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CAUSATION AND EFFECTUATION: TOWARD A THEORETICAL SHIFT FROM ECONOMIC INEVITABILITY TO ENTREPRENEURIAL CONTINGENCY

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In economics and management theories, scholars have traditionally *assumed* the existence of artifacts such as firms/organizations and markets. I argue that an explanation for the *creation* of such artifacts requires the notion of effectuation. Causation rests on a logic of prediction, effectuation on the logic of control. I illustrate effectuation through business examples and realistic thought experiments, examine its connections with existing theories and empirical evidence, and offer a list of testable propositions for future empirical work.

I now am eagerly striving, for example, to get this truth which I seem half to perceive, into words which shall make it show more clearly. If the words come, it will seem as if the striving itself had drawn or pulled them into actuality out from the state of merely possible being in which they were. How is this feat performed? How does the pulling pull? How do I get my hold on words not yet existent and when they come by what means have I made them come? Really it is the problem of creation; for in the end the question is: How do I make them be?...

...Sustaining, persevering, striving, paying with effort as we go, hanging on, and finally achieving our intention—this is action, this is effectuation in the only shape in which, by a pure experience-philosophy, the whereabouts of it anywhere can be discussed. Here is creation in its first intention, here is causality at work (James, 1912: 181, 183).

We know how to advise a society, an organization, or an individual if we are first given a consistent set of preferences. Under some conditions, we can suggest how to make decisions if the preferences are only consistent up to the point of specifying a series of independent constraints on the choice. But what about a normative theory of goal-finding behavior? What do we say when our client tells us that he is not sure his present set of values is the set of values in terms of which he wants to act? (March, 1982: 74).

Walk into an MBA classroom anywhere in the world. Chances are the discussion revolves around a decision or a set of decisions to be made. For example, classes with a more economic bent (e.g., managerial economics, marketing, strategy) might be discussing the pricing decision. The standard formal approach to this decision involves setting the marginal revenue equal to the marginal cost; a more adaptive approach might involve doing market research to discover the shape of the demand function and to arrive at a price that the market will bear. In another example, classes with a more psychological bent (e.g., human resources management, organization behavior, leadership) might be discussing personnel decisions, such as hiring the best person for the job or managing and/or leading a team. Approaches might range from psychometric measurements to avoiding well-understood biases, such as anchoring, escalation, groupthink, and so on.

These decisions in economics and management may be discussed at several levels: individual, firm, industry/market, and economy. But underlying almost every one of these decisions is the *assumed existence* of the central artifacts and contexts of business within which the decisions take place. In other words, none of these decisions involves the *creation* of artifacts such as firms, markets, and economies. For example, the following are rarely, if at all, addressed in our curricula:

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- How do we make the pricing decision when the firm does not yet exist (i.e., no revenue functions or cost functions are given) or, even more interesting, when the market for the product/service does not yet exist (i.e., there is no demand function)?
- How do we hire someone for an organization that does not yet exist? How do we even get able people to *apply* to a contingent organization—an organization whose existence is contingent upon acquiring employees (e.g., a knowledge-intensive firm, such as a software company)?!
- How do we value firms in an industry that did not exist five years ago and is barely forming in the present (e.g., internet companies)? More interesting, how would we have valued them five years ago, when internet companies were barely emerging?
- At the macro level, how do we create a capitalist economy from a formerly communist one? Or, more interesting, what should a *postcapitalist* economy look like?[1]

A very large and growing fraction of people in business struggle with such decisions every day. Business all over the world is becoming more free-market oriented and more entrepreneurial. Almost half the companies on the Fortune 500 list did not exist fifteen years ago. Emerging technologies, such as those on the internet, are not only creating rapid change but also fundamentally redefining how we truck and trade and how we interact with one another in every sphere of human action. Therefore, as March points out in the quote at the beginning of this article, questions such as the ones listed above ought to be an important part of our research endeavors.

Each of these questions involves the problem of choosing particular effects that may or may not implement intentional goals. For example, if we knew precisely what type of firm we wished to create, we could use existing theories and principles to create the firm. But usually all the entrepreneur knows when he or she starts out is something very general, such as the desire to make lots of money or to create a valuable legacy like a lasting institution, or, more common, to simply pursue an interesting idea that seems worth pursuing. Similarly, if we clearly knew which particular market to capture, we could presumably use techniques of market research and formulate strategies to penetrate it. In areas such as e-commerce, however, most markets are nascent or simply nonexistent. Marketing to markets that do not yet exist involves understanding how markets come to be. Similarly, valuing and financing a firm that does not yet exist involve understanding how firms come to be. And creating a firm in a market that does not yet exist involves understanding how to make decisions in the absence of preexistent goals.

March sets out three justifications that researchers have used to ignore phenomena involving ambiguous, changing, and *constructed* goals and values:

> The first is that goal development and choice are independent processes, conceptually and behaviorally. The second is that the model of choice is never satisfied in fact and that deviations from the model accommodate the problems of introducing change. The third is that the idea of changing goals is so intractable in a normative theory of choice that nothing can be said about it. Since I am unpersuaded on the first and second justifications, my optimism with respect to the third is somewhat greater than most of my fellows (March, 1982: 72).

In the past couple of decades, researchers have been struggling in March's spirit of optimism to take on these seemingly intractable questions. I hope to make a contribution here toward that effort by identifying and developing a decision model that involves processes of effectuation, rather than causation, and showing its use in the creation of new firms. Although a general theory of effectuation could be developed to address all four types of questions listed above, in this article I develop only a special theory to explain the creation of new firms.

After a brief definition of effectuation as contrasted with causation, I explicate the processes involved through two thought experiments—one hypothetical and the other historical—and then I succinctly review several relevant streams of research in order to delineate the space for effectuation processes in the literature and to develop a rudimentary theory of effectuation. Thereafter, I suggest connections to the seminal works of three eminent researchers in management who have taken the lead toward new horizons in our discipline (March, 1982;

[1] All four questions listed here can be addressed through a general theory of effectual reasoning, the main elements of which are explicated in this article. However, given the cognitive and spatial limits of a single journal article, I focus on the first question alone. I address this question in considerable detail to illustrate (what is for now) a special theory of effectuation in the creation of firms in nonexistent or not-yet-existent markets.

Mintzberg, 1994; Weick, 1979). Following that, I examine some recent empirical evidence that does not fit with the traditionally accepted paradigm of causation models and, finally, develop propositions based on effectuation at all four levels of phenomena: macro, industry/market, firm, and individual.

PROCESSES OF CAUSATION AND EFFECTUATION

> *Definition: Causation*[2] *processes take a particular effect as given and focus on selecting between means to create that effect. Effectuation processes take a set of means as given and focus on selecting between possible effects that can be created with that set of means.*

A simple example should help clarify and distinguish between the two types of processes. Imagine a chef assigned the task of cooking dinner. There are two ways the task can be organized. In the first, the host or client picks out a menu in advance. All the chef needs to do is list the ingredients needed, shop for them, and then actually cook the meal. This is a process of causation. It begins with a given menu and focuses on selecting between effective ways to prepare the meal.

In the second case, the host asks the chef to look through the cupboards in the kitchen for possible ingredients and utensils and then cook a meal. Here, the chef has to imagine possible menus based on the given ingredients and utensils, select the menu, and then prepare the meal. This is a process of effectuation. It begins with given ingredients and utensils and focuses on preparing one of many possible desirable meals with them.

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; 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; and so on. These are obviously oversimplified examples. To bring the definitions closer to reality through, say, the dinner example, we 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—that is, to cook a meal, to build some wooden artifact, or to create a painting. In fact, an effect is the operationalization 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 particular set of means. Whereas causation models consist of many-to-one mappings, effectuation models involve one-to-many mappings.

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 in this article I deliberately juxtapose them as a dichotomy to enable clearer theoretical exposition. Before embarking on a literature review to delineate the space for effectuation models, I present two realistic examples from business to illustrate and compare the two types of decision processes (i.e., causation and effectuation). The first thought experiment is a hypothetical one—that of creating an imaginary restaurant—and the second is historical—the story of U-Haul.

