

Chapter 2

Debates in Entrepreneurship: Opportunity Formation and Implications for the Field of Entrepreneurship

Sharon A. Alvarez, Jay B. Barney, and Susan L. Young

The field of entrepreneurship has struggled since the 1970s to define itself as a field and gain legitimacy as a valid academic area of research (Cooper, 2003). Much of the work in entrepreneurship was either theoretical or used the phenomena as a context in which to observe other theories (Alvarez & Barney, 2008). This led to a “land grab” mentality—almost a rapaciousness—regarding entrepreneurship research among many of the established disciplines—economics, sociology, organization behavior, strategy, organization theory—looking for something new to study.

However, during this time there were scholars devoted to entrepreneurship as a core research field. This focused research has led to a unique defining question for the field of entrepreneurship: where do opportunities come from (Aldrich & Fiol, 1994; Aldrich & Kenworthy, 1999; Aldrich & Ruef, 2006; Alvarez & Barney, 2005; Alvarez & Barney, 2007; Alvarez & Parker, 2009; Baker & Nelson, 2005; Casson, 1982; Eckhardt & Ciuchta, 2008; Gartner, 1985; Gloria-Palermo, 1999; McMullen & Shepherd, 2006; Sarasvathy, 2001; Sarasvathy et al., 2003; Shane, 2003; Shane & Eckhardt, 2003; Shane & Venkataraman, 2000; Venkataraman, 1997)? Moreover, there have been at least three special issues on this topic: one by Zoltan Acs in the *Journal of Small Business Economics* and two by Alvarez and Barney in *Strategic Entrepreneurship Journal*.

This question of where opportunities come from has generated significant debate (Alvarez & Barney, 2008). This debate is embedded in a larger philosophy of science debate about realist and constructionist paradigms that has plagued organizational science scholars for at least the past four decades (Moldoveanu & Baum, 2002). Moreover, it is at the core of the debate between discovered realist opportunities and created evolutionary realist opportunities (McMullen & Shepherd, 2006).

On the one hand, realists assume that reality has an objective existence independent of individual perceptions (Popper, 1979). On the other hand,

S.A. Alvarez (✉)

Department of Management, Fisher College of Business, 2100 Neil Avenue, 850, Columbus, OH 43210, USA

e-mail: alvarez_42@fisher.osu.edu

constructionists argue that reality is a social product based on the social interactions of individuals and does not have an existence independent of individual perception (Berger & Luckmann, 1967; Kuhn, 1970; Weick, 1979). Recently, scholars have begun to identify ways that apparent conflicts between realists and constructionists can be resolved. One such way is the evolutionary realist approach, which assumes that reality is as individuals perceive it but that it is tested against an objective and external, albeit potentially unobservable, reality which is a reliable guide to action (Azevedo, 2002). For example, Campbell (1974) argues that there is a reality that is independent of an individual's perception and that this reality plays a part in the selection and editing of individual's beliefs and perceptions.

Perhaps not surprisingly, up to this point in the evolution of the field of entrepreneurship the realist perspective of how opportunities are formed and exploited has dominated, while the constructionist and evolutionary realist approaches have received much less attention (Venkataraman, 2003). This is not to say that constructionist (Gartner, 1985) or evolutionary realist (Aldrich & Kenworthy, 1999; Aldrich & Ruef, 2006; Baker & Nelson, 2005) work has not been done in the field of entrepreneurship. However, realist views of entrepreneurship—labeled as either the individual/opportunity nexus approach or discovery—have to this point been more systematically developed as approaches to opportunity formation (Shane, 2003).

The purpose of this chapter is to articulate and explicitly describe the assumptions of a realist perspective of opportunity formation, a constructionist perspective of opportunity formation, and an evolutionary realist perspective that includes some elements of realist perspectives and some elements of constructionist perspectives into the discussion of the formation of entrepreneurial opportunities. In doing so this chapter suggests that realist views and constructionist views are incomplete without the evolutionary realist perspective. Without fully articulating the evolutionary realist perspective, the analytical richness and promise of the integration of both realist and constructionist views cannot be reaped (Azevedo, 1997).

The rest of this chapter is organized as follows. The next section gives a brief summary of the realist, constructionist, and evolutionary realist perspectives, and how these perspectives manifest themselves in the entrepreneurship literature. The chapter then goes on to extend this logic into the organization emergence process.

Epistemological Traditions

A Realist Approach to Opportunity Formation

The realist perspective has its roots in classic positivism and dates back to August Comte (Blanchard, 1855) and Ernst Mach's (Kockelmans, 1968) views that any theory not based on observable fact is meaningless. Moreover, Comte claimed, that the goal of science is prediction based only on observable terms. Unobservable objects, processes, and events in current realist views are ascribed the same properties

as the observable. In this view the unobservable exists objectively and mind-independently. There is a real world existing independent of our attempts to know it; that we humans can have knowledge of that world; and that the validity of our knowledge-claims is, at least in part, determined by the way the world is (Azevedo, 1997). Theory in this view either correctly or incorrectly describes the unobservable and it can be tested as either true or false. In other words, realists know the “truth” about genuinely existing unobservable entities. For realists, the objects of scientific knowledge are phenomena and take the form of general laws that must be testable by experience and show logical links between specific phenomena and these laws.

This realist tradition is manifest, in the entrepreneurship literature, in a set of ideas that has come to be known as discovery opportunities or the individual/opportunity nexus approach. This approach builds on the work of the “Austrian” economists (Hayek, 1945; Kirzner, 1973; Von Mises, 1949). The Austrian economists differed from the more traditional neoclassical economists by assuming markets with imperfect information (Kirzner, 1989; Von Mises, 1949). The notion of opportunity¹ in Hayek’s work is price discrepancies, perceived by agents with particular subjective localized knowledge of the market and thus allowing for arbitrage. While there is no specific role for the entrepreneur in his vision of the market process, Hayek laid the groundwork for the discussion of the opportunity concept (Buenstorf, 2007). The role of the entrepreneur becomes more established in Kirzner (1973, 1989), who extended von Mises’ work on asymmetric beliefs (Von Mises, 1949). Opportunities in this regard stem from imperfect knowledge, subject to the particular knowledge of time, and place possessed by the entrepreneur. In this view, opportunities are there for the taking, but only for those who possess the qualities necessary both to discover and exploit them (Shane & Eckhardt, 2003). Thus, entrepreneurs are considered as possessing an accurate view of “reality” as opposed to non-entrepreneurs (McMullen & Shepherd, 2006).

Indeed, the central assumption of this discovery approach suggests that unobservable opportunities exist objectively and independent of individual perception and by implication that these opportunities can only be seen, and thus “discovered,” by special alert individuals (Kirzner, 1973, 10). Discovery opportunities are treated as if they are clearly definable and identifiable objects. Even if it is acknowledged that there are many aspects and stages to the formation of the opportunity, opportunities are nonetheless represented as if they have material properties and defined parameters that exist independent of the perceptions of individuals. Moreover, the recognition of these opportunities by an individual is viewed as an event. These opportunities exist in an already existing reality and alert individuals are often familiar with the norms and laws or “truth” of this reality.

Opportunities in this view arise from competitive imperfections in markets due to changes in technology, consumer preferences, or some other attributes of the context within which an industry or market exists (Kirzner, 1973, 10). The task of the individual is to become “alert” to the existence of these opportunities and to

¹An opportunity is defined in this chapter as a market imperfection.

“claim” those that hold the greatest potential (Casson, 1982; Shane, 2003). In this view, entrepreneurial opportunities are like lost luggage in a train station; they exist, just waiting to be claimed by alert individuals who know of their existence.

