Many are Called, but Few are Chosen: An Evolutionary Perspective for the study of Entrepreneurship*

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Abstract

More than a decade ago, Low and MacMillan identified three elements indispensable to an understanding of entrepreneurial success: process, context, and outcomes. Since their critique, three important advances include (a) a shift in theoretical emphasis from the characteristics of entrepreneurs as individuals to the consequences of their actions, (b) a deeper understanding of how entrepreneurs use knowledge, networks, and resources to construct firms, and (c) a more sophisticated taxonomy of environmental forces at different levels of analysis (population, community, and society) that affect entrepreneurship. Although our knowledge of entrepreneurial activities has increased dramatically, we still have much to learn about how process and context interact to shape the outcome of entrepreneurial efforts. From an evolutionary approach, process and context (strategy and environment) interact in a recursive continuous process, driving the fate of entrepreneurial efforts. Thus, integrating context and process into research designs remains a major challenge. Such integration constitutes a necessary step to a more complete evolutionary approach and a better understanding of entrepreneurial success.

In entrepreneurship, as in the biblical story, many are called but few are chosen. Although the propensity to entrepreneurship varies from one society to another, a universal constant is that no matter how many entrepreneurs emerge, most do not succeed in creating lasting organizations. As Low and MacMillan (1988: p. 142) noted, "the list of potential pitfalls associated with starting a new venture appears limitless." Understanding how and why some entrepreneurs succeed remains a major challenge for the entrepreneurship research community.

No one doubts the importance of entrepreneurship, but the merits of specific approaches to its study have been the subject of prolific debate. In the paper that gives unity to this issue, Low and Macmillan (1988) explicitly asked two questions: what exactly should we be studying about entrepreneurship, and how should we be doing it. In their attempt to specify a theoretical perspective for the study of entrepreneurship, Low and Macmillan (1988: p. 142) pointed out a basic evolutionary principle: entrepreneurs are socially important not because they exist, but

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because they succeed in creating organizations. As intellectually stimulating as it may be to find out what motivates entrepreneurs and how they differ from ordinary mortals, the more critical question is how these individuals manage to create and sustain successful organizations, despite severe obstacles.

Toward this end, Low and MacMillan identified two indispensable elements of entrepreneurship theory and research. First, any theoretical model or research design should integrate the outcomes of entrepreneurial efforts and the processes that led to those outcomes. Second, understanding entrepreneurial success requires that we consider the social context in which entrepreneurs develop their efforts.

By insisting on the inclusion of context, process, and outcomes in our theoretical models and research designs, Low and MacMillan (1988: pp. 156–157) implicitly pointed out the need for an evolutionary approach. Evolutionary theory unites in a single coherent framework a concern for entrepreneurial outcomes and the processes and contexts making them possible, using the basic concepts of variation, adaptation, selection, and retention (Aldrich, 1999). An evolutionary approach studies the creation of new organizational structures (variation), the way in which entrepreneurs modify their organizations and use resources to survive in changing environments (adaptation), the circumstances under which such organizational arrangements lead to success and survival (selection), and the way in which successful arrangements tend to be imitated and perpetuated by other entrepreneurs (retention).

In arguing for the value of an evolutionary approach, we are not broaching a new idea. Indeed, Low and MacMillan mentioned several previous articles (Aldrich and Auster, 1986; Hannan and Freeman, 1977) that suggested such a possibility. In this article, we survey the past decade and evaluate the extent to which evolutionary theoretical developments and empirical research have advanced our comprehension of entrepreneurial activities. In other words, have we used our time wisely? What are the next steps to be taken? We focus first on theoretical models and then turn to issues of processes, contexts, and outcomes.

Theoretical Advances

Theory, as an interpretive lens, profoundly influences our capacity to understand phenomena. One powerful traditional interpretation that Low and MacMillan roundly criticized was a concentration on entrepreneurs as objects of study by themselves. Classical romantic views of entrepreneurs hid the fact that most achieve only modest success and that success does not depend entirely on the capacities of individuals. As a new theoretical approach, evolutionary theory contributes another interpretive lens by calling attention to the complex and chaotic world of entrepreneurial activities.