Thought Experiment #1: Curry in a Hurry

In this example I trace the process for building an imaginary Indian restaurant, "Curry in a Hurry." Two cases, one using causation and the other effectuation, are examined. For the purposes of this illustration, the example chosen is a typical causation process that underlies many economic theories today—theories in which it is argued that artifacts such as firms are inevitable outcomes, given the preference orderings of economic actors and certain simple assumptions of rationality (implying causal reasoning) in their choice behavior. The causation process used in the example here is typified by and embodied in the procedures stated by Philip Kotler in his *Marketing Management* (1991: 63, 263), a book that in its many editions is consid-

[2] A brief outline of the philosophical underpinnings of causation is provided in a later section, titled "Future Theoretical Work on Effectuation."

ered a classic and is widely used as a textbook in MBA programs around the world.

Kotler defines a market as follows: "A *market* consists of all the potential customers sharing a particular need or want who might be willing and able to engage in exchange to satisfy that need or want" (1991: 63). Given a product or a service, Kotler suggests the following procedure for bringing the product/service to market (note that Kotler assumes the market exists):

1. Analyze long-run opportunities in the market.
2. Research and select target markets.
   - Identify segmentation variables and segment the market.
   - Develop profiles of resulting segments.
   - Evaluate the attractiveness of each segment.
   - Select the target segment(s).
   - Identify possible positioning concepts for each target segment.
   - Select, develop, and communicate the chosen positioning concept.
3. Design marketing strategies.
4. Plan marketing programs.
5. Organize, implement, and control marketing effort.

This process is commonly known in marketing as the STP—segmentation, targeting, and positioning—process.

Curry in a Hurry is a restaurant with a new twist—say, an Indian restaurant with a fast food section. The current paradigm using causation processes indicates that, to implement this idea, the entrepreneur should start with a universe of all potential customers. Let us imagine that she wants to build her restaurant in Pittsburgh, Pennsylvania, USA, which will then become the initial universe or *market* for Curry in a Hurry. Assuming that the percentage of the population of Pittsburgh that totally abhors Indian food is negligible, the entrepreneur can start the STP process.

Several relevant segmentation variables, such as demographics, residential neighborhoods, ethnic origin, marital status, income level, and patterns of eating out, could be used. Based on these, the entrepreneur could send out questionnaires to selected neighborhoods and organize focus groups at, say, the two major universities in Pittsburgh. Analyzing responses to the questionnaires and focus groups, she could arrive at a target segment—for example, wealthy families, both Indian and others, who eat out at least twice a week. That would help her determine her menu choices, décor, hours, and other operational details. She could then design marketing and sales campaigns to induce her target segment to try her restaurant. She could also visit other Indian and fast food restaurants and find some method of surveying them and then develop plausible demand forecasts for her planned restaurant.

In any case, the process would involve considerable amounts of time and analytical effort. It would also require resources both for research and, thereafter, for implementing the marketing strategies. In summary, the current paradigm suggests that we proceed inward to specifics from a larger, general universe—that is, to an optimal target segment from a predetermined market. In terms of Curry in a Hurry, this could mean something like a progression from the entire city of Pittsburgh to Fox Chapel (an affluent residential neighborhood) to the Joneses (specific customer profile of a wealthy family), as it were.

Instead, if our imaginary entrepreneur were to use processes of effectuation to build her restaurant, she would have to proceed in the opposite direction (note that effectuation is suggested here as a viable and *descriptively valid* alternative to the STP process—not as a *normatively superior* one). For example, instead of starting with the assumption of an existing market and investing money and other resources to design the best possible restaurant for the given market, she would begin by examining the particular set of means or causes available to her. Assuming she has extremely limited monetary resources—say $20,000—she should think creatively to bring the idea to market with as close to zero resources as possible. She could do this by convincing an established restaurateur to become a strategic partner or by doing just enough market research to convince a financier to invest the money needed to start the restaurant. Another method of effectuation would be to convince a local Indian restaurant or a local fast food restaurant to allow her to put up a counter where she would actually sell a selection of Indian fast food. Selecting a menu and honing other such details would be seat-of-the-pants and tentative, perhaps a process of satisficing (Simon, 1959).

Several other courses of effectuation can be imagined. Perhaps the course the entrepreneur

actually pursues is to contact one or two of her friends or relatives who work downtown and bring them and their office colleagues some of her food to taste. If the people in the office like her food, she might get a lunch delivery service going. Over time, she might develop enough of a customer base to start a restaurant or else, after a few weeks of trying to build the lunch business, she might discover that the people who said they enjoyed her food did not really enjoy it so much as they did her quirky personality and conversation, particularly her rather unusual life perceptions. Our imaginary entrepreneur might now decide to give up the lunch business and start writing a book, going on the lecture circuit and eventually building a business in the motivational consulting industry!

Given the exact same starting point—but with a different set of contingencies—the entrepreneur might end up building one of a variety of businesses. To take a quick tour of some possibilities, consider the following: Whoever first buys the food from our imaginary Curry in a Hurry entrepreneur becomes, by definition, the first target customer. By continually *listening* to the customer and building an ever-increasing network of customers and strategic partners, the entrepreneur can then identify a workable segment profile. For example, if the first customers who actually buy the food and come back for more are working women of varied ethnic origin, this becomes her target segment. Depending on what the first customer *really* wants, she can start defining her market. If the customer is really interested in the food, the entrepreneur can start targeting all working women in the geographic location, or she can think in terms of locating more outlets in areas with working women of similar profiles—a "Women in a Hurry" franchise?

Or, if the customer is interested primarily in the idea of ethnic or exotic entertainment, rather than merely in food, the entrepreneur might develop other products, such as catering services, party planning, and so on—"Curry Favors"?[3] Perhaps, if the customers buy food from her because they actually enjoy learning about new cultures, she might offer lectures and classes, maybe beginning with Indian cooking and moving on to cultural aspects, including concerts and ancient history and philosophy, and the profound idea that food is a vehicle of cultural exploration—"School of Curry"? Or maybe what really interests them is theme tours and other travel options to India and the Far East—"Curryland Travels"?

In a nutshell, in using effectuation processes to build her firm, the entrepreneur can build several different types of firms in completely disparate industries. This means that the original idea (or set of causes) does not *imply* any one single strategic universe for the firm (or effect). Instead, the process of effectuation allows the entrepreneur to create one or more several possible effects irrespective of the generalized end goal with which she started. The process not only enables the realization of several possible effects (although generally one or only a few are actually realized in the implementation) but it also allows a decision maker to change his or her goals and even to shape and *construct* them over time, making use of contingencies as they arise.

Furthermore, even the generalized aspiration of starting a business is not a necessary starting point for effectuation processes. Several successful businesses and even great companies have begun without any conscious initial intention on the part of the founders. To cite but one example, the waste management giant Browning Ferris Industries (BFI) began as the result of contingent problem solving. In 1967, while presiding over a community association meeting, Tom Fatjo, a respected professional in Houston, Texas, listened to members whine about the garbage problem in their subdivision. Exasperated, he suggested that maybe the community should haul its own garbage. The community turned to him and dared him to do it himself. After physically hauling garbage while continuing his professional career for over a year, he realized the potential in garbage and went on to build BFI.

In a similar vein, the Curry in a Hurry entrepreneur's journey of effectuation might also be the result of any one of a wide variety of serendipitous events. For example, a chance suggestion made by a friend after tasting her food on a social occasion might have started the process or, as happens in the case of many entrepreneurs today, an unexpected misfortune might have forced her to earn a living on her own.

[3] I apologize for the cheesy names, but, hopefully, they get the message across.