The discovery and exploitation of opportunities often requires individuals to have ex-ante knowledge of the opportunity (Shane, 2000). Consistent with the realist perspective knowledge in this view is highly informative, reliable, and useful. Opportunities are phenomena subject to invariable laws of nature and the task of the individual entrepreneur is to discover these laws. Individuals in this view already possess information and knowledge from previous experience in an industry or market, or they may collect it as they begin to search for possible opportunities in a recently changed market or industry (Casson, 1982). Alert (or just lucky (Barney, 1986)) individuals may even discover opportunities without engaging in a systematic search. Indeed as stated by Kirzner (1973) an alert individual may actually find a \$10 bill on the ground waiting to be picked-up.

The realist perspective of opportunity formation in this view attempts to answer the question: what is an entrepreneur? This perspective asserts that individuals who are entrepreneurs and those that are non-entrepreneurs must differ in some important ways. Without these differences, anyone in an economy could become aware of and then exploit an opportunity. However, if entrepreneurs and non-entrepreneurs differ, then not everyone in an economy will know about particular opportunities, and even if they do, not everyone will be predisposed to exploit them.

Several possible differences between entrepreneurs and non-entrepreneurs have been examined (Kirzner, 1973; Shane, 2003). Most of these differences lead to the development of information asymmetries between entrepreneurs and non-entrepreneurs (Shane, 2000). Kirzner (1973, 67) summarizes the differences between entrepreneurs and non-entrepreneurs by simply asserting that entrepreneurs are more “alert” to the existence of opportunities than non-entrepreneurs.

The basic ontological position of the realist discovery view of opportunities is that these opportunities exist independent of individual’s knowledge of them, and that this knowledge can be acquired. However, the limitation of this view is that it holds the nature of the world, and specifically the opportunity in this case, subject to empirical investigation. It is therefore committed to an ontological unity in that it does not recognize ontologies that are closed to empirical investigation. Thus, in principle, opportunities in this view can be “tested” for validity before an individual entrepreneur provides agency to the opportunity. This perspective of opportunities assumes a “God’s eye” view of opportunities as reality.

A Constructionist Approach to Opportunity Formation

A constructionist perspective is rooted in the work of Berger and Luckmann (1966). The social action, institutions, and conditions that are presented as objective phenomena in a realist perspective are instead constructed through the interactions and interpretations of people in a constructionist perspective. The primary difference then between realists and constructionists is that realists explain observable and

non-observable phenomena as if observable, and constructionists explain non-observable subject matter through interpretive understanding of particular actions (Azevedo, 2002).

These essential insights from a constructionist approach have also manifested in the field of entrepreneurship trying to understand how opportunities are formed and exploited. A constructionist approach to opportunity formation can be seen in effectuation logic (Sarasvathy, 2001) and bricolage (Baker & Nelson, 2005). The central assumption in this view about opportunity formation would suggest that individuals interpret a phenomenon, raw data, or resources and give it a meaning that is different from other's interpretation. In a constructionist approach of opportunity formation individuals create realities and then mold their actions to these realities (Katz & Gartner, 1988). In this approach the individual decides what opportunity to create and then uses available resources to accomplish this task. Resources in this view might not be used in traditional ways but may be put to use in novel service (Penrose, 1959). In this way the entrepreneur "designs the future" based on the environment and the resources available to the entrepreneur (Baker & Nelson, 2005).

In a constructionist view any resources—information and knowledge—are subject to interpretation. Entrepreneurs in this view start "where they are and with what they have" and interpret their idiosyncratic relationship with their resources (Baker & Nelson, 2005; Mahoney & Michael, 2005; Penrose, 1959). The information then available to an entrepreneur in a constructionist view would be their interpretation of their environment and resources and their unique interpretation of what can be accomplished within their environment and with their resources.

The constructionist approach does not predict how opportunities are selected, revised, or whether or not they are valid outside of the individual's reality. This view suggests that perceptual and cognitive mechanisms are generally reliable within the range of the environmental interactions that produced them. This is not to say that what the entrepreneur envisions is a mirror of reality. Instead the entrepreneur's goal is to construct, deconstruct, and reconstruct an existing reality so as to form a new reality and thus opportunity.

Through their actions individuals create a self-fulfilling prophecy, a prediction that is a result of having been made, causes the expected or predicted event to occur and thus confirms its own accuracy (Ford, 1999). Since an essential element of the self-fulfilling effect is an unshakable conviction that everything that has a name actually exists, any time we name something we create an opportunity for a self-fulfilling prophecy (Ford, 1999; Watzlawick, 1984).

Just as the realist perspective of opportunity formation informs the nature of what is an entrepreneur, the constructionist perspective informs the nature of an entrepreneur. Entrepreneurs in this view perceive an opportunity that was not perceived by others thus implying that entrepreneurs must be different than non-entrepreneurs since they perceive and assign meaning to conditions and phenomena differently than non-entrepreneurs (Ford, 1999). In this view the formation of an opportunity and the entrepreneur cannot be separated since it is the differences in the perceptual, cognitive beliefs, and interpretations of entrepreneurs that

construct these opportunities. Moreover, the notion of self-fulfilling prophecy is a strong assumption suggesting that the over-confidence bias plays a significant role (Busenitz & Barney, 1997). In this view entrepreneur's biases are reinforced and may be strengthened as their convictions become accurate.

While the constructionist approach to opportunity formation, knowledge is relative and opportunities exist in the perceptions of individuals, may be appealing, but the constructionist approach also has limitations. Knowledge and opportunities in this view are relative; the problem is that when everything is relative, logical coherence is renounced (Azevedo, 2002). This is a problem since individuals in constructionists' views are participating in a dialogue that pre-supposes a commitment to a minimal logic; i.e., a current market exists, but is then redefined by the enactment of the new opportunity as the opportunity is tested against this existing market through human action. Thus, constructionists have moved to a view of knowledge as the outcomes of functionally oriented behavior and in doing so have ended up with a view of knowledge that resembles Campbell's evolutionary realist approach (Moldoveanu & Baum, 2002).

The next section combines realist perspectives with constructionist perspectives in what has become known as an evolutionary realist approach (Campbell, 1960).

An Evolutionary Realist Approach to Opportunity Formation

The realist and constructionist perspectives both have their strengths; however, the problem is that the two appear to have irreconcilably conflicting assumptions about the nature of the social world (Moldoveanu & Baum, 2002). These differences lead to a fragmented perspective, which in turn leads to a general lack of consistency and coherence. What scholars such as Azevedo (1997, 2002), McKelvey (1999), Campbell (1974) have suggested is a perspective that maintains the strengths of both the realist and constructionist perspective and at the same time avoids the problems of fragmentation (Azevedo, 1997). They note that such a perspective might be an evolutionary realist perspective, a perspective that does not deny a constructionist perspective of knowledge as well as an objective external reality that serves as an ultimate criteria (McKelvey, 1999).

Campbell (1974) built on the strengths of realist and constructionist approaches by arguing that there is a reality independent of the individual and this reality imposes constraints on the individual's actions. In this approach, knowledge may be constructed by individuals but it is validated through social cross-validation. In Campbell's evolutionary approach individuals begin to act through blind variation, then through a trial and error approach these actions are then selected for or against based on the environment or culture which embodies the variation. Campbell contends that the blind-variation and selection-retention process are fundamental to all inductive achievement, to all genuine increases in knowledge, and to all increases in fit of a system to its environment (Aldrich & Kenworthy, 1999).

