, they not only end up creating new firms, but often end up creating new products and even new market niches that emerge as the *residuals* of their decisions rather than as pre-existent goals to be achieved through their decisions. Effectuation is essentially a divergent process that increases the dimensionality of the commodity space. In a world where effectuation processes dominate, firm differentiation is not a phenomenon to be explained – it is the expected outcome.

There is a particularly interesting corollary to the above exposition of three categories of “means” in effectuation. These three categories occur not only at the individual level, they also have counterparts at the level of the firm and even at the level of the economy. At the level of the firm, the corresponding means are its physical resources, human resources, and organizational resources, a la the resource-based theory of the firm (Barney, 1991). At the level of the economy, these means become demographics, technological capabilities, and socio-political institutions (such as property rights). Newman, for example, explicates the role of institutional upheaval in creating ambiguous cause-effect relationships in economies such as the

ones in Eastern Europe as they come out of communist systems (Newman, 2000). She further speculates that this ambiguity in turn requires a stock of entrepreneurial talent (within firms) to enable organizational learning leading to organizational transformation and successful adaptation. Our research supports that by implying that the use of effectuation is the key to managing such cause-effect ambiguities.

It turns out, therefore, that effectuation processes bring some important perspectives and issues to the table with regard to the resource-based theory of the firm. For example, effectuation suggests that what will make the resource based view of the firm powerful is not a focus on what the resources are and how they influence outcomes and value creation. Rather the more powerful contribution will be if we focus on the following questions: *Given* particular sets of resources, means, and capabilities, what is the process of creating and achieving a plurality of new and profitable ends? Under what circumstances which type of reasoning processes (causal and effectual) gets used? By whom? How? With what consequences? Through what routines, procedures, decisions, actions? Etc.

3. **Firm Scope -- Emphasizing the logic of control rather than the logic of prediction**

What is the function of or value added by the headquarters unit in a diversified firm? Or, what limits the scope of the firm?

The tension between creativity and efficiency

By setting out to create a strategic management based on creative action, i.e. originative choice in the absence of pre-existent goals, we have moved to a world where effectuation is at least as valid an alternative as causation. But the mere existence of effectuation processes suggests at least one more answer to this third fundamental question in strategic management, namely, that firms have to manage a continual and/or iterative tension between creativity and

efficiency. Furthermore, we posit that they manage this tension by differential uses of causal and effectual reasoning, and that that differential limits the scope of particular firms at least to a partial degree. The tension between creativity and efficiency has manifested itself in many forms both in theories and data in strategic management, as well as in management and economics. To cite but two examples: In a major historical synthesis of several bodies of economic literature, Galambos (1988), identifies the fundamental tension between the corporation's thrust towards market control and efficiency, on the one hand, and the necessity to continually innovate, on the other. Similarly, in a seminal article in management, March has highlighted the trade-offs between exploration and exploitation in organizational learning (March 1991).

Several suggestions have been developed in the literature on how to deal with this tension. Chandler suggests the necessity (and the historical reality) of firms in more mature and complex industries using strategic and market control techniques while firms in more technologically turbulent environments resorting to more entrepreneurial techniques (Chandler, 1962). But others prefer one or the other more. For example, Williamson advocates more of an efficiency perspective for the headquarters of a large business firm, eschewing a more proactive entrepreneurial strategizing (Williamson, 1975). Overall, the consensus seems to be towards some kind of a balanced portfolio or diversification approach to this particular strategic management question.

The real options approach

Furthermore, in recent years, particular advances have come from the “real options approach” to evaluate projects in the portfolio for possible investment. For example in a recent exposition, Raynor discusses how hybrid diversification established real option for firms

(Raynor, 2000). Real options allow a firm to deal with uncertainty by limiting the floor (possible loss) on an investment to the value of the option while allowing the ceiling to extend to the fullest extent the project could potentially attain (Trigeorgis, 1993; McGrath, 1997). The real options approach, unlike traditional NPV analyses, but very much like the effectuation approach may not lead to higher success rates, but it is more likely to reduce the *costs* of failure. This is because both the real options approach and the effectuation process tie up outlays to tighter feedback loops at lower levels of investment, and enable failures to occur early.