Thought Experiment #2: U-Haul

The following example also consists of a thought experiment to trace the processes used in the creation of U-Haul. Although there is no detailed history of U-Haul in which the actual processes used by its founder are traced, the thought experiment uses extracts from the company's history posted on its website, combined with Silver's study:

> Like many other successful ventures, the concept for U-Haul® was provoked by need. After World War II the population of the United States became more mobile and migratory. There existed an obvious widespread need for do-it-yourself moving equipment on a one-way, nationwide basis. It was the visionary approach of U-Haul that recognized this need, acted upon it and literally created an industry.
>
> With $5,000, L. S. Shoen, his wife Anna Mary Carty Shoen and their young child moved to the Carty ranch in Ridgefield, Washington. There, with the help of the Carty family, the Shoens built the first U-Haul trailers in the fall of 1945, using the ranch's automobile garage (and milk house) as the first manufacturing plant for the budding U-Haul Co.
>
> By the end of 1949, it was possible to rent a trailer one-way from city-to-city throughout most of the United States (Silver, 1985: 387–390).

The historical facts are that in four years Shoen transformed his perception of an *obvious* widespread need, $5,000, and access to an automobile garage into a nationwide firm with a complicated production function, thousands of stakeholders, and what was essentially 100 percent market share in the *newly created* do-it-yourself moving industry. In our thought experiment we can now examine the minimal set of decisions that he had to make in effecting this transformation:

1. How many moving vans/trucks should he buy or make?
2. How many locations would he need to open?
3. How many employees should he hire? (One per location or more?)
4. From whom should he raise the capital?
5. Should he open a few locations regionally or go national at once?
6. How should he establish his market presence—advertise? If so, how?
7. Putting it all together, how should he price the product?
8. Given the fact that all he had was $5,000 to begin with, should he move to Ridgefield and begin building the trucks?

If we examine each of these entrepreneurial decisions using only causation processes, the best current theory and practice within each functional domain will fail to lead us to a good decision. For instance, if we examine the marketing decisions using current theories and practice in marketing, we have to figure out the potential universe of customers for U-Haul and develop a marketing plan that targets the segment with the highest potential for return on investment. Even if Shoen could somehow find a way to figure all this out in 1945 without exhausting his initial capital of $5,000, there was presumably no way he would be able to realistically convince any potential investor to put up the enormous outlay called for in such a marketing plan.

This has been tested through class discussions using the creation of U-Haul as a case study. Students typically come to one of two conclusions:

1. This project is not financially viable—the resource requirements are very large (estimates range between $20 million and $50 million in current dollars) and overwhelm any attempt to price the service viably; OR
2. This project is not viable psychologically—even if it were financially viable and potentially profitable, the initial resources required would be so large as to raise the question of why anybody with control over $20 to $50 million would want to invest it in this relatively mundane but risky project consisting of buying trucks and renting locations across the country.

Yet U-Haul was created with an almost instantaneous national presence for a very small financial outlay!

Shoen used processes of effectuation that involved his seizing and exploiting contingencies through an expanding network of human alliances. Instead of trying to raise the money to buy a large number of trucks or trying to start the company with very few locations, he did the following:[4]

- He began by establishing an identity. The trailers were painted bright orange. The name "U-Haul Co." was established. Trailers were imaged on the sides and back with a sales message: "U-Haul Co., Rental Trail-

[4] The sources used were the company's own historical records and Silver (1985).

ers, $2.00 Per Day"—always advertising them, whether on the road or on display.
- He convinced friends, family members, and customers (who then convinced others close to them, and so on) to individually make down payments on trucks and then lend him the use of the trucks.
- He contracted with service station outlets (including national chains) to merchandise trailer rentals, eliminating the need for buying space in cities across the country and for recruiting employees to man the spaces.
- He offered early customers a discount on their trailer rental for establishing a U-Haul rental agent at their destination and established a commission structure for dealers.

Thus, with hardly any employees and a ridiculously small outlay of funds, U-Haul came into being. Furthermore, in the case of U-Haul, in the initial stages of implementing processes of effectuation, the firm appears almost to have been in the business of selling livelihoods to potential U-Haul franchisees (before the idea of franchising was developed), rather than in the one-way rental business.

This case study particularly highlights the unique role of the decision maker in solving the existence problem through effectuation. Characteristics of decision makers, such as who they are, what they know, and whom they know, form the primary set of means that combine with contingencies to create an effect that is not preselected but that gets *constructed* as an integral part of the effectuation process. The effectuator merely pursues an aspiration and visualizes a set of actions for transforming the original idea into a firm—not into *the* particular predetermined or optimal firm, but a very generalized aspiration of a firm. The commitment to such a tentative set of actions includes proceeding with no a priori guarantees or even strong potentialities for success. The effectuator more often than not proceeds without any certainties about the existence of a market or a demand curve, let alone a market for *his or her* product, or a potential revenue curve.

In cases involving spectacular successes (Silver, 1985), the effectuating entrepreneurs' vision appears to involve more than the identification and pursuit of an opportunity; it seems to include the very *creation* of the opportunity as part of the implementation of the entrepreneurial process. The *latent market* for U-Haul, consisting of the obvious widespread need for one-way rentals, was only a necessary condition for its actualization. Sufficiency is provided by active implementations of imagined solutions that seize and build on several types of contingencies that ultimately carve out the structure and shape of the market. Currently, markets on the internet are being created in this manner, through contingent interactions between the imaginations of effectuators and the aspirations of their partners in the process, whether the partners consist of customers, investors, and/or various types of alliances.

A RUDIMENTARY THEORY OF EFFECTUATION PROCESSES IN BUSINESS

Before developing a theory for decisions involving effectuation and delineating its space within the literature, it is necessary to emphasize that effectuation processes are not posited here as "better" or "more efficient" than causation processes in creating artifacts such as firms, markets, and economies. Under what circumstances which types of processes provide particular advantages and disadvantages is an issue to be resolved through future empirical studies. For example, in the thought experiment of Curry in a Hurry, presented above, if the entrepreneur clearly wants to build an up-scale Indian restaurant, she presumably will be better off using causation processes than effectuation. But if she has only the generalized aspiration of building a successful business of her own with relatively limited access to resources, she should consider effectuation processes.

Summarizing from the literature on decision making, the anatomy of a decision involves

- a given goal to be achieved or a decision to be made (usually well structured and specific),
- a set of alternative means or causes (that can be generated through the decision process),
- constraints on possible means (usually imposed by the environment), and
- criteria for selecting between the means (usually maximization of expected return in terms of the predetermined goal).

Clearly, this structure assumes a decision process involving causation.

A decision involving effectuation, however, consists of

- a given set of means (that usually consists of relatively unalterable characteristics/circumstances of the decision maker),

- a set of effects or possible operationalizations of generalized aspirations (mostly generated through the decision process),
- constraints on (and opportunities for) possible effects (usually imposed by the limited means as well as by the environment and its contingencies), and
- criteria for selecting between the effects (usually a predetermined level of affordable loss or acceptable risk related to the given means).

Entrepreneurs begin with three categories of "means": they know who they are, what they know, and whom they know—their own traits, tastes, and abilities; the knowledge corridors they are in; and the social networks they are a part of. At the level of the firm, the corresponding means are its physical resources, human resources, and organizational resources, à la the resource-based theory of the firm (Barney, 1991). At the level of the economy, these means become demographics, current technology regimes, and sociopolitical institutions (such as property rights).

One could speculate that effectuation processes are more general and more ubiquitous than causation processes in *human* decisions. For example, on most nights most people cook dinner using an effectuation process—that is, they look around in their kitchen cupboards for what's available and fix themselves something. Only rarely do they decide to throw a dinner party and carefully develop a causation process for accomplishing it (i.e., choose a menu, shop for specific ingredients, and follow precise recipes). It stands to reason, then, that effectuation processes may not be very helpful for throwing a great dinner party. But human life usually comes stocked with cupboards that open and close at unexpected moments, often containing unspecified ingredients that the decision maker has little choice over; grocery shops are typically too far away or closed; and cookware often has to be borrowed from neighbors. To put it more mundanely, in cases in which a particular effect has been preselected by the decision maker, causation processes can be applied to choose the best, the fastest, the most efficient, or the most economical method to achieve the chosen effect; imagining possible effects and choosing among them, however, involve characteristics of the decision maker(s) and his or her (their) ability to identify and use contingencies over a dynamic process involving other decision makers interacting with one another.