It is the action component that differentiates the constructionist approach from the evolutionary realist approach to opportunity formation. A pure constructionist approach does not require action, *per se*, but the evolutionary realist approach requires not only the social construction of the action, but also the action itself, as well as selection for or against the action by the market.²

Campbell's evolutionary approach has been extended to organization science primarily by McKelvey (1997) and to entrepreneurship specifically by Aldrich and Kenworthy (1999) and Aldrich and Ruef (2006). Recently, this evolutionary realist approach in entrepreneurship of opportunity formation has been labeled creation opportunities by Venkataraman (2003). Creation theory is a logical theoretical alternative to discovery theory for clarifying the actions that entrepreneurs take to form and exploit opportunities (Aldrich & Kenworthy, 1999; Aldrich & Ruef, 2006; Gartner, 1985; Venkataraman, 2003). Aspects of creation theory have been described by a variety of authors (Aldrich & Kenworthy, 1999; Alvarez & Barney, 2005; Baker & Nelson, 2005; Gartner, 1985; Langlois & Cosgel, 1993; Loasby, 2002; Sarasvathy, 2001; Schumpeter, 1934) and Alvarez and Barney (2007) in particular delineate the differences between the discovery and creation theories of opportunity.

The roots of creation theory can also be seen in the work of Joseph Schumpeter. Schumpeter does not explicitly promote the concept of opportunity; he instead espouses the notion of innovation, where the entrepreneur creates new combinations of resources, which results in a new product and brings it to market (Schumpeter, 1934). This act of creating a new combination can be interpreted as the creation of an entrepreneurial opportunity (Buenstorf, 2007). As Buenstorf further explains: "If interpreted in this way, Schumpeter's approach differs from the Hayek-Mises-Kirzner tradition in that opportunities are not pre-supposed for entrepreneurial activity to occur, but are created by the innovative entrepreneur" (2007, 325). Further, in the Kirznerian view, entrepreneurs discover and pursue opportunities that are reflected within the price system and thus exist within markets, while Schumpeterian entrepreneurs exploit an opportunity found outside the economic sphere and bring it to market. In essence, the Schumpeterian entrepreneur "creates" the opportunity.

The Austrians and evolutionary economists are not the only disciplines concerned with opportunities. In philosophy of science the debate among realists, constructionists, and evolutionary branches can also be understood as whether or not opportunities are discovered or created. This next section is an explicit consideration of the dimensions along which an evolutionary realist approach that incorporates constructionist and realist philosophical roots can be used to understand opportunity formation in entrepreneurship.

Incorporating the constructionist perspective, the first assumption is that opportunities in this view do not exist independent of individual action. The second

² Markets are socially constructed entities.

assumption is that the process of enactment, an entrepreneur's actions and reactions, will not only form new opportunities, but also will bring about changes in the individual. However, incorporating a realist perspective, these actions are then tested against an objective reality for validity. In this case, even though we acknowledge that markets are socially constructed, the reaction of the market will be viewed as a check on opportunity validity.

Creation opportunities to produce and sell new products or services do not exist until entrepreneurs act to create them (Baker & Nelson, 2005; Gartner, 1985; Sarasvathy, 2001; Weick, 1979). In opportunity creation neither the supply nor demand exists prior to individual action: instead the individual through their actions develops both the opportunity and the market (Miller, 2007b). Individuals do not recognize opportunities first and then act; rather, they act, wait for a response from their actions—usually from the market—and then they readjust and act again (Weick, 1979). And in acting, individuals create opportunities that could not have been known without the series of actions they took. In this sense, the formation of opportunities is both a path dependent (Arthur, 1989) and emergent process (Mintzberg & Waters, 1985). In acting and reacting, entrepreneurs enact the opportunities they ultimately exploit (Weick, 1979).

This enactment process is consistent with evolutionary realist perspectives of individual action (Aldrich & Ruef, 2006; Campbell, 1960; Weick, 1979). In both evolutionary realist approaches and in creation opportunity approaches blind variation can begin a process of action and reaction that leads to the formation of opportunities. In evolutionary terms, the role of blind variation emphasizes how social systems can emerge without any self-conscious planning or foresight for action (Aldrich & Kenworthy, 1999). Blind variations are the raw materials from which selection processes cull those that are most suitable (Aldrich & Ruef, 2006).

Of course, in creation opportunities, individual actions need not be “completely blind” they may be the result of an individual's perception such as in the constructionist approach. However, they are likely to be quite myopic. Individuals may have hypotheses about how a market will react to their efforts, but rarely will entrepreneurs be able to see “the end from the beginning.” In this view the future is contingent upon the non-deterministic individual actions and choices. There is no “end” until the creation process has unfolded, i.e., opportunities cannot be understood until they exist, and they only exist after they are enacted in an iterative process of action and reaction (Aldrich & Kenworthy, 1999; Berger & Luckmann, 1967; Weick, 1979).

In this view, individuals do not become aware of new opportunities by recombining existing knowledge in new ways. This conception takes the “new combination” perspective advocated by Schumpeter and extends it. Rather, in this theory, entrepreneurs create new knowledge about previously non-existent opportunities by acting, then closely observing the market's responses to those actions, learning, and then acting again (Choi, 1993). Failure to learn from these entrepreneurial

experiments will almost certainly prevent entrepreneurs from ever creating opportunities, unless they are lucky. More frequently, this enactment process is characterized by numerous failed experiments, failures that suggest only the next experiment in a process of unknown duration (Nelson & Winter, 1977). Indeed, after several iterative actions, evaluations, and reactions, entrepreneurs may even decide that they misinterpreted the results of previous actions and go back several sequences and start again, or even abandon the process altogether (Cyert & March, 1963; March & Simon, 1958; Mosakowski, 1997). In general, the more novel the opportunity that is ultimately created by this process, the more new knowledge and information the entrepreneur will need to create through this series of experiments (Galbraith, 1977).

In this enactment process, prior industry or market experience, far from being a benefit, may actually hinder entrepreneurial learning (March, 1991; Sine et al., 2005; Weick, 1979). This is because, according to Creation Theory, opportunities do not necessarily emerge out of competitive imperfections in pre-existing industries or markets—where prior industry or market experience may actually help entrepreneurs combine pre-existing knowledge in new ways—but, instead, may emerge out of the enactment process itself. In Creation Theory, entrepreneurs are breaking away from established forms and face the challenge of creating new knowledge themselves (Aldrich & Ruef, 2006). Being too closely tied to prior industries or markets may make it difficult for individuals to recognize the creation of new industries or markets (Aldrich & Kenworthy, 1999; March, 1991; March & Simon, 1958; Mosakowski, 1997; Simon, 1973).

On the other hand, experience in the enactment process—the process of acting, observing, learning, and acting—can be very valuable. Thus, Creation Theory suggests that “serial entrepreneurs”—i.e., entrepreneurs with experience in the opportunity enactment process—need not confine their efforts to exploiting a series of new opportunities in a single industry or market, but may, instead, repeat the enactment process in creating what turn out to be very different new opportunities.

The enactment of entrepreneurial opportunities will often be a messy, non-linear process. However, if an entrepreneur is able to complete this enactment process and create an opportunity—and this is far from certain—the knowledge that has been created while this opportunity was being enacted may be specific to this entrepreneur. It may be tacit, and socially complex, and thus not likely to rapidly diffuse among potential competitors (Dierickx and Cool, 1989). Thus, even though information about the existence about an enacted opportunity may become widely known after it has been exploited, knowledge about how to exploit such an enacted opportunity may be less widely known. In this sense, exploiting enacted opportunities is more likely to be a source of sustained competitive advantage than exploiting opportunities formed by competitive imperfections to pre-existing industries or markets (Barney, 1986).