However, both the real options approach and the more traditional NPV analyses begin with a *given* portfolio of potential projects. In other words, in both these cases, the scope of the firm is limited by the portfolio that it actually considers for its investment decision. Effectuation brings another perspective to the table, a perspective that enables the firm to expand its portfolio beyond any current potential projects available to it. In other words, the portfolio metaphor for constructing and bounding firm scope is replaced by a new metaphor – that of the blank slate. The advantage of the blank slate approach is precisely that the firm is not limited to a focus on reduction of unpleasant surprises. Instead, the blank slate allows the firm to open itself to pleasant surprises that it cannot possibly forecast through any current prediction of future possibilities. The options that the firm does not know it has are precisely the ones that effectuation allows it to access and create.

The logic of control

This brings us to the interesting question: How does one pick an option that one does not know one has (or might have in the future)? To achieve this, we have to move our focus from using a logic of prediction to a logic of control. The logic of prediction states that *To the extent we predict the future, we can control it*. Therefore the preferred strategies under this logic

consist in analyzing the history and structure of the environment to make predictions about future trends, which then form the basis for strategic decisions. Effectuation, however, operates on a logic of control. The logic of control states that *To the extent that we can control the future, we do not need to predict it*. This logic accordingly emphasizes strategic alliances and pre-commitments as a way to control rather than predict future trends.

Again, a simple example would serve to illustrate the difference between the two. A classic example of Knightian uncertainty is that of predicting next year's fashions. Not only is the future in this example unknown, it is also unknowable. Yet fashion designers routinely succeed by actually controlling and molding people's tastes rather than by trying to predict them. By forming enduring relationships with movie stars and other taste leaders, fashion designers either *prescribe* tastes in their promotions ("This is what you *should* be wearing") and/or present them as *fait accompli* ("Animal prints are *in* this year").

We would like to emphasize here that we do not advocate the normative superiority of effectuation over causation or control over prediction in any overall or general fashion. In fact, causation processes have been studied and used successfully for a long time and are crucial under several circumstances of decision making. For example, when strategic outcomes are a result of maturing technologies or extensions of proven demand-supply combinations as in franchising, causation models undoubtedly work and have been proven effective. Effectuation, however, brings into existence a new decision domain that has been previously inaccessible to systematic understanding because it involves the absence of predictive rationality, pre-existent goals, and environmental selection. This is a space characterized by a *combination* of Knightian uncertainty, Marchian goal ambiguity, and Weickian enactment (Knight, 1921; March, 1982; Weick, 1979).

The Knightian-Marchian-Weickian decision domain

This new decision domain can be clearly explicated by extending the familiar metaphor of the statistical urn containing different colored balls that researchers studying decision making under uncertainty have used to model the future. Problems involving risk are akin to a speculative game with an urn containing 5 green balls and 5 red balls. The drawer of a red ball is awarded a prize of \$50. For any given draw, we can precisely calculate the probability of getting a red ball, because we know the underlying distribution of balls inside the urn from which we are making the draw. Problems involving uncertainty involve the same award of \$50 for the draw of a red ball -- except this time we do not know how many balls are in the urn, of which colors, or even if there are any red balls at all in the distribution. In statistical terminology, decisions involving the first type of urn with the known distribution call for classical analytical techniques; and the decisions involving the second type of urn with the unknown distribution call for estimation techniques. Once the underlying distribution is discovered through estimation procedures, the urn with the unknown distribution is transformed, as it were, into the urn with the known distribution and becomes susceptible to analytical techniques. Both these urns exemplify the logic of prediction.

The process of effectuation, however, seems to suggest the following conjecture about the decision maker's logic, i.e., the logic of control: "I do not care what color balls are in the urn or their underlying distribution. If I am playing a game where drawing a red ball wins \$50, I will go acquire red balls and put them in the urn. I will also look for other people who have red balls and induce them to put them in the urn and play the game as my partners. As time goes by, there would be so many red balls in the distribution as to make almost every draw a red ball. Furthermore, if neither I nor my acquaintances have red balls, only green ones, we will put

enough of them in the urn so as to make the original game obsolete and create a new game where green balls win.”

In managing the tension between creativity and efficiency, large corporations as well as individual entrepreneurs can use the logic of control to shape and create a future that cannot be predicted. To cite but a few scenarios, they need not always strive to articulate a clear strategic vision or specify ordered lading lists of outcomes to be pursued. Sometimes a series of tentative projects can be undertaken based exclusively on the enthusiastic engagement of committed stakeholders and strategic goals can be allowed to emerge as part of the process. For example, IBM took the big step of moving into computers not because top management believed in the future of computers but because IBM’s scientists and engineers loved the new technology (McCraw, __). Steve Wozniak, similarly developed Apple as the machine he himself wanted to have – and Sant and Bakke set out to start a company *they* would want to work in (Waterman and Peters). As suggested earlier, effectuation works well in situations where predictive rationality, pre-existent goals, and environmental selection break down. Most entrepreneurs (individual or corporate) operate within such spaces; and most creative choices even in established businesses happen within such domains. Under these circumstances, effectuation, rather causal reasoning, is called for.