Two small but significant theoretical developments, in our opinion, play a central role in the demystification of entrepreneurs. First, the concepts of “nascent entrepreneurs” and “entrepreneurial cycles” emphasize that most would-be entreneurs never succeed in actually creating organizations (Reynolds and White, 1997). Second, the distinction between “innovation” and “reproduction” in

entrepreneurial activities helps us see that innovation and entrepreneurship are not necessarily coupled, and that entrepreneurs are subject to the same social pressures and constraints as other individuals.

Nascent Entrepreneurs

First, the concept of a "nascent entrepreneur" captures the flavor of the chaotic and disorderly founding process. A nascent entrepreneur is defined as someone who initiates serious activities that are intended to culminate in a viable business startup (Reynolds, 1994). In evolutionary terms, nascent entrepreneurs are a major source of organizational variations, beginning with their intentions and continuing through their activities oriented toward a realized founding. Each year, between four and six percent of the working population in the United States take action to start a new venture, and about 40 percent of American adults experience spells of self employment in their lifetime (Reynolds and White, 1997).

The entrepreneurial cycle has four phases – conception, gestation, infancy and adolescence – that capture three transitions in entrepreneurial efforts: from an adult with a business idea to an individual entrepreneur, to a fledgling firm, and, finally, to an established new firm (Reynolds, 1994). The first transition occurs when someone begins thinking about trying to start a new business, alone or with others, and actually engages in activities to further that objective. Operationally, someone becomes a nascent entrepreneur if they not only say they are currently giving serious thought to the new business, but also are engaged in at least two entrepreneurial activities, such as looking for facilities and equipment, writing a business plan, investing money, or organizing a startup team.

The transition between a "nascent entrepreneur" and a "fledgling firm" is not a simple one. In many cases, nascent entrepreneurs' initial ideas fizzle out because their intentions were misguided or they could not mobilize needed resources. Many also cannot achieve the level of control necessary for gaining dominion over their organization's boundaries. The founding process often appears chaotic, complex, and compressed in time, due to extreme selection forces. Thus, many organizing attempts fail.

Foundings that survive typically adopt the existing routines and competencies of the population they join, but some may create new ones. All struggle to hold their place in the niche. Only half of all potential founders succeed in creating an enterprise, and fewer than one in ten of them are able to make their organizations grow significantly (Duncan and Handler, 1994; Reynolds and White, 1997). At any given time, then, we observe only a surviving fraction of a much larger pool of startups begun but abandoned by nascent entrepreneurs (Katz and Gartner, 1988).

Why are the ideas of an entrepreneurial cycle and a nascent entrepreneur important? Failure to appreciate the level of turnover and turbulence in populations has blinded social scientists and public policy experts to the organizational fermentation simmering just below the surface in modern societies. Past research has focused mainly on the prominent exceptions of organizations that manage to survive and grow, rather than the ubiquitous efforts that fail. The entrepreneurial cycle

concept forces researchers to consider new firms as just one possible outcome (and indeed not the most common) of the entrepreneurial process. Most entrepreneurial efforts do not result in the formation of an organization, and even when they do, the resulting firm is often quite small and short-lived. Nonetheless, the many attempted startups, as well as an occasional moderately successful firm, augment the bubbling cauldron of organizational soup so vividly described by Kaufman (1985).

Innovators and Reproducers

Second, the distinction between "innovators" and "reproducers" also enhances our understanding of entrepreneurship (Aldrich and Kenworthy, 1999). Although new firms may bring new products, structures, ideas, and processes to industries and markets, not all entrepreneurs and their firms qualify as innovators. On a continuum between the two poles of reproducer and innovator, reproducer organizations are defined as organizations whose routines and competencies vary imperceptibly from those of existing organizations in established populations. They bring little or no incremental knowledge to the populations they enter, organizing their activities in much the same way as their predecessors.