Opportunity Formation and Organizational Forms

It may seem that the study and interpretation of the ontological status of organizational forms³ is independent from studying the ontological status of opportunities, as if it is possible to gather the information needed to form an organization independently from the knowledge about opportunity formation. What we know about organization formation may possibly be a function of how we frame the existence of opportunities as either objective phenomena, constructed phenomena, or phenomena as a result of evolutionary forces. Yet, questions of determinates of variations of organizational forms have typically not connected to how variation in opportunity type might affect the differences or similarities of organization forms. The next section explores the relationship between opportunity formation and organizational form along the dimensions of informational environment and planning and goals (Scott, 1981) and decision-making processes for accomplishing goals (Aldrich & Mueller, 1982).

Organizational Forms that Originate from Discovery Opportunities

Stinchcombe (1965) posited that the formation of organizations was culturally embedded and historically specific, reflecting societal conditions at a particular historical conjecture. This view of organization formation focuses on dynamics within existing populations, noting that most founding attempts reproduce existing organizational forms and comprise incremental and perhaps even novel additions to the organizational landscape (Carroll & Hannan, 2000). These organizations typically do not create a new landscape. This type of organization would be consistent with exploiting a discovery opportunity.

Environment and Information

Discovery opportunities generate new organizational forms that are the result of opportunities that are specific responses to specific environmental conditions. At founding these new organizations exhibit a tight association in time between changes in environmental conditions that initiate an opportunity and the innovation of a new organization that exploits this opportunity (Kimberly, 1975). These new organizational forms that result from a particular time in history often depend upon the social technology available at that particular time and take on the characteristics of the environment that surround their early establishment (Stinchcombe, 1965). Indeed, the environment in this view may actually constrain the basic structure of

³There are several definitions of the term organizational form; we mean it in its most general sense. We view the organizational form as a distinct social entity Scott, W.R. 1987. The adolescence of institutional theory. *Administrative Science Quarterly*, 32: 493–511.

the new organizational form (Selznick, 1957). These forms tend to become institutionalized and the basic structure of the form remains relatively stable over a very long time (Kimberly, 1975; Romanelli, 1991; Stinchcombe, 1965).

In the discovery view established and accepted societal norms and values make possible the availability of useful information. In this view it is possible for entrepreneurs to collect information and use personal knowledge and information gained from experience to search and exploit opportunities (Shane, 2000). In particular, the information asymmetries that allow “entrepreneurs to see opportunities that others cannot” are also likely to help entrepreneurs anticipate the effectiveness of their actions in exploiting these opportunities. Information about an industry or market may be very helpful in understanding the nature of a new opportunity and the best ways to exploit it.

In order for entrepreneurs in this view to effectively use the information that they collect about opportunities they must form organizations that incorporate well-understood norms and shared values that manifest themselves as knowledge, laws, and forms of application (Kuhn, 1970). Similar to a well-established research paradigm, these norms and values would result in well-established and familiar markets or industries.

Decision-Making Tools

The tools of decision-making used for discovery opportunities are tools that are appropriate under conditions where current and historical information and knowledge are available and well-accepted in describing and exploiting opportunities (Casson, 1982; Fiet, 2002; McKelvey, 1997). To collect information in these settings, entrepreneurs can use government reports, trade association reports, customer surveys, focus groups, and direct observation (Christensen et al., 2004; Timmons, 1999). They can also rely on their own experience in a market or industry as a source of important information (Johnson, 1986; Shane, 2000; Von Mises, 1949). To determine if an opportunity is worth pursuing, entrepreneurs can apply any of a variety of risk-based decision-making tools—including net present value analysis (Brealey & Myers, 1988), real options analysis (McGrath, 1997), and scenario planning (Schoemaker, 1995)—to the information they have collected.

Planning and Goals

Planning and goal setting are important in realist contexts and for the exploitation of discovery opportunities (Castrogiovanni, 1996; Delmar & Shane, 2003). Planning in this setting, helps the entrepreneur integrate information and knowledge in novel ways to both describe what an opportunity is, and how that opportunity is to be exploited (Delmar & Shane, 2003; Van de Ven et al., 1989). Once in place, it will usually not be necessary for entrepreneurs to fundamentally alter the assumptions of their plans since, in this informational context, there will typically be enough information to make reasonably accurate predictions about the nature of an

opportunity and how it can be exploited. Changes in these plans may reflect changes in competition or market analysis—but the fundamental opportunity should remain constant.

Organizational Forms that Originate from Constructionist Opportunities

In a constructionist approach organizational forms do not necessarily reflect societal conditions or are embedded in current institutions. Instead, in a constructionist approach new organizational forms reflect the construction, deconstruction, and reconstruction that result in the new opportunities that the entrepreneur is trying to exploit. Entrepreneurs in this setting have resources available to them that might in fact be in use or are embedded in current institutions. However, in this approach instead of viewing resources as having a set value and use, these entrepreneurs put resources to service in a heterogeneous and unique variety of ways (Baker & Nelson, 2005; Mahoney & Michael, 2005; Penrose, 1959; Sarasvathy, 2001).

Informational Environment

Constructed opportunities are the responses to different interpretations of the environment in which the entrepreneur is currently embedded (Berger & Luckmann, 1967; Romanelli, 1991; Weick, 1979). The organizational form variations that result from constructed opportunities are directly linked to the entrepreneur's perceptions of the opportunities and of their skills in forming the opportunity. Therefore, we might expect constructed opportunities to generate new organizational forms that accomplish existing tasks or goals using different resources or resources in a different manner. While at founding these organizations may represent a new way of accomplishing goals, these new forms are restricted by the limitations of the entrepreneur's experience and the information they possess when constructing the new opportunity (Freeman, 1986).

In populations of established organizations, where the forms and the organization's networks and relationships are stable, these organizations will tend not to exploit new resources that may become available (Romanelli, 1991). These resources may include technical innovations, changes in society, discovery or depletion of natural resources, etc. (Romanelli, 1991). These changes in resources make it possible for entrepreneurs to exploit these resources to accomplish goals in different ways from the established organizations. Entrepreneurs in this setting start where they are in time and space and with the resources they have at hand (Baker & Nelson, 2005).

There are two important differences between a constructed approach and a realist discovery approach. The first is that while in discovery opportunities raw data are understood to mirror and represent an objective reality, in a constructionist approach raw data are attached meaning and subject to interpretation. The difference between

the realist and the constructionist thus lies in the interpretation and meaning attached to the raw data. The second is that the organizational forms that result from a discovery opportunity are likely to mirror the organizations already in the population, while the constructed opportunities are likely to lead to organizational forms that differ from those in the population in which they exist.

Decision-Making Tools

To collect information in these constructionist settings, entrepreneurs can use many of the same resources that are used in a realist discovery perspective, government reports, trade association reports, customer surveys, focus groups, and direct observation; they can also rely on their own experience in a market or industry as a source of important information. Indeed, these entrepreneurs are often embedded in the networks and organizational environment that existing organizations occupy. Should the new resources or information available enhance the established competencies of existing organizations they may adopt the resources. However, should these resources be competency destroying, the established organizations may choose to ignore these new resources creating a new resource space (Tushman & Anderson, 1986). While the existing organizations may not wish to adopt new resources or ways of accomplishing tasks, they still may wish to be informed about new innovations in their environment making much of the information and raw data available.

Goal Setting

Goal setting is important in a constructed reality since outcomes are stated a priori, which direct the actions of the entrepreneur in the present and enable the accomplishment of that outcome. Goal setting helps the entrepreneur process information, perceive their environment and apply their available resources in new forms of service (Baker & Nelson, 2005; Daft & Weick, 1984; Mahoney & Michael, 2005). In a constructionist view the goal is determined, the environment is scanned which determines how and what kind of data is collected, the data are interpreted or given meaning, and then a new action or response occurs as a result of the interpretation (Argyris & Schon, 1978; Daft & Weick, 1984). In this way the goal becomes a self-fulfilling reality.