4. Firm Performance -- Emphasizing locality and contingency

*What determines success or failure in international competition? Or, what are the origins of success and what are their particular manifestations in international settings or global competition?*⁷

The diversified multinational corporation (DMNC) and the I-R framework

Firm performance has been a holy grail both for strategic management theorists and entrepreneurship researchers. The quest for identifying both necessary and sufficient conditions for successful performance, performance being defined as profitability in the short run and survival and growth in the long run, has consumed considerable research resources. In this section, we suggest answers to the questions listed immediately above by applying the theory of effectuation to explain the performance of one particular type of “successful” firm, the DMNC.

Summarizing the efforts to explain firm performance especially as they pertain to the management of DMNCs, Doz and Prahalad argue that the emerging paradigm uses *the global integration-local responsiveness (I-R) framework*, with the basic unit of analysis being the individual manager, rather than an abstraction at a higher level of aggregation (Doz & Prahalad, 1994).

Near-decomposability and the rapid evolution of systems that out-perform their competition

How do we approach this suggested paradigm (the I-R framework) starting with effectuation processes preferred and used by entrepreneurs who end up building such DMNCs from scratch? A connection between effectuation processes and the I-R framework can be forged through the concept of near-decomposability. Near-decomposability refers to the property of complex systems that enables each of their components, by appropriate specialization, to carry on most of its activities, especially those activities that are innovative,

⁷ In answering these questions posed by Rumelt et. al., we provide a plausible explanation for the survival and growth of *any* large firm, including international firms; rather than focus on the *international* aspects of large firms,

with only moderate impact upon, and interaction with the other components (Simon, 1996). This idea of near-decomposability has been used before in the entrepreneurship literature to explain the ability of entrepreneurs to create intermediate stable forms as a precondition for longer-term survival of their new enterprises, and also for the ability of entrepreneurs to fulfill their original aspirations (Venkataraman, 1989; 1990). In a more recent essay, Sarasvathy and Simon (2000) have shown that near-decomposability is a necessary condition for quick response to opportunity -- the opportunity provided by a new idea or discovery, or by a change in the environment (Simon, 1996) or through processes of effectuation (Sarasvathy, 2000).

Near-decomposability is a pervasive feature of the architecture of the complex systems that we find in the world, both inorganic and organic, ranging from elementary particles to social systems (Simon, 1969). A complex system is nearly decomposable if it is comprised of a number of interconnected subsystems in such a way that elements within any particular subsystem interact much more vigorously and rapidly with each other than do elements belonging to different subsystems. There may be a whole hierarchy of systems, subsystems, sub-subsystems, etc., where this same property holds between any two levels. In such systems, (1) the short-term (high-frequency) behavior of each subsystem is approximately independent of the other subsystems at its level, and (2) in the long run, the (low-frequency) behavior of a subsystem depends on that of the other components only in an (approximately) aggregate way.

We may compare a nearly-decomposable system with a computer program using closed subroutines, so that the behavior of each routine depends only upon the inputs and outputs of its subroutines, without regard to the detailed processes these subroutines use to produce their outputs from their inputs. The theory of near-decomposability has been independently discovered several times and is now widely used in engineering and science to facilitate the

we focus on the reasons for their survival and growth.

solution of large systems of equations, especially those involving a wide range of temporal frequencies: for example, it is used to analyze large electrical power grids and in so-called "renormalization" in quantum physics. Nearly decomposable systems are close relatives of fractals.

Because near-decomposability is a structural feature, it has relevant implications for issues connected with firm scope. But when combined with the effectuation *process* that creates a structure that is nearly decomposable, the resulting theory has implications for firm performance especially for the creation and sustenance of large and diversified firms such as the DMNCs. Careful inquiry into the reasons for the recurring appearance of near-decomposability as a common property of complex systems traces it (near-decomposability) to the processes of their (complex systems') evolution. If we begin with a population of systems of comparable complexity, some of them nearly decomposable and some not, but all having similar frequencies of mutation, the nearly decomposable systems will increase their fitness through evolutionary processes much faster than the remaining systems, and will soon come to dominate the entire population. The complex systems we see in the world today are the products of such competitive selection, hence are predominately nearly decomposable (Simon, 1996).