Table 1 presents a list of the distinguishing characteristics of the two types of processes. Causation processes are effect dependent. Effectuation processes are actor dependent. Causation processes are excellent at exploiting knowledge. Effectuation processes are excellent at exploiting contingencies. Nature abounds in particular events with regular causes that can be analyzed and understood, and, therefore, causation processes are excellent when dealing with natural phenomena. Human life abounds in contingencies that cannot easily be analyzed and predicted but can only be seized and exploited, and, therefore, effectuation processes are far more frequent and very much more useful in understanding and dealing with spheres of human action. This is especially true when dealing with the uncertainties of future phenomena and problems of existence.

An examination of existing research on decisions dealing with uncertainties pertaining to the future (even if the research predominantly involves causation processes) should be useful in delineating the space for processes of effectuation. Researchers in areas ranging from mathematics, statistics, and economics to psychology, sociology, and business have grappled with decisions involving future phenomena. Historically, the research on decision making under uncertainty can be divided into (1) the development of normative, rational decision models (e.g., Focardi & Jonas, 1998; MacCrimmon, Wehrung, & Stanbury, 1986; Shapira, 1997) and (2) empirical investigations into bounds on that rationality in actual decision makers (e.g., Einhorn & Hogarth, 1981; Kahneman & Tversky, 1990; Taylor 1984; Zey, 1998).

The normative development is rooted in the conceptual distinction between "risk" and "uncertainty" (Knight, 1921). The commonly used statistical metaphor of the urn containing different colored balls serves to illustrate the difference between the two (Kamien, 1994). Problems involving risk are akin to a speculative game involving an urn containing five green balls and five red balls. Whoever draws 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

TABLE 1
Contrasting Causation and Effectuation

Categories of Differentiation	Causation Processes	Effectuation Processes
Givens	Effect is given	Only some means or tools are given
Decision-making selection criteria	Help choose between means to achieve the given effect	Help choose between possible effects that can be created with given means
	Selection criteria based on expected return	Selection criteria based on affordable loss or acceptable risk
	Effect dependent: Choice of means is driven by characteristics of the effect the decision maker wants to create and his or her knowledge of possible means	Actor dependent: Given specific means, choice of effect is driven by characteristics of the actor and his or her ability to discover and use contingencies
Competencies employed	Excellent at exploiting knowledge	Excellent at exploiting contingencies
Context of relevance	More ubiquitous in nature	More ubiquitous in human action
	More useful in static, linear, and independent environments	Explicit *assumption* of dynamic, nonlinear, and ecological environments
Nature of unknowns	Focus on the predictable aspects of an uncertain future	Focus on the controllable aspects of an unpredictable future
Underlying logic	To the extent we can predict future, we can control it	To the extent we can control future, we do not need to predict it
Outcomes	Market share in existent markets through competitive strategies	New markets created through alliances and other cooperative strategies

uncertainty involve the same award of $50 for the draw of a red ball, except we do not know how many balls are in the urn, what colors they are, 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 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 it becomes susceptible to analytical techniques.

Real-life examples of *risk* include all types of insurance, some areas of the stock markets, and gaming of various types. Forecasting demand for very well-established products, such as Coca-Cola or personal computers nowadays, also falls within this category. Some real-life examples of *uncertainty* include dealing with environmental pollution, global warming, genetic cloning, and commercialization of innovations—particularly radical innovations.

Experiments by researchers developing normative models have demonstrated that human beings in general prefer the "risky or known distribution" urn over the "uncertain or unknown distribution" urn (Ellsberg, 1961). But some researchers, such as those studying creative problem solving (Getzels & Csikszentmihalyi, 1976), scientific discovery (Kulkarni & Simon, 1986), and entrepreneurship (Dickson & Giglierano, 1986; Kamien, 1994), have speculated that since creative problem solvers like entrepreneurs have been shown to have a high tolerance for ambiguity, they will have a preference for the urn with the unknown distribution.

Both normative approaches have been qualified by other researchers, who have shown that human beings in general are not strictly rational (Simon, 1959). Instead, their rationality is bounded by cognitive limitations, such as physiological constraints on computational capacity (Payne, Bettman, & Johnson, 1993), and psycho-

logical limitations, such as biases and fallacies (Bar-Hillel, 1980; Tversky & Kahneman, 1982). Yet this does not imply that decision makers are irrational. Rather, the evidence suggests that within certain bounds, decision makers use heuristics and inductive logics that often lead to very effective decisions (Gigerenzer, Hell, & Blank, 1988).

The arguments from both perspectives—unbounded rationality and bounded rationality—can be summarized as follows. If the decision makers believe they are dealing with a measurable or relatively predictable future, they will tend to do some systematic information gathering and invest some effort on a reasonable analysis of that information, within certain bounds. Similarly, if they believe they are dealing with relatively unpredictable phenomena, they will try to gather information through experimental and iterative learning techniques aimed at first discovering the underlying distribution of the future. This logically implies that the decision makers' underlying beliefs about the future phenomena that impact a particular decision can be deduced by examining the *types* of heuristics and logical approaches they use in making the decision.

In terms of the urn metaphor used to describe causation processes of risk and uncertainty, the process of effectuation seems to suggest the following conjecture about a decision maker's logic: "I do not care what color the balls are in the urn or what their underlying distribution is. 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 will 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, but 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 sum, this conjecture can be embodied in the following four principles that form the core of a rudimentary theory of effectuation, graphically depicted in Figure 1:

1. Affordable loss rather than expected returns: Causation models focus on maximizing the potential returns for a decision by selecting optimal strategies. Effectuation predetermines how much loss is affordable and focuses on experimenting with as many strategies as possible with the given limited means. The effectuator prefers options that create more options in the future over those that maximize returns in the present.