Organizational Forms that Originate from Evolutionary Realist Opportunities

Few researchers have addressed the emergence or creation of new organizational populations (Baum, 1996). Indeed, most studies presuppose the existence of the population and ask how do emerging organizations imitate, mimic, or gain legitimacy within this population (Aldrich & Fiol, 1994; Etzioni, 1963). Emerging

organizations from creation opportunities are likely to be the first organizations in a population. These organizations typically do not have existing organizational forms to imitate and the challenge of the organization here is to establish itself as a new form (McKelvey, 1982) in what is often an emerging population. Therefore, to understand the emergence of an organization from a creation opportunity, it is important to understand the emergence of a population and not just that of a single organization in an already established population.

Informational Environment

In creation opportunities well-established norms in society and the use of historical or current knowledge and information may not be useful. Indeed mimicking or imprinting based on existing routines or competencies of existing organizations may actually be damaging and hinder those trying to exploit an opportunity. Forming an organization in this view often means deviating from established organizational forms and organizational templates that might help give information and knowledge form and meaning (Aldrich & Ruef, 2006). Indeed, the formation of these new opportunities may necessitate the rejection of what is currently known for what is unknown and can only be known with time. These opportunities often require the development of new resources, commitments, routines, networks, and societal norms that are distinctly different than what was previously accepted.

In a creation view new organizational forms do not take on the characteristics of people and environments that surround their early establishment. Instead these opportunities and the organizational forms used to exploit them shape the people and the environment. The organization in this view is not imprinted by its environment as suggested by Stinchcombe (1965), but instead imprints the environment. The environmental conditions are the result of the new organizational form.

In this view the new organizations may be isolated from competitors since there will only be a few organizations that have the newly created knowledge or resources. If the new organizational forms succeed in establishing a new population those organizations will have a relative advantage based on their path dependent abilities to exploit evolving resource conditions and competencies. Indeed, the new resources, routines, and competencies that emerge from these successful organizational forms may destroy the established resources and competencies of existing organizations (Christensen et al., 2004; Schumpeter, 1939).

Creation opportunity formation is often the result of a blind variation that starts the formation process. In this view, the opportunity is not necessarily trying to solve a problem or even to respond to a technical or regulatory change, but instead is the result of a blind variation that leads to a new understanding—a solution that has not yet identified a problem—and potentially transformations of how things are done. The process of creation opportunity formation, if successful, will lead to a new organizational form that evolves, is not designed, and will stimulate the evolution of new organizational populations. In this view these new organizational forms are distinctive and are the eventual culmination of a cumulative series of interrelated acts of variation, selection, and retention that initiate new populations (Aldrich & Ruef, 2006; Dosi, 1988; Van de Ven & Garud, 1994).

Decision-Making Tools

Creation opportunities are created endogenously by entrepreneurial actions and that the decision-making context is either ambiguous or uncertain. Not surprisingly, if the assumptions of creation opportunities hold in a particular entrepreneurial setting, tools for collecting information for a discovery opportunity—including the use of focus groups and government reports—and making decisions—including present value techniques—are significantly limited. However, some of the decision-making tools found in a constructionist approach may also be useful in a creation approach.

Entrepreneurs in creation settings do make decisions. Under conditions of uncertainty—typical of this setting since the future has not yet evolved—entrepreneurs can make decisions using at least two methods: By applying biases and heuristics (Busenitz and Barney, 1997; Hayward et al., 2006) or by engaging in a decision-making process that acknowledges informational limits, and lets more rational decisions emerge over time.

Biases and heuristics can be used to make decisions when rational decision-making models do not apply (Kahneman et al., 1982). Indeed, cognitive psychologists have emphasized the utility of biases and heuristics in enabling people to make decisions under conditions where the amount of information available is less than what is required by more rational decision-making approaches (Bazerman, 2002). As suggested earlier, Busenitz and Barney (1997) identified two cognitive biases that are particularly functional for entrepreneurs making decisions under conditions of uncertainty: the over-confidence bias and the representativeness bias—or the willingness of decision makers to generalize from small samples. In the uncertain conditions assumed to exist in creation settings, entrepreneurs may use these (and other) biases to enable them to make decisions about whether or not to engage in specific entrepreneurial activities (Fischhoff et al., 1977; Hayward et al., 2006).

A second set of tools for decision-making can be applied in ambiguous or uncertain settings and does not require the adoption of biases or heuristics. This process has been studied in many different fields, and goes by several different names. In organization theory, it is known as logical incrementalism (Quinn, 1980), in anthropology it is known as bricolage (Baker & Nelson, 2005), in entrepreneurship it is known as effectuation (Sarasvathy, 2001), in mathematics it is known as Bayesian updating (Bayes, 1764), and in political science it is known as “muddling through” (Lindblom, 1959).

Whatever its name, this decision-making process has several features in common. For example, this process is incremental—entrepreneurs make small decisions based on their current resources and capabilities. It is iterative—it involves making and remaking decisions until desired outcomes are achieved. And finally, this process is inductive—data to evaluate the quality of decisions is collected *after* decisions are made.

Not surprisingly, those that have studied this process have most frequently documented its existence when individuals or organizations are trying to make decisions in very uncertain settings (Quinn, 1980), when entrepreneurs are trying to create new opportunities to exploit (Baker & Nelson, 2005; Sarasvathy, 2001), when strong priors about the distribution of outcomes associated with a decision do not exist

(Alvarez & Parker, 2006), and when bureaucrats and politicians are confronted with complex and unpredictable decision-making settings (Lindblom, 1977). These are all conditions that are more closely aligned with the conditions described by creation approaches than they are with discovery approaches. March (1982, 75) suggests that these decision-making modes are most effective when “decisions about which actions to take exist in the face of unknown future values” (March, 1982).

Planning and Goal Setting

Planning plays a very different role in the conditions under which creation approaches apply, conditions where current and historical information and knowledge are not available or not useful in describing the nature of an opportunity. Indeed, entrepreneurs in this setting may not find traditional forms of planning to be beneficial. In creation approaches, the task facing entrepreneurs is not so much combining information and knowledge in novel ways, but, rather, asking the right questions, designing new experiments, remaining flexible, and learning (Mintzberg, 1994). In the same way that formal strategic plans under conditions of uncertainty can inappropriately constrain an established firm’s strategic choices (Fredrickson, 1983, 1986; Mintzberg, 1994), too rigorous business planning under conditions of Knightian uncertainty can short circuit the opportunity enactment process (March, 1991; Weick, 1979). Only as this enactment process reaches its conclusion—i.e., when the level of uncertainty facing an entrepreneur shifts and new information and norms become accepted—are more traditional forms of business planning likely to be helpful to these entrepreneurs.

Under these uncertain conditions, learning is generally more important than planning (Argote, 1999). Opportunities in these settings have few, if any, precedents. Entrepreneurs in this setting can only very imperfectly anticipate the nature of the opportunities they may ultimately form and exploit and must learn about those opportunities as they emerge. When entrepreneurs do not have well-understood and deep knowledge of the opportunities they are enacting, learning by doing is a more effective guide to entrepreneurial action than detailed planning (Argote, 1999). Entrepreneurs in highly uncertain conditions develop their own knowledge structures through repeated experiments and then use those knowledge structures to give the information they create form and meaning.

These conclusions do not mean that entrepreneurs operating under conditions of high uncertainty do not plan. However, rather than elaborate documents that include sophisticated financial projections and customer segmentation analyses, Creation Theory suggests that business plans developed in highly uncertain settings will be simpler guides to entrepreneurial behavior. In this perspective, optimization and sharply defined goals are replaced with an approach that acknowledges that each point along the way of enacting an opportunity may be unique. Planning in this setting may suggest the general direction entrepreneurs think they are likely to be heading, but are subject to numerous fundamental changes. Indeed, it would not be uncommon for successive business plans of entrepreneurs operating under high uncertainty conditions to have remarkably little in common (Buehler et al., 1994).