The connection between near-decomposability and rapid evolution is simple and direct. In nearly-decomposable systems, each component can evolve toward greater fitness with little dependence upon the changes taking place in the details of other components. Simple mathematics shows that, if and only if these conditions hold, natural selection can take advantage of the random alterations of components with little concern for countervailing cross effects between them. Such a system is like a defective safe that clicks whenever one of its dials is set correctly, independently of where the other dials are currently set.

The power of near-decomposability to produce rapid evolution has been demonstrated by an ingenious simulation by Marengo, Frenken, and Valente M. (1999), who, employing a genetic algorithm proposed by Stuart Kauffman for evolution of mutating systems in a fitness landscape, demonstrated a greatly superior rate of evolution of nearly decomposable systems over systems having the same rates of mutation but lacking near-decomposability.

Effectuation and the creation of near-decomposable systems

Empirical evidence from the study cited earlier indicates that the process the expert entrepreneurs use to grow their companies from a single customer to a firm with specific products in explicit markets can best be described through the metaphor of stitching together a patchwork quilt. While each patch used in the quilt is a rather arbitrary piece of fabric, some belonging to the quilter and others brought to them at one time or another by friends, a good quilter manages to construct an aesthetically appealing and even meaningful pattern in the quilt that emerges from the endeavor. The 27 entrepreneurs in the study, starting with exactly the same detailed product description, built completely different firms in 18 disparate industries by adding products and segments to their initial product in a patchwork quilt fashion.

They were able to do this, in part because of the ideas for each component that they were able to evoke based on who they were, what they knew and whom they knew. Their design efforts were greatly facilitated by the fact that, as in the quilting endeavor, each component could be examined and developed in detail with only general reference to the basic requirements and products (inputs and outputs) of the other components. So there was a large element of near-decomposability in the process and its product.

Just as effectuation creates rapidly evolving artifacts that leverage interdependence to exploit locality and contingency, so near-decomposability in the structure of such systems

leverages independence to exploit the same locality and contingency. While effectuation stitches together pieces of entrepreneurial fabric into economic quilts that continue to make sense in an interactive and dynamically changing environment, near-decomposability identifies lines of "tearing" so that pieces can be re-worked in synchrony with the overall pattern as the needs imposed by the environment change. Together they provide a convincing explanation, in our opinion, for the creation and growth of large DMNCs in the real world. Investigations into effectuation processes are just beginning. But the admittedly limited evidence examined so far suggests that the theory could hold interesting implications for firm performance, particularly survival and growth over the long run.

CONCLUSION

To summarize, entrepreneurship offers strategic management a set of relatively new answers to fundamental questions: (1) That firms effectuate; (2) that effectuation, being innately a pluralistic process, explains differentiation even among successful firms; (3) that underlying logic of control in effectuation suggests ways for the headquarters of a large corporation to deal with the inherent tension between creativity and efficiency in their strategy; and, (4) that effectuation combined with the near-decomposable systems it creates can explain firm performance.

The theoretical perspective from entrepreneurship used in this chapter provides several potential avenues for future research in strategic management. In particular, it calls into question the predominant mode of empirical investigations into resource-based theories that seeks to explain firm performance as directly dependent on the resources of the firm. Instead, the ideas presented in this chapter demonstrate the importance of putting Romeo back into the balcony and

undertake the more useful approach of connecting particular methods and processes of *resource-use* with firm performance. The dominant implication here is that the mere existence of or access to resources does not by itself explain firm performance. *How* people or firms combine, extrapolate and use those resources matter, and matter greatly. We could speculate, for example, that the strategic history of IBM and Apple with regard to the PC market differed not because they had different resources, but they chose to use them differently – while IBM allowed clones to be manufactured, Apple did not. Similarly, Microsoft and Sun Microsystems use their considerable resources very differently – the former preferring a strictly proprietary and barrier-building approach (the citadel model) to software development as opposed to the latter’s open source methods (the bazaar model). Strategic management research should investigate such differential dyadic phenomena at a process level (examining the use of causation versus effectuation, for example) in addition to testing aggregate models of direct relationships between resources and firm performance. Just as, starting with exactly the same set of objects, a Degas and a Dali would create completely different still life paintings, it is conceivable that with the exact same set of resources, different strategic managers might create entirely different strategic universes for their firms.

Strategic management strives to extend economics beyond its preoccupation with the static equilibrium model by injecting time and purposive direction into our understanding of business. Entrepreneurship seeks to enhance strategic management and our larger understanding of business, by turning the spotlight on to the inherent creativity of human action, and by allowing a plurality of human aspirations to emerge as effectual purposes that shape economic endeavors.

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