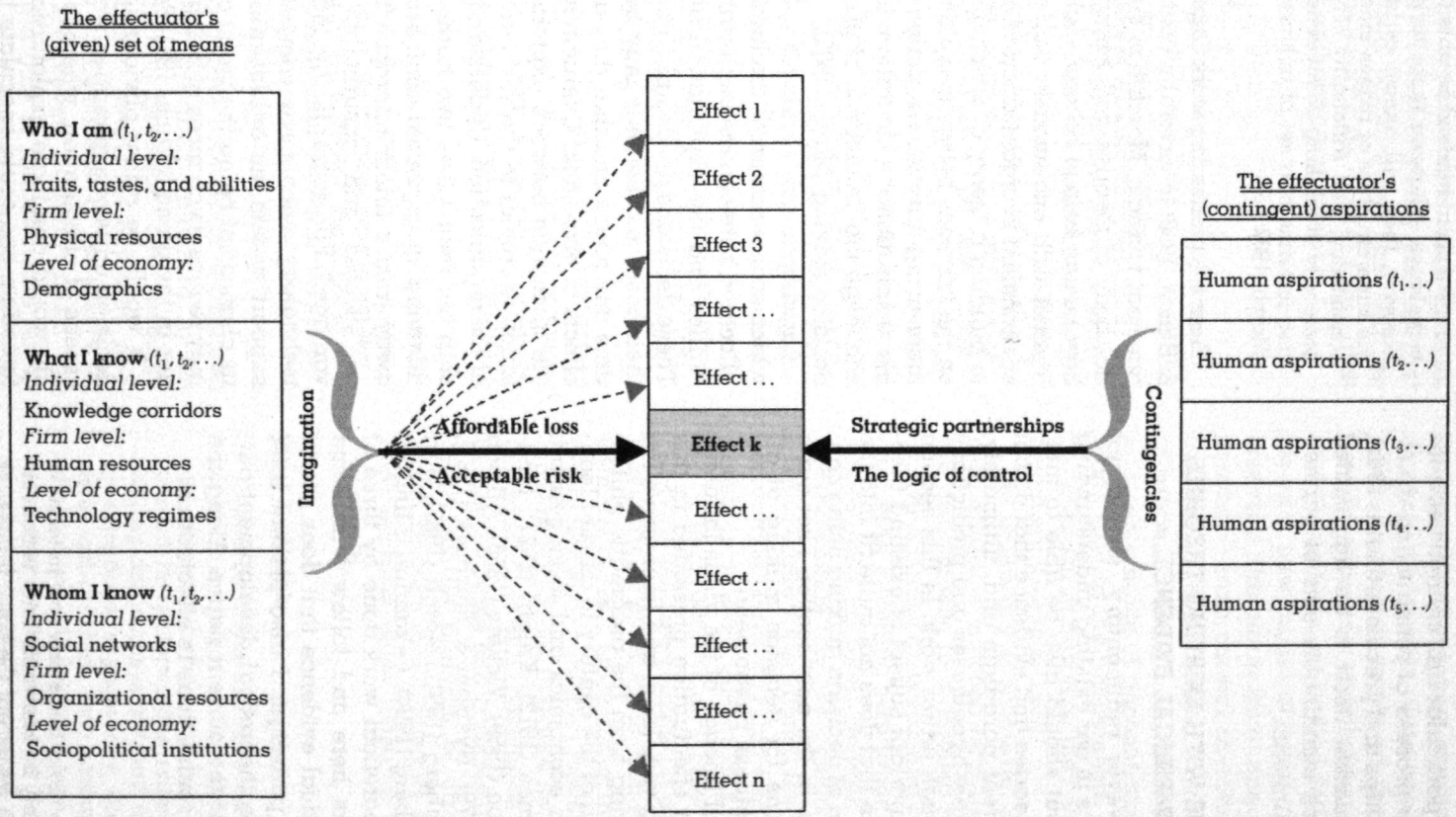
2. Strategic alliances rather than competitive analyses: Causation models, such as the Porter model in strategy, emphasize detailed competitive analyses (Porter, 1980). Effectuation emphasizes strategic alliances and precommitments from stakeholders as a way to reduce and/or eliminate uncertainty and to erect entry barriers.

3. Exploitation of contingencies rather than exploitation of preexisting knowledge: When preexisting knowledge, such as expertise in a particular new technology, forms the source of competitive advantage, causation models might be preferable. Effectuation, however, would be better for exploiting contingencies that arose unexpectedly over time.

4. Controlling an unpredictable future rather than predicting an uncertain one: Causation processes focus on the predictable aspects of an uncertain future. The logic for using causation processes is: *To the extent that we can predict the future, we can control it.* Effectuation, however, focuses on the *controllable* aspects of an unpredictable future. The logic for using effectuation processes is: *To the extent that we can control the future, we do not need to predict it.*

This logic is particularly useful in areas where human action (locally or in the aggregate) is the predominant factor shaping the future. For example, instead of defining a market as the universe of all possible customers as Kotler defines it, an effectuator would define *his or her* market as a community of people willing and able to commit enough resources and talents to sustain the particular enterprise. In the former case, the market is assumed to exist *independent* of the firm or entrepreneur, and the task of the entrepreneur becomes to grab as much of that market as possible. In the latter case, however, the founder, along with others, *creates* the market by bringing together enough stakeholders who "buy into" the idea to sustain the enterprise. Since the structure of what exactly the enterprise is is left open and is dependent upon the particular commitments made by the stakeholders, the need for prediction is greatly reduced, if not completely obliterated. In

FIGURE 1
The Theory of Effectuation[α]



[α] Effectuation begins with a given set of means and contingent human aspirations to select from a set of possible effects imagined by the effectuator(s). Both means and aspirations change over time. The particular effect selected is a function of the level of loss or risk acceptable to the effectuator(s), as well as the degree of control over the future that the effectuator(s) achieves through strategic partnerships along the way.

other words, the particular firm created becomes *the residual* of a process of constructing a network of partnerships and precommitments (Burt, 1992), and the market itself is an aggregated taxonomy of such sustainable sets of partnerships and commitments.

CONNECTIONS WITH EXISTING THEORIES AND EMPIRICAL EVIDENCE

A theory, however rudimentary, should not only identify gaps in our existing understanding of phenomena but should also be able to integrate existing theories and evidence that do not quite fit the current paradigm and, ultimately, should provide new hypotheses and predictions to be tested through future work. In this section I examine an important subset of existing theories and evidence that does not quite fit into the current paradigm of decision making using causation processes. In the next section I set out a list of propositions for decision making at all four levels of business phenomena.

The intellectual lineage of the ideas influencing the theory of effectuation presented in this article includes a very large and impressive list of thinkers, ranging from the pragmatic philosophers at the turn of the century to current leaders of thought in economics and management: Peirce (1878), James (1912), Knight (1921), Lindblom (1959), Simon (1959), Vickers (1965), Allison (1969), Weick (1979), Nystrom & Starbuck (1981), Buchanan & Vanberg (1991), March (1982), Burt (1992), and Mintzberg (1994). I examine a limited subset of the theoretical work done by three of these researchers here and follow with some additional empirical evidence that does not fit into the current paradigm. I also present brief outlines of future theoretical development outside the scope of the current paper. Along the way, I highlight connections to effectuation.

James G. March

> 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 (March, 1982: 75).

From the pioneering work *Organizations* (March & Simon, 1958) to several recent articles in management journals, March has created a substantial body of theories and empirical evidence on how human beings behave, make decisions, and interact with one another and with the external environment in organizations. Of particular value to building a theory of effectuation are his ideas on the tradeoffs between exploration and exploitation in organizational learning (March, 1991) and his inspirational exhortation to researchers to challenge the assumption of preexistent goals in decision making (March, 1982).

Organizational learning involves decisions in which scarce resources (including attention) are allocated 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. Understanding the relationship between these two horns of a continuing dilemma in organizational evolution leads us away from a linear approach to such concepts as "success" and "sustainable competitive advantage." For example, by introducing a new technology, such as a computerized decision support system, an organization may decrease its chances of being the worst competitor, but it may reduce its chances of being the overall winner in the game (March, 1991: 84).

It would be rather obvious to speculate that decision units of exploration would contain processes of effectuation, whereas causation models would dominate exploitation. But, more interesting, one could speculate that the problem of allocation of resources between exploration and exploitation might itself be modeled more effectively using an effectuation rather than a causation model. March's exposition on exploration and exploitation also brings out that causal reasoning and effectual reasoning need

not always pull in opposite directions. Instead, they can work in a complementary fashion, just as exploration and exploitation can both be used by a firm to sustain its market share over different spatial and temporal contexts.

Henry Mintzberg

> I would like to introduce just one fact[5] here. In one sense, it is the only real fact I know in all of the literature of strategic management . . .
>
> . . . Honda's success, (in capturing two thirds of the American motorcycle market) if we are to believe those who did it and not those who figured it, was built precisely on what they initially believed to be a probable non-starter—namely the small motorcycle. Their own priors were that a market without small motorcycles would not buy small motorcycles. Had they had a proper planning process in place . . . this non-starter would have been eliminated at the outset—plan rationally and be done with it. But Honda was badly managed in this regard, and so a few Japanese managers, riding around on those little things in Los Angeles, were pleasantly surprised. They learned. (General Motors was apparently well managed in this regard, because a product development manager there once told me that they had a mini-van on the drawing boards long before Chrysler ever did but that this probable non-starter was scuttled in the planning process) (Mintzberg, 1991: 92).

Success stories of probable nonstarters abound in the history of economics, management, and human affairs in general. For example, Polanyi comments on one of his contributions to physics:

> I would never have conceived my theory, let alone have made a great effort to verify it, if I had been more familiar with major developments in physics that were taking place. Moreover, my initial ignorance of the powerful, false objections that were raised against my ideas protected those ideas from being nipped in the bud (Polanyi, 1963: 1013).