As the emergent creation process unfolds, entrepreneurs might not only be forced to redefine their potential customers, but also they might have to redefine the industry or market within which they are operating, their core technologies, and the opportunities they are looking to exploit (Bhide, 1992, 1999; Christensen et al., 2004).

These numerous and fundamental changes, of course, do not imply that entrepreneurs in this setting are “poor planners.” Instead, these changes reflect the lack of information entrepreneurs have about the business opportunities they will ultimately exploit. Moreover, these changes imply flexible decision-making that is adaptive to the changes required from new information and knowledge that is created through the enactment process (Garud & Kotha, 1994). Under conditions of high uncertainty, flexibility, adaptability (March, 1991; Weick, 1979), and absorptive capacity (Cohen & Levinthal, 1990) are more valuable than detailed strategic, financial, and market analyses (Bhide, 1999; Mintzberg, 1994).

Discussion

This chapter presents a typology of entrepreneurial opportunity formation grounded in philosophy of science paradigms. Given the relatively young theoretical progress in the field of entrepreneurship it is important that theories of entrepreneurship evolve in ways that are consistent with the basic assumptions of each paradigm. Articulating and being specific about these paradigms is important in the field of entrepreneurship since paradigms help to organize the process of science and further the development of a field through the efficient cumulative growth of knowledge.

Paradigms provide direction for a field’s development and help sort out facts in terms of their relevance. In the absence of paradigms, all facts are more or less relevant and this gives the appearance of randomness to those gathering the facts. The accumulation of knowledge requires an organizing framework upon which the facts and ideas are organized.

Theory, particularly in the early stages, involves trade-offs between its strengths and its unavoidable weaknesses. The formation of opportunities may be considered a balancing act on a multi-dimensional seesaw of theory. Thorngate (1976) postulates that a theory of social behavior cannot be simultaneously general, accurate, and simple. Two of the three characteristics are possible, but only by sacrificing the third. Creation approaches are general and simple, and the trade-off may be a theory that is not very accurate at specifying detail. However, this lack of precision may not be bad since creation approaches are a complex model of human actions and interactions that may not be amenable to precise measurement at this point of development. To design a model that is precise and accurate may be to lose the phenomenon of interest (Daft & Weick, 1984).

In some fields the paradigm debates have raged and the goal is to get past the debates (Azevedo, 2002; McKelvey, 1999). However, in the field of entrepreneurship there has been little if any debate, as the perspectives in entrepreneurship have

not been articulated as internally consistent with underlying structures, assumptions, and differences that can be related to each other. This chapter makes no recommendations as to whether any one theory is superior, but instead suggests the need for ongoing debate and dialogue to sharpen the boundaries and explanatory power and the precision of these different ontological perspectives. The approach in this chapter allows the field of entrepreneurship to have these debates. The use of multiple perspectives in entrepreneurship, then, need not be seen as a problem; instead it is currently an essential part of understanding entrepreneurship.

Finally, the formation of entrepreneurial opportunities is a particularly fruitful area in which to understand the differences and implications of the different philosophy of science approaches, realist, social constructionist, and evolutionary realist. Scholars realize that theory provides no “God’s eye” view of reality, but is rather an epistemology and uses assumptions about the nature of the social world to simplify the reality studied. Depending on the properties of the context, whether knowledge and information are well-accepted and stable or whether knowledge and information need to be created and the context is unstable different philosophical approaches may be needed.

Two essential characteristics qualify a research strategy as a paradigm development strategy: first a commitment to theory building and second a commitment to a program of research (Mackenzie & House, 1978). In the field of entrepreneurship, scholars have begun the conversation (Aldrich & Ruef, 2006; Alvarez & Barney, 2007; Baker & Nelson, 2005; Miller, 2007a; Sarasvathy, 2001; Sarasvathy et al., 2003; Venkataraman, 1997), etc., but there is still much work to be done. Effective theory building efforts require a long-term commitment and research programs are often limited to the laboratory in social sciences. Opportunity formation provides a natural context in which to apply the knowledge already gained to the structure of society, its effects on individuals, and the individual’s effect on society as the process of forming the opportunity evolves. These conditions are ripe for studying the relationships between individuals and society. By varying the assumptions about the context—either stable or unstable—scholars can gain knowledge of the social world by understanding how entrepreneurs interact with this world. The complex problems encountered in opportunity formation can be a source of stimulus to improve and inform current theories about interactions between individuals and the social world.

References

- Aldrich, H., & Fiol, C. M. 1994. Fools rush in? The institutional context of industry creation. *Academy of Management Review*, 19(4): 645–670.
- Aldrich, H. E., & Kenworthy, A. L. 1999. The accidental entrepreneur: Campbellian antinomies and organizational foundations. In J. A. C. Baum, & B. McKelvey (Eds.), *Variations in Organization Science: In Honor of Donald T. Campbell*: 19–33. Thousand Oaks, CA: Sage.
- Aldrich, H. E., & Mueller, S. 1982. The evolution of organizational forms: Technology, coordination, and control. In B. M. Staw, & L. L. Cummings (Eds.), *Research in Organizational Behavior*, Vol. 4. Greenwich: JAI.

- Aldrich, H. E., & Ruef, M. 2006. *Organizations Evolving* (2nd ed.). Thousand Oaks, CA: Sage.
- Alvarez, S. A., & Barney, J. 2005. How entrepreneurs organize firms under conditions of uncertainty. *Journal of Management*, 31(5): 776–793.
- Alvarez, S. A., & Barney, J. B. 2007. Discovery and creation: Alternative theories of entrepreneurial action. *Strategic Entrepreneurship Journal*, 1(1–2): 11–26.
- Alvarez, S. A., & Barney, J. B. 2008. Opportunities, organizations, and entrepreneurship: Theory and debate. *Strategic Entrepreneurship Journal*, 2(3): 171–173.
- Alvarez, S. A., & Parker, S. 2006. New firm organization and the emergence of concentrated control rights: A Bayesian approach. Fisher College Center for Entrepreneurship, Working Paper Series.
- Alvarez, S. A., & Parker, S. 2009. New firm organization and the emergence of control rights: A Bayesian approach. *Academy of Management Review*, 34(2): 209–227.
- Argote, L. 1999. *Organizational Learning: Creating, Retaining and Transferring Knowledge*. Norwell: Kluwer Academic Publishers.
- Argyris, C., & Schon, D. 1978. *Organizational Learning*. Reading, MA: Addison-Wesley.
- Arthur, W. B. 1989. Competing technologies, increasing returns, and lock-in by historical events. *Economic Journal*, 99(394): 116–131.
- Azevedo, J. 1997. *Mapping Reality. An Evolutionary Realist Methodology for the Natural and Social Sciences*. Albany, NY: State University of New York Press.
- Azevedo, J. 2002. Updating organizational epistemology. In J. A. C. Baum (Ed.), *Companion to Organizations*: 715–732. Oxford: Blackwell Publishers Ltd.
- Baker, T., & Nelson, R. 2005. Creating something from nothing: Resource construction through entrepreneurial bricolage. *Administrative Science Quarterly*, 50(3): 329–366.
- Barney, J. B. 1986. Strategic factor markets: Expectations, luck, and business strategy. *Management Science*, 32(10): 1231–1241.
- Baum, J. 1996. Organizational ecology. In S. R. Clegg, C. Hardy, & W. R. Nord (Eds.), *Handbook of Organization Studies*. Thousand Oaks, CA: Sage Publications.
- Bayes, T. 1764. An essay toward solving a problem in the doctrine of chances. *Philosophical Transactions of the Royal Society of London*, 53: 370–418.
- Bazerman, M. H. 2002. *Judgement in Managerial Decision Making* (5th ed.). New York: John Wiley & Sons, Inc.
- Berger, P. L., & Luckmann, T. 1966. *The Social Construction of Reality. A Treatise in the Sociology of Knowledge*. Garden City, NY: Anchor Books Doubleday.
- Bhide, A. 1992. Bootstrap finance: The art of start-ups. *Harvard Business Review*, 70(6): 109–117.
- Bhide, A. 1999. *How Entrepreneurs Craft Strategies That Work*. Boston, MA: Harvard Business School Press.
- Blanchard, C. 1855. *The Positive Philosophy of Auguste Comte Freely Translated and Condensed by Harriet Martineau*. New York: AMS Press.
- Brealey, R., & Myers, S. 1988. *Principles of Corporate Finance*. New York: McGraw-Hill.
- Buehler, R., Griffin, D., & Ross, M. 1994. Exploring the “Planning Fallacy”. Why people underestimate their task completion times. *Journal of Personality and Social Psychology*, 67(3): 366–381.
- Buenstorf, G. 2007. Creation and pursuit of entrepreneurial opportunities: An evolutionary economics perspective. *Small Business Economics*, 28: 323–327.
- Busenitz, L. W., & Barney, J. B. 1997. Differences between entrepreneurs and managers in large organizations: Biases and heuristics in strategic decision making. *Journal of Business Venturing*, 12(1): 9–30.
- Campbell, D. T. 1960. Blind variation and selective retention in creative thought as in other knowledge processes. *Psychological Review*, 67(6): 380–400.
- Campbell, D. T. 1974. Evolutionary epistemology. In P. A. Schilpp (Ed.), *The Philosophy of Karl Popper*, Vol. 14: 413–463. Lasalle: Open Court.
- Carroll, G. R., & Hannan, M. T. 2000. *The Demography of Corporations and Industries*. Princeton, NJ: Princeton University Press.