Innovator organizations, by contrast, are those organizations started by entrepreneurs whose routines and competencies vary significantly from those of existing organizations (Picot et al. 1989). Many such organizations will not survive, as their departures from existing routines and competencies are unworkable or fall outside current selection criteria. For example, many attempts to combine resources in new ways are fatally flawed. In fact, most entrepreneurs, either by choice or because of the strength of selection mechanisms, simply reproduce the structures, competencies, and routines of pre-existing organizations. Thus, most nascent entrepreneurs start as small reproducers and not as innovators.

In an evolutionary approach, the continuum from reproducer to innovator is defined by outcomes, not intentions (Aldrich and Kenworthy, 1999). Some entrepreneurs consciously intend to depart from existing knowledge, whereas others give it no thought. Irrespective of intentions, individuals face a tension between deviating from existing routines and competencies and conforming to them. As Campbell (1982) noted, playfulness and experimentation are natural human impulses that have extraordinary strength and persistence, enabling people to generate variations of great utility. However, people's tendency to defer to the beliefs of others blunts the full expression of these impulses.

Founders who begin as innovators usually build on or enhance existing routines and competencies, which can then be adopted by existing organizations (Schmookler, 1962; Tushman and Anderson, 1986). Consequently, even innovative start-ups face a competitive disadvantage because existing organizations can easily blend competence-enhancing innovations into their operations. This scenario leads to a very pessimistic view of innovation and its rewards for entrepreneurs. Even in cases where entrepreneurs provide meaningful and important innovations, they may not gain a clear advantage for survival.

However, competence-destroying innovations *do* give entrepreneurs very clear competitive and survival advantages. Competence-destroying innovations require new knowledge, routines, and competencies in the development and production of a product/service. They fundamentally alter the set of relevant competencies required of an organization. Accordingly, they put existing organizations at a disadvantage, because such organizations are often not flexible enough to change. By contrast, because the main advantages of start-ups are their flexibility and their ability to change, they can easily over-run their slow and rigid "big sisters."

The distinction between innovators and reproducers represents a big step forward in the demystification of entrepreneurs. Innovation is not a characteristic of the individual entrepreneurs, but of their actions (Gartner, 1988). Overestimating the innovating capacity and personal traits of entrepreneurs has hidden the major role of imitation in entrepreneurial processes. Evolutionary theory calls our attention to the numerically dominant role of reproducers, rather than innovators.

Empirical Advances

Although the development of theoretical elements more in concert with the real processes and contexts of entrepreneurial activities is important, we also need to assess the empirical findings of the discipline. Following the recommendations offered by Low and MacMillan, several questions deserve more attention. First, how do entrepreneurs obtain and apply the knowledge used to acquire and exploit resources? Second, under what circumstances do these practices lead to success? The first question directs us to explore the world of managerial action, where entrepreneurs define and develop organizations through strategic choices. The second question presumes that organizations, new or old, do not exist in a vacuum and are subject to the pressures and constraints of their environments. Organizational survival does not depend on strategic choices or environmental forces alone, but rather on the degree of fit between entrepreneurial efforts and environmental forces.

We divide our review of this literature into three main areas. First, we explore a few strategic choices that entrepreneurs make to create new organizations. Second, we review our understanding of environments. Third, we examine the degree to which process and context have been integrated into a more complete understanding of entrepreneurial success.

Process: Constructing New Organizations from Knowledge and Resources

What do we know about the process of creating a new firm? The transformation of an idea into an organization requires that entrepreneurs acquire resources, and as Greene and Brown (1997) noted, the success or failure of a new venture is affected by its resource profile. Although many typologies of resources and forms of capital have been developed, we believe that there are three essential elements for the success of nascent entrepreneurs: human capital, financial capital, and social

capital. The creation of a new firm requires a certain amount of knowledge that can be obtained by formal education, previous experience, or informal training. Entrepreneurs also require financial capital in order to obtain the inputs (labor, raw materials, information, etc.) necessary for the production of their goods or services and to sustain them during the unavoidable period in which their efforts do not produce profits. Finally, entrepreneurs must also develop social networks to gain access to the information, knowledge, financial capital and other resources that they do not possess. During the last decade, researchers have gained a greater understanding of the role played by these resources in the process of creating new firms or expanding existing ones.