Researchers in cognitive science have explored the importance of so-called ignorance in the form of a recognition heuristic. This research into ignorance-based heuristics explains phenomena such as (1) the success of Benetton's ad campaign that conveyed nothing about the product but sought only to induce name recognition (Goldstein & Gigerenzer, 1999) and (2) the striking stock market returns generated by the recognition knowledge of pedestrians that beat the considered opinions of mutual fund experts (Borges, Goldstein, Ortmann, & Gigerenzer, 1999). Another example of the benefits of *not* having expertise comes from the area of research methods, embodied in Gersick's discovery of a new model of group development. Eschewing the normative linear movement of research—from careful literature review to deduction of hypotheses, to careful operationalization, to design, to inference making—she adopted a mode of unconstrained curiosity and immersion in the phenomena, which led her to the element of surprise that was crucial to her discovery (Gersick, 1992).

The prolificacy of successful nonstarters in human affairs is matched only by sure things that fail disastrously. In a detailed review of the predictive accuracy of forecasting by experts in various fields, including population, economics, technology, and so forth, Hogarth and Makridakis (1981) conclude that the evidence indicated forecasting errors varied from a few to a few hundred percentage points and that forecasting was notoriously inaccurate. Also, using hundreds of studies in management and other areas of human behavior, Mintzberg makes a powerful argument that strategic planning is "not" strategy formation (Mintzberg, 1994). Once again, the evidence seems to suggest that a different model of decision making is required: one that does not focus on analysis and prediction but on synthesis and action. Effectuation provides one possible alternative, particularly in the problem of strategy *formation*, which belongs in the category of existence problems such as those listed in the beginning of this article.

Karl E. Weick

> I want to argue that one reason we theorize poorly about what matters most is because we use discourse that makes it hard to capture living forward. Living forward is a blend of thrownness, making do, journeys stitched together by faith, presumptions, expectations, alertness, and actions—all of which may amount to something, although we will know for sure what that something may be only when it is too late to do much about it. Unsettled, emergent, contingent living forward contrasts sharply with our backward-oriented theoretical propositions that depict that living as settled, causally connected, and coherent after the fact (Weick, 1999: 135).

Weick's theory of enactment-retention-selection puts decision makers in organizations at

[5] The fact he is referring to is the title of the article, "Learning 1, Planning 0."

the center stage of the organization's evolution (Weick, 1979). Unlike in commonly accepted models of evolution, where selection is exclusively the prerogative of the environment, Weick argues that "decision makers in organizations intervene between the environment and its effects inside the organization, which means that selection criteria become lodged more in the decision-makers than in the environment" (Weick, 1979: 125).

But this intervention is not coherently planned or causally prescribed as most mainstream research on organizations seems to emphasize. Instead, in the theory of enactment, a nonlinear process that is strongly evocative of the "living forward" model of effectuation is assumed. Using such examples as Mozart's description of how he composed music, Weick links enactment to the idea that actors in organizations are involved more in making retrospective sense of their actions than in acting based on predetermined goals and causal rationality (Weick, 1995). Although Weick does not especially focus on the creation of an organization from scratch, the basic decision unit of the larger organizational processes of enactment and sensemaking can be posited as a model of effectuation rather than causation.[6]

Future Theoretical Work on Effectuation

Integrating March, Mintzberg, and Weick. March's ideas on exploration and the challenge to preexistent goals, Mintzberg's gathering of evidence against planning and prediction, and Weick's emphasis on enactment and living forward are all integrated in this article into a model of effectual reasoning that explicitly addresses (1) a logic of control (rather than prediction), (2) endogenous goal creation, and (3) a (partially) constructed environment. Additionally, building upon the preceding theories' subconcepts, which basically pose a disconnect of intention, action, and meaning, here I show how effectuation inverts causal reasoning to indicate *a new connection* among means, imagination, and action that helps generate intentions and meaning in an endogenous fashion.

Effectuation in areas other than the creation of economic artifacts. I have primarily brought out the role of effectuation within the normative decision theory literature, but there is a substantial body of theoretical and empirical work providing alternative perspectives that need to be examined in more detail. Connections of effectuation with such theories as March's "garbage can" model, Weick's enactment processes, Lindblom's successive comparisons framework, Gigerenzer's ignorance-based heuristics, Simon's bounded rationality, and several others (e.g., the literature on improvisation and bricolage) have to be explored in depth. For example, in considering the issue of endogenous goal creation in the context of public policy formulation, Lindblom develops an alternative to traditional rational comprehensive models of decision making (Lindblom, 1959). In his "successive limited comparisons" method of policy making, the policy maker directly chooses between policies rather than first developing an ordered set of values and subsequently evaluating the policies on how well they attain the prioritized values. In other words, the policy maker does not separate ends from means; the choice of means embodies within it the policy maker's selection of ends.

Lindblom's model is clearly not one of causal reasoning. It embodies several principles of effectual reasoning. Particularly, in the model, Lindblom embraces bounded rationality and endogenous and contingent goal creation, and explicitly eschews prediction. Instead of with "means," in the sense in which they have been discussed in the current exposition on effectuation, Lindblom's model begins with a very limited set of actual policies, and in it Lindblom seeks to select between the marginal combinations of values (ends) that the policy maker wishes to attain. Lindblom's successive comparisons model is an application of effectual reasoning to a very different context of decision making than the creation of economic artifacts. The central focus in the Lindblom model is on conflicting values: both conflicts *between* decision makers and the *relative* conflicts among the value priorities of an individual decision maker under different spatial and temporal contexts of decision making. Lindblom's theory indicates that it would be interesting to identify and examine areas other than the creation of economic artifacts for applications of effectual

[6] I am attempting a more detailed examination of the links between effectuation and the ideas of March and Weick, as well as others, such as Lindblom and Simon, in a subsequent paper.

reasoning. Such an endeavor would be particularly necessary to develop a general theory of effectuation—a task clearly beyond the scope of this paper.

For now, the primary enhancement that effectuation brings to earlier theories, particularly in economics and management, is the connection with causal reasoning and the explicit logic of control versus prediction in human affairs. This enhancement is important in that it outlines the existence of a form of reasoning that is not merely a deviation from causal reasoning. Instead, effectuation suggests a hitherto unspecified alternative *logic* that might unite several of the earlier theories into a newly coherent paradigm of decision making.

Connections with other nonlinear approaches. In a similar vein, the connection of effectuation to nonlinear approaches, such as chaos/complexity theories, needs to be investigated. I am attempting this in a separate essay in which the processes of effectual reasoning are united with the structural property of near decomposability in complex systems that has been proven to speed up their evolution (Simon, 1996). Together, effectuation and near decomposability may explain not only the creation of new firms but also the creation of rapidly growing, innovative, and enduring firms (Sarasvathy & Simon, 2000).

Connections with the philosophical underpinnings of causation. Causation has a very old and venerable lineage in philosophy. In "abducting"[7] a theory of effectual reasoning, one must pay attention to the several centuries of continuing conversation about causation—from Aristotle down to more recent theorizing, such as John Mackie's INUS condition (Mackie, 1998). Mackie defines a cause as an *I*nsufficient but *N*ecessary component of an *U*nnecessary but *S*ufficient condition, offering potentially a more precise way of introducing plurality, nonlinearity, and contingency into causal reasoning without assuming away the qualitative variables.

Aristotle argued that there are four causes to all phenomena—namely, material cause, efficient cause, formal cause, and final cause (sometimes called "teleology"). The simplest way to understand the four causes is to consider a phenomenon such as a house and ask, "Why house?" According to Aristotle, four categories of answers emerge:

1. The house is what it is because of the materials that went into the building of it (material cause).
2. The house is what it is because of the people (masons, bricklayers, and so forth) who actually built it—their skills, care, and so on (efficient cause).
3. The house is what it is because of the architect's plan (formal cause).
4. The house is what it is because of the people who own it and live in it; whether they wish to raise children or have wild parties there, for example, will determine what the house is (final cause).