- Casson, M. 1982. *The Entrepreneur: An Economic Theory* (2nd ed.). Oxford: Edward Elgar.
- Castrogiovanni, G. 1996. Pre-startup planning and the survival of new small businesses: Theoretical linkages. *Journal of Management*, 22(6): 801–822.
- Choi, Y. B. 1993. *Paradigms and Conventions: Uncertainty, Decision Making and Entrepreneurship*. Ann Arbor, MI: University of Michigan Press.
- Christensen, C. M., Anthony, S. D., & Roth, E. A. 2004. *Seeing What's Next*. Boston, MA: Harvard Business School Press.
- Cohen, W., & Levinthal, R. 1990. Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35(1): 128–153.
- Cooper, A. 2003. Entrepreneurship: The past, the present, the future. In Z. J. Acs, & D. B. Audretsch (Eds.), *Handbook of Entrepreneurship Research*, Vol. 1. Boston, MA: Kluwer Academic Publishers.
- Cyert, R. M., & March, J. G. 1963. *A Behavioral Theory of the Firm*. Englewood Cliffs, NJ: Prentice Hall.
- Daft, R. L., & Weick, K. E. 1984. Toward a model of organizations as interpretation systems. *Academy of Management Review*, 9(2): 284–295.
- Dierckx, I., & Cool K. 1989. Asset stock accumulation and sustainability of competitive advantage. *Management Science*, 35(12): 1504–1511.
- Delmar, F., & Shane, S. 2003. Does business planning facilitate the development of new ventures? *Strategic Management Journal*, 24(12): 1165–1185.
- Dosi, G. 1988. Sources, procedures, and microeconomic effects of innovation. *Journal of Economic Literature*, 26(4): 1120–1171.
- Eckhardt, J. T., & Ciuchta, M. P. 2008. Selected variation: The population-level implications of multistage selection in entrepreneurship. *Strategic Entrepreneurship Journal*, 2(3): 209–224.
- Etzioni, A. 1963. The epigenesis of political communities at the international level. *The American Journal of Sociology*, 68(4): 407–421.
- Fiet, J. O. 2002. *The Systematic Search for Entrepreneurial Discoveries*. Westport, CT: Quorum Books.
- Fischhoff, B., Slovic, P., & Lichtenstein, S. 1977. Knowing with certainty: The appropriateness of extreme confidence. *Journal of Experimental Psychology: Human Perception and Performance*, 3: 552–564.
- Ford, J. D. 1999. Organizational change as shifting conversations. *Journal of Organizational Change Management*, 12(6): 480–500.
- Fredrickson, J. W. 1983. Strategic process research: Questions and recommendations. *Academy of Management Review*, 8: 565–575.
- Fredrickson, J. W. 1986. The strategic decision process and organizational structure. *Academy of Management Review*, 11(2): 280–297.
- Freeman, J. 1986. Entrepreneurs as organizational products: Semiconductor firms and venture capital firms. In G. Libecap (Ed.), *Advances in the Study of Entrepreneurship, Innovation and Economic Growth*. Greenwich: JAI.
- Galbraith, J. R. 1977. *Designing Complex Organizations*. Reading, MA: Addison-Wesley.
- Gartner, W. B. 1985. A conceptual framework for describing the phenomenon of new venture creation. *Academy of Management Review*, 10(4): 696–706.
- Garud, R., & Kotha, S. 1994. Using the brain as a metaphor to model flexible production systems. *Academy of Management Review*, 19: 671–698.
- Gloria-Palermo, S. 1999. Discovery versus creation: Implications of the Austrian view of the market process. In J. Groenewegen, & J. Vromen (Eds.), *Institutions and the Evolution of Capitalism: Implications of Evolutionary Economics*. Cheltenham: Edward Elgar.
- Hayek, F. A. v. 1945. The use of knowledge in society. *The American Economic Review*, 35(4): 519–530.
- Hayward, M., Shepherd, D. A., & Griffin, D. 2006. A hubris theory of entrepreneurship. *Management Science*, 52(2): 160–172.