Knowledge. A fair amount of human capital can be easily obtained from the socialization process experienced by all individuals in a particular society. Modern societies have fundamental rules of organizing that exist as cultural products, but particular strategies of action differ across societies. Resources for constructing strategies of action are generated by "the symbolic experiences, mythic lore, and ritual practices of a group or society [that] creates moods and motivations, ways of organizing experience and evaluating reality, modes of regulating conduct, and ways of forming social bonds" (Swidler, 1986: p. 284). In the United States, for example, people who are trying to get something done are very likely to create voluntary social movements. Nonetheless, founders also need specific resources, in addition to this general knowledge.

How do founders know what resources to pursue? Because most founders simply try to reproduce the most common forms in the populations they enter, much of the knowledge they require is widely available. They can obtain it from established organizations, industry experts, trade publications, newsletters, experience as an employee of an organization in the population, on-line databases, and early hires who have worked in the industry. Three of the most likely sources of entrepreneurial knowledge are previous work experience, advice from experts, and imitation and copying (Vesper, 1996).

Forms of knowledge acquisition for entrepreneurial activities differ somewhat from other areas of social life. In particular, the founding of a new organization often requires nascent entrepreneurs to improvise. As founders move deeper into the founding process, they must occasionally recall, develop, and apply knowledge under extreme time pressures (Moorman and Miner, 1998). The narrow time frame between conception and execution during founding compresses many activities that would otherwise be stretched out over longer periods in established organizations. Managers often have the luxury of contemplating their options, whereas entrepreneurs must act with little time for reflection. The short cycle between action and feedback provides many more opportunities for learning than managerial work in established organizations (Sitkin, 1992).

During the improvisation process, many occasions arise for blind variations and creativity, thus opening a window of opportunity for innovative organizational forms to emerge (Lant and Mezias, 1990). Due to the trial and error cycle inherent in any improvisation, the entrepreneurial process is a non-institutionalized form of acquiring human capital. In this sense, even when entrepreneurs are unable to

create a long lasting organization, their efforts are rewarded by the acquisition of unique knowledge that can be used by them or other entrepreneurs in subsequent founding attempts.

Managers and entrepreneurs also differ in the way they apply and evaluate their knowledge and capabilities. Instead of applying rational and scientific principles, entrepreneurs often rely on cognitive biases and heuristics. In the context of a decision making process, biases and heuristics are cognitive mechanisms and subjective opinions that guide behavior (Busenitz and Barney, 1997). The two most distinctive biases of entrepreneurs are overconfidence and representativeness. In their daily operations, entrepreneurs usually overestimate their capabilities and often generalize about a person or a phenomenon based on a few observations. In established firms, such behavior may lead to important strategic mistakes, and nascent entrepreneurs face the same threat. However, relying on incomplete information and cognitive heuristics may be the only way to overcome the incredible obstacles facing a new firm.

Financial Capital, Employees and Other Resources. Dominating all other statistics on new organizations is one inevitable fact: most new ventures begin small. Information from nationally representative sources reveals that few resources, other than knowledge, are available to most new organizations. Because initial endowments are critical to organizational survival, organizations that begin with limited resources are at high risk of early disbanding (Baum, 1996: 79–81; Fichman and Levinthal, 1991). A larger stock of initial endowments may give some founders an advantage that carries them through the difficult early months and years of a founding (Levinthal, 1991; Levinthal and Fichman, 1988). For example, Brüderl et al. (1992) found that the likelihood of disbanding among small businesses was strongly affected by their initial size.