The conversation on causation, of course, has developed well beyond Aristotle's ideas. Particularly, the work of biomathematician Robert Rosen in *Life Itself* suggests that the conversation since Aristotle (all of the conversation of modern science, for example) has been almost exclusively limited to the first three causes: material, formal, and efficient (Rosen, 1991). Rosen argues that the standard form of a mathematical function $f_\alpha(x)$ incorporates the three causes, with "x" being the material cause, "f" the efficient, and "α" the formal. But scientists in general do not seem to tackle final cause or teleology very well. While physical scientists have tended to avoid teleology altogether, social scientists, particularly in economic sciences, have, in general, exogenously imposed one on the phenomena they study. Buchanan and Vanberg point that out in detail in an article entitled "The Market As a Creative Process":

> We have suggested that a perceptual vision of the market as a creative process offers more insight and understanding than the alternative visions that elicit interpretations of the market as a discovery process, or, more familiarly, as an allocative process.[8] In either of the latter alternatives, there is a telos imposed by the scientist's own perception, a telos that is nonexistent in the first stance (1991: 183).

[7] The logician Charles Sander Peirce developed the concept of "abduction" as a third alternative to "deduction" and "induction." Abduction involves creating new hypotheses purely from imagination, as opposed to deducing them from first principles or axioms or inducing them from data or empirical findings.

[8] The three models of market process described by Buchanan and Vanberg are evocative of the statistical metaphor of the urn used in an earlier section. *Allocative process* suggests the urn with the known distribution, *discovery process* suggests the urn with the unknown distribution, and *creative process* evokes effectuation.

As researchers, we seem to do this (impute an exogenous telos) mostly because it allows us to apply the other three causes relatively easily to human behavior or, more precisely, allows us to "explain" and seemingly "predict" human behavior in terms of the first three causes alone.

The key, however, is to find a way to theorize about human behavior without either ignoring telos altogether or imposing/assuming one exogenously. It is clear, without going into further detail, that a comparison of different causation theories—mechanical, narrative fiction, generative, successionist, and so on—and a detailed review of the entire historical flow on causal reasoning—exploring where effectual reasoning would join in and branch out—would be a necessary endeavor for developing a comprehensive theory of effectuation.

Differentiating the ideas in this paper from earlier theories. There are two key factors that distinguish the ideas presented here from earlier theories that have each partially assaulted the bastions of predictive rationality, preexistent goals, and environmental selection. The first consists of the juxtaposition of effectual reasoning with causality, and the second involves the logic of control instead of the focus on prediction.

These two factors powerfully combine to help us build the theoretical foundations for explaining the origins of economic artifacts as a function of the decision processes used by actual entrepreneurs in creating and growing firms in the real world. Empirical explorations (whether historical, anecdotal, out in the field, or inside the lab) are rife with examples of entrepreneurs' and entrepreneurial firms' using decision processes other than those posited by traditional causal reasoning. Examples include Eisenhardt (1989), Ehringer (1995), Moorman and Miner (1998), and others. The theory of effectuation provides the beginning of a robust and rigorous basis for an empirically validated (and testable) model of entrepreneurial decision making.

Connections to some recent empirical findings. Besides integrating previous theories that challenge traditional assumptions of causal reasoning and providing a testable model of entrepreneurial decision making, a theory of effectuation could explain some empirical findings (or the lack of them) in such areas as entrepreneurship. For several decades now, researchers have investigated the traits of successful entrepreneurs and compared them with failed entrepreneurs and nonentrepreneurs. Results, however, have been disappointingly mixed (see Gartner, 1988, for a comprehensive review).

The "successful entrepreneur" seems to be an elusive, many-splendored beast. Successful entrepreneurs range all over the risk-preference spectrum (Palich & Bagby, 1995); they make it to both lists: the ten easiest bosses to work for and the ten most difficult bosses to work for. Bleeding heart liberals and tough libertarians, and shades in between, all build thriving firms. Furthermore, firms succeed by being bold and brash and churning in change as much as by being narrowly focused and conservative and extremely understated in their strategies; both formal strategic planning and lack of it seem to have worked (Schwenk, 1988; Schwenk & Shrader, 1993). In current theories based on causation, scholars have a tough time explaining some of these phenomena and, particularly, suggesting courses of action for particular individuals in creating particular economic artifacts.

The theory of effectuation brings another perspective to the table. It suggests we need to give up ideas such as *the* successful personality or clearly superior characteristics of *the* successful firm or organization. Rather, we need to learn to deal with a rain forest of individuals and firms and markets and societies, intermeshed and woven together with completely coherent yet vastly diverse local patterns that add up to a complex, interdependent ecology of human artifacts. We need to move away from the vision of *the* "market" as a monolithic construct that rides roughshod over vast farmlands of homogenous commodities, relentlessly separating the wheat from the chaff, and start researching "markets" as groups of individuals and communities developing a variety of gardens and parks based on their particular tastes in landscaping and architecture. Only then can we begin to explain why people of all types seem to build successful companies and other economic artifacts.

The focus in our journals and classrooms, for example, would shift from "how to build a successful firm" or "how to become a successful entrepreneur" to "What types of ideas and opportunities should *YOU* pursue?" and "Given who you are, what you know, and whom you know, what types of economic and/or social ar-

tifacts can you, would you want to, and should you create?" The old adage about invention captures this shift rather pithily: *Both the optimist and the pessimist contribute to successful inventions. The optimist invents the airplane; the pessimist, the parachute.*

More important, the theory of effectuation suggests that to normatively unpack the critical factors of success and failure, we first need to disconnect the success of the individual entrepreneur from the success of the firm he or she creates. In fact, effectuation prescribes that the concept of success/failure is not a 0–1 variable—that is, "success" is not the logical equivalent of "not failing," and vice versa. Rather, within the theory of effectuation, any specific firm is only one of many possible viable and contingent combinations of a given set of means with which the entrepreneur begins. Thus, effectuation posits a plurality of "failed" firms for any one or more "successful" firms that actually get created by any given entrepreneur. The normative aspects of effectuation, if any, for the creation of successful firms would have to do with the "management" of failures rather than with their avoidance. Given the scope of this article, what exactly those normative features are is left as an empirical question for future research.

PROPOSITIONS FOR THE ROLE OF EFFECTUATION PROCESSES IN BUSINESSES

To summarize, effectuation processes are posited as the fundamental decision units in explanations of how economic artifacts such as firms, markets, and economies come to be. Effectuation begins with a given set of causes, consisting of (mostly) unalterable characteristics and circumstances of the decision maker, and the focus is on choosing among alternative (desirable) effects that can be produced with the given set of means, thereby eliminating the assumption of preexistent goals. Unlike in causation models, which are usually static and in which decision makers are assumed independent, in effectuation a dynamic decision environment involving multiple interacting decision makers is assumed. As explicated earlier, the four principles of effectuation, in contrast with causation, involve

1. affordable loss, rather than expected returns;
2. strategic alliances, rather than competitive analyses;
3. exploitation of contingencies, rather than preexisting knowledge; and
4. control of an unpredictable future, rather than prediction of an uncertain one.

Based on the foregoing exposition on processes of effectuation, in this section I give a set of propositions that could be used as a basis for future empirical work.

At the Level of the Economy

One of the most important concerns in macroeconomic policy is the fostering of entrepreneurial activity (both in start-ups and existing corporations) to spur innovation, productivity, and growth in the economy. In free-market capitalism both job creation and increases in real per capita income have been shown to depend on entrepreneurial activity, particularly in the form of new firm formation (Birch, 1987; Shane, 1995). Because of this, governments at all levels—local, state, and national—seek to enact policies encouraging start-up entrepreneurs. Currently, such policies are usually focused on encouraging entry in large numbers, in the hope that time will weed out the failures, rather than encouraging certain *types* of enterprises or entrepreneurial strategies. According to Kenneth Arrow, the conventional wisdom of encouraging entry is based on modeling the market as a stochastic process (see Sarasvathy, 2000). In this accepted theory, it is assumed that the creation of firms and the creation of markets are independent processes. To be more precise, it is assumed that markets exist either concurrently or latently and that the markets determine, in a stochastic fashion, which firms survive and which fail.