- Johnson, P. 1986. *New Firms, An Economic Perspective*. London: Allen and Unwin.
- Kahneman, D. P., Slovic, P., & Tversky, A. 1982. *Judgment Under Uncertainty: Heuristics and Biases*. New York: Cambridge University Press.
- Katz, J. A., & Gartner, W. B. 1988. Properties of emerging organizations. *Academy of Management Review*, 13(3): 429–441.
- Kimberly, J. R. 1975. Environmental constraints and organizational structure: A comparative analysis of rehabilitation organizations. *Administrative Science Quarterly*, 20: 1–9.
- Kirzner, I. 1973. *Competition and Entrepreneurship*. Chicago and London: University of Chicago Press.
- Kirzner, I. 1989. *Discovery, Capitalism, and Distributive Justice*. Oxford: Basil Blackwell.
- Kockelmans, J. 1968. *Philosophy of Science: The Historical Background*. New York: The Free Press.
- Kuhn, T. S. 1970. *The Structure of Scientific Revolutions*. Chicago, IL: The University of Chicago Press.
- Langlois, R. N., & Cosgel, M. M. 1993. Frank knight on risk, uncertainty, and the firm: A new interpretation. *Economic Inquiry*, 31(3): 456–465.
- Lindblom, C. E. 1959. The science of muddling through. *Public Administration Review*, 19: 79–99.
- Lindblom, C. E. 1977. *Politics and Markets*. New York: Basic Books.
- Loasby, B. J. 2002. The organizational basis of cognition and the cognitive basis of organization. In M. Augier, & J. G. March (Eds.), *The Economics of Choice, Change and Organization, Essays in Memory of Richard M. Cyert*: 147–167. Cheltenham, UK: Edward Elgar.
- Mackenzie, K. D., & House, R. 1978. Paradigm development in the social sciences: A proposed research strategy. *Academy of Management Review*.
- Mahoney, J., & Michael, S. 2005. A subjectivist theory of entrepreneurship. In S. A. Alvarez, R. Agarwal, & O. Sorenson (Eds.), *Handbook of Entrepreneurship Research: Interdisciplinary Perspectives*. London: Springer-Verlag.
- March, J. G. 1982. *The Technology of Foolishness*. Bergen, Norway: Universitetsforlaget.
- March, J. G. 1991. Exploration and exploitation in organizational learning. *Organization Science*, 2(1): 71–87.
- March, J. G., & Simon, H. A. 1958. *Organizations*. New York: John Wiley.
- McGrath, R. G. 1997. A real options logic for initiating technology positioning investments. *Academy of Management Review*, 22: 974–996.
- McKelvey, B. 1982. *Organizational Systematics: Taxonomy, Evolution, Classification*. Berkeley, CA: University of California Press.
- McKelvey, B. 1997. Quasi-natural organization science. *Organization Science*, 8(4): 352–380.
- McKelvey, B. 1999. Toward a campbellian realist organization science. In J. Baum, & B. McKelvey (Eds.), *Variations in Organization Science: In Honor of Donald T. Campbell*: 383–411. Thousand Oaks, CA: Sage.
- McMullen, J. S., & Shepherd, D. A. 2006. Entrepreneurial action and the role of uncertainty in the theory of the entrepreneur. *Academy of Management Review*, 31(1): 132–152.
- Miller, K. D. 2007a. Risk and rationality in entrepreneurial processes. *Strategic Entrepreneurship Journal*, this issue.
- Miller, K. D. 2007b. *Risk and Rationality in Entrepreneurial Processes*. Paper presented at the Strategic Entrepreneurship Journal Launch, Chicago, IL.
- Mintzberg, H. 1994. *The Rise and Fall of Strategic Planning*. Boston, MA: Free Press.
- Mintzberg, H., & Waters, J. A. 1985. Of strategies, deliberate and emergent. *Strategic Management Journal*, 6(3): 257.
- Moldoveanu, M. C., & Baum, J. A. C. 2002. Contemporary debates in organizational epistemology. In J. A. C. Baum (Ed.), *Companion to Organizations*. Oxford: Blackwell Publishers Ltd.
- Mosakowski, E. 1997. Strategy making under causal ambiguity: Conceptual issues and empirical evidence. *Organization Science*, 8(4): 414–442.
- Nelson, R., & Winter, S. 1977. In search of useful theory of innovation. *Research Policy*, 6: 36–76.
- Penrose, E. G. 1959. *The Theory of the Growth of the Firm*. New York: Wiley.

- Popper, K. R. 1979. *Objective Knowledge: An Evolutionary Approach* (2nd ed.). Oxford, UK: Clarendon.
- Quinn, J. B. 1980. An incremental approach to strategic change. *The McKinsey Quarterly*, Winter Issue: 34–52.
- Romanelli, E. 1991. The evolution of new organizational forms. *American Review of Sociology*, 17: 79–103.
- Sarasvathy, S. D. 2001. Causation and effectuation: Toward a theoretical shift from economic inevitability to entrepreneurial contingency. *Academy of Management Review*, 26(2): 243–263.
- Sarasvathy, S. D., Dew, N., Velamuri, S. R., & Venkataraman, S. 2003. Three views of entrepreneurial opportunity. In Z. J. Acs, & D. B. Audretsch (Eds.), *Handbook of Entrepreneurship Research: An Interdisciplinary Survey and Introduction*, Vol. I: 141–160. Dordrecht: Kluwer.
- Schoemaker, P. J. H. 1995. Scenario planning: A tool for strategic thinking. *Sloan Management Review*, 36(2): 25–40.
- Schumpeter, J. A. 1934. *Theory of Economic Development: An Inquiry Into Profits, Capital, Credit, Interest and the Business Cycle*. Cambridge: Harvard University Press.
- Schumpeter, J. A. 1939. *Business Cycles. A Theoretical, Historical, and Statistical Analysis of the Capitalist Process*. New York and London: McGraw-Hill.
- Scott, W. R. 1981. *Organizations: Rational, Natural, and Open Systems*. Englewood Cliffs, NJ: Prentice-Hall.
- Scott, W. R. 1987. The adolescence of institutional theory. *Administrative Science Quarterly*, 32: 493–511.
- Selznick, P. 1957. *Leadership in Administration*. New York: Harper & Row.
- Shane, S. 2000. Prior knowledge and the discovery of entrepreneurial opportunities. *Organization Science*, 11(4): 448–470.
- Shane, S. 2003. *A General Theory of Entrepreneurship. The Individual-Opportunity Nexus*. Northampton, MA: Edward Elgar.
- Shane, S., & Eckhardt, J. 2003. The individual opportunity nexus. In Z. J. Acs, & D. B. Audretsch (Eds.), *Handbook of Entrepreneurship Research: An Interdisciplinary Survey and Introduction*. The Netherlands: Kluwer Academic Publishers.
- Shane, S., & Venkataraman, S. 2000. The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25(1): 217.
- Simon, H. A. 1973. The structure of ill structured problems. *Artificial Intelligence*, 4: 181–201.
- Sine, W. D., Haverman, H. A., & Tolbert, P. S. 2005. Risky business? Entrepreneurship in the new independent power sector. *Administrative Science Quarterly*, 50(2): 200–232.
- Stinchcombe, A. 1965. Social structure and organizations. In J. G. March (Ed.), *Handbook of Organizations*: 142–193. Chicago, IL: Rand McNally.
- Thorngate, W. 1976. Possible limits in a science of social behavior. In J. H. Strickland, F. E. Aboud, and K. J. Gergen (Eds.), *Social Psychology in Transition*: 121–139. New York: Plenum.
- Timmons, J. A. 1999. *New Venture Creation: Entrepreneurship for the 21st Century* (5th ed.). Boston, MA: Irwin McGraw-Hill.
- Tushman, M., & Anderson, P. 1986. Technological discontinuities and organizational environments. *Administrative Science Quarterly*, 31: 439–465.
- Van de Ven, A. H., & Garud, R. 1994. The coevolution of technical and institutional events in the development of an innovation. In J. Baum, & J. Singh (Eds.), *Evolutionary Dynamics of Organizations*. New York: Oxford University Press.
- Van de Ven, A. H., Venkataraman, D., Polley, D., & Garud, R. 1989. *Processes of New Business Creation in Different Organizational Settings*. New York: Ballinger/Harper and Row.
- Venkataraman, S. 1997. The distinctive domain of entrepreneurship research: An editor's perspective. In J. Katz, & R. Brockhaus (Eds.), *Advances in Entrepreneurship, Firm Emergence, and Growth*, Vol. 3: 119–138. Greenwich, CT: JAI Press.

- Venkataraman, S. 2003. Foreword. In S. Shane, *A General Theory of Entrepreneurship. The Individual-Opportunity Nexus*: xi-xii. Northampton, MA: Edward Elgar.
- Von Mises, L. 1949. *Human Action: A Treatise on Economics*. New Haven, CT: Yale University Press.
- Watzlawick, P. 1984. *Self-fulfilling Prophecies*. New York: W. W. Norton & Company.
- Weick, K. E. 1979. *The Social Psychology of Organizing*. Reading, MA: Addison-Wesley.

Handbook of Entrepreneurship Research
An Interdisciplinary Survey and Introduction

Acs, Z.J.; Audretsch, D.B. (Eds.)

2010, XXIII, 678 p. 22 illus., Hardcover

ISBN: 978-1-4419-1190-2