The theory is based on data, from the National Venture Capital Association, that suggest that the expected success rate for new ventures is very low (estimated at less than two in ten). In light of this, the quest to reduce the failure rate is one of the holy grails of research in entrepreneurship. The predominant method in this literature consists of trying to connect the performance of a firm to a variety of factors, such as liability of newness, entrepreneurial orientation, and so forth. The results using this line of research have, at best, been mixed (Henderson, 1999; Lumpkin & Dess, 1996).

The theory of effectuation suggests another approach. While the *probability* of failure in new ventures may not be reducible because it depends on a seemingly inexhaustible variety of interacting factors—from the genes of the entrepreneur to changing weather patterns in the larger socioeconomic-political environment—the *costs* of failure are another matter altogether. Because effectuation does not involve elaborate planning and prediction costs but relies, instead, on precommitments to reduce uncertainties, we can state the following proposition about the role of effectuation at the level of the economy.

> *Proposition 1: Prefirms or very early-stage firms created through processes of effectuation, if they fail, will fail early and/or at lower levels of investment than those created through processes of causation. Ergo, effectuation processes allow the economy to experiment with more numbers of new ideas at lower costs.*

At the Level of the Market or Industry

Economic history is rich in stories about the birth of new industries. Be they Josiah Wedgwood and his pots and vases, Edison and his invention factory, Jobs and Wozniak and personal computers, or the founders of Netscape and Amazon.com and e-commerce, entrepreneurs have helped create new markets and new industries, as well as new firms and organizations in existing industries. But creating a firm in an industry that does not yet exist calls for strategies very different from those used for penetrating a predefined and well-structured market. Wedgwood's success called for an awareness of the revolutionary new concept of "social mobility" in eighteenth-century England and the understanding that pots and vases can be symbols of people's aspirations in this regard (Koehn, 1997). Transforming the invention of a light bulb into the electrification of entire cities involved Edison's educating and convincing thousands of people, including politicians, priests, and the robber barons on Wall Street, to fundamentally rethink their presumptions about light and fire and science and safety (Baldwin, 1995). Jobs and Wozniak had to stumble on the inventions of Xerox PARC and disprove the market forecasts for computers at around 2,000 units by the end of the twentieth century. And the founders of Netscape and Amazon.com had to demonstrate that revolutions were possible in the IPO market—that is, billion dollar companies could be created with virtually no sales revenues and/or profits.

These endeavors that opened up new markets and industries plugged into and exploited social and technological contingencies that could not have been anticipated or planned for. Also, they involved *changing* (not *fulfilling*), often on a revolutionary scale, the perceptions and expectations of their stakeholders, customers and investors alike—a task that Schumpeter attributed to "creative destruction" when he observed, "It was not enough to produce satisfactory soap, it was also necessary to induce people to wash" (Schumpeter, 1939: 243). Processes of causation are not much use on the cusps of such catastrophic changes in the economy as the births and deaths of industries. A historic analysis of companies that pioneered such changes and a comparison of the commonalities in the decision processes used by the entrepreneurs who created those companies should provide evidence for the following claim.

> *Proposition 2: Successful early entrants in a new industry are more likely to have used effectuation processes than causation processes. With later entrants, the trend could be reversed.*

At the Level of the Firm

Researchers trying to understand success and failure factors in new ventures time and again have proposed longitudinal studies as the most effective method to understand them and to develop predictions for separating potential winners from losers. Again, attempts at such longitudinal studies have not provided brilliant illuminations (Van de Ven, Polley, Garud, & Venkataraman, 1999). Reasons include, among other things, the difficulties in comparing firms across industries, technologies, and geographical factors. The theory of effectuation opens up possibilities for true comparisons across such diverse factors. Since all new firms and entrepreneurs, irrespective of which industry or environment they are operating in, make decisions, and since

their decisions can clearly be classified into the two categories of causation and effectuation (using the four contrasting principles listed earlier), longitudinal studies can be used to compare them on this one dimension, with a view to separating potential successes and failures. For example, this leads to the following conjecture.

> *Proposition 3: Successful firms, in their early stages, are more likely to have focused on forming alliances and partnerships than on other types of competitive strategies, such as sophisticated market research and competitive analyses, long-term planning and forecasting, and formal management practices in recruitment and training of employees.*

Within the Firm—At the Level of Founders/Decision Makers

In addition to carefully separating their anatomical structures, I have clearly delineated four principles on which effectuation processes can be contrasted with causation models in individual decision making. Yet a lot remains to be done in terms of identifying and categorizing particular decisions in particular functional areas inside firms. Methods such as grounded theory building using case studies and qualitative analyses of detailed decision-making experiments might be required to accomplish this empirical objective. As a first step in that direction, I offer the following conjectures.

> *Conjecture 1: In marketing decisions, in contrast to traditional decision makers, effectuators are less likely to use traditional types of market research, such as carefully designed surveys and test marketing; instead, they are likely to dive straight into seat-of-the-pants marketing/selling activities and alliances.*
>
> *Conjecture 2: In financial decisions, in contrast to traditional decision makers, effectuators are less likely to use long-term planning or net present value (NPV) analyses; instead, they are likely to be focused on the short term and, at most, to use informal versions of real options.*
>
> *Conjecture 3: In organizational decisions, in contrast to traditional decision makers, effectuators are more likely to build strong participatory cultures, rather than hierarchical, procedures-based ones. In fact, in contrast to traditional decision makers, effectuators are likely to be less effective in running large organizations with well-oiled procedures.*
>
> *Conjecture 4: Effectuators are more likely to fail more often but are also more likely to manage the failures more effectively and to create larger, more successful firms in the long run (although they may need to hire professional chief operating officers to actually run them!).*

CONTINGENT ASPIRATIONS AND THE ENTREPRENEURIAL IMAGINATION

Economics and management have long rested on primitives, such as "product" and "market," and on institutions, such as "firm," "industry," and "economy." But these concepts and institutions are artifacts that begin as gleams in the eyes of individuals. Values get created in every sphere of human endeavor, from the arts and sciences to sports and philosophy. These fruits of the human imagination may be used in a variety of ways to fulfill human aspirations. The possible uses and the breadth of their dissemination are limited only by the economic ingenuity of the entrepreneurs who create the artifacts that transform the fruits of human imagination into goods and services for truck and trade.

Before there are products, there is human imagination, and before there is a market, there are human aspirations. Successful entrepreneurs have long created firms, industries, and even economies by matching up the offspring of human imagination with human aspirations. They have realized that this matching does not occur spontaneously or "inevitably." Rather, the creation of economic artifacts demands imagination, inspiration, and protracted endeavor—both cooperative and competitive.

In fact, in mainstream economics, researchers have thus far explained entrepreneurship not as the creation of artifacts by imaginative actors fashioning purpose and meaning out of contin-

gent endowments and endeavors but as the inevitable outcome of mindless "forces," stochastic processes, or environmental selection. The essential agent of economics is a rational actor, upon whom a monolithic telos is usually imposed by the economist, whether it is utility/profit maximization at the micro level or welfare maximization at the level of the economy. The essential agent of entrepreneurship, as I argue here, however, is an effectuator: an imaginative actor who seizes contingent opportunities and exploits any and all means at hand to fulfill a plurality of current and future aspirations, many of which are shaped and created through the very process of economic decision making and are not given a priori.

Human imagination and human aspirations influence each other and reshape one another continually, both directly and through economic artifacts. The swirls and eddies these interactions engender often change the shoreline and make the waters treacherous for economic ship builders and navigators. That is why destinations as well as paths are often unclear in economic decision making. And when destinations are unclear and there are no preexistent goals, causal road maps are less useful than effectual exchanges of information between all stakeholders involved in the journey. Bold expeditions and even one-eyed pirates rule such seas, and voyages to India effectually end up in the Americas.

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