Most businesses not only start small but also change little, if at all, over their lifetimes (Aldrich and Auster, 1986). Most firms never add more employees, and of the minority that does grow, only 3 percent add more than 100 employees (Duncan and Handler, 1994; Spilling, 1996). Resource requirements at founding are thus fairly modest and capital requirements for start-ups are small. In 1987, the Bureau of the Census (1987) conducted a special survey to ascertain the amount of original capital owners needed to start or acquire their businesses. Two points stand out. First, most owners required less than $5,000 to start their businesses – 57 percent of the men and 65 percent of the women. Second, only a small percentage required more than $100,000 – about 4 percent of the men and 2 percent of the women. Less than half of 1 percent of either group required a million dollars or more.

Most nascent entrepreneurs draw upon their own savings and personal assets in constructing their organizations. Few manage to scrape together sufficient resources to give themselves a financial cushion in their early days. Although some economists have argued that liquidity constraints – lack of funds – inhibit people from attempting to start businesses, the issue is still under debate. For example, Dunn and Holtz-Eakin (1996), in a nationally representative longitudinal survey study in the United States, found that level of personal assets did not predict which

respondents would enter self-employment. Indeed, many entrepreneurs find ways around their lack of funds. However, Blanchflower and Oswald (1998) argued that the probability of self-employment depends heavily on whether someone has ever received an inheritance or gift. Surveys consistently find that potential founders complain most often about the limited availability of capital. In any case, most nascent entrepreneurs begin with almost nothing in the way of assets.

Even though most begin with almost nothing, nascent entrepreneurs do not depend on charity for their survival. Entrepreneurs, as sense-making agents, pursue goals that shift as some resources prove unattainable and others fall into their laps. Their ability to obtain resources reveals to them how other people evaluate them, and negative assessments cause many entrepreneurs to drop out of the process. Nonetheless, a few succeed in assembling what they need, gaining enough control over resources to protect them from other users.

Social Capital. The concept of social capital is used to describe the instrumental benefits of social relationships (Aldrich, 1999: 81–88). Although not always accumulated with a particular purpose, social capital may help entrepreneurs in their efforts. Social capital is important because it allows individuals to obtain resources that are otherwise unavailable to them, such as knowledge, capital, clients, and access to suppliers. Three different dimensions determine the value of social capital: social resources, network position and the strength of the relationship (Lin, 1999). A network of social relationships is valuable to entrepreneurs because of the amount of resources that their contacts posess. The location of entrepreneurs within the larger community network also affects their ability to acquire resources (Burt, 1992).

Finally, the strength of the relationship with contacts may also affect the benefits that entrepreneurs obtain from their network. Many of the empirical findings mentioned by Low and Macmillan regarding the role of networks have been confirmed in the last ten years: entrepreneurs still require diverse network ties to obtain access to a wider circle of information about potential markets, new business locations, innovations, sources of capital, and potential investors. By a diversity of ties, we mean contacts that occupy differing social locations. Diversity is important because ties with more than one person with similar characteristics do not provide access to new information, and thus entrepreneurs with greater diversity in their personal networks obtain more novel information than those with restricted networks (Burt, 1992).

Recent research has also confirmed that strong ties (ties with high levels of trust and emotional closeness between two individuals) sometimes help nascent entrepreneurs in their efforts. Most business owners report 3 to 10 strong ties. This small number reflects the difficulties people have in maintaining strong ties. Most entrepreneurs' strong tie networks consist of a majority of business associates, a few close friends, and one or two family members (Aldrich et al. 1996).

Entrepreneurs draw on two kinds of social capital: one obtained from their family of origin and one developed by the individual (Greene and Brown, 1997). The need for this distinction has been empirically confirmed by studies showing that family members are not as important for entrepreneurial success as previously

believed. Only members of a few ethnic minority groups can count on financial support from family members (Aldrich et al. 1996; Bates, 1997; Renzulli, 1998; Zimmer and Aldrich, 1987). Indeed, relying too heavily on family members may put a nascent entrepreneur at a disadvantage (Renzulli, 1998). A panel study in the Research Triangle Area of North Carolina found that the greater the proportion of kin members in a nascent entrepreneur's business discussion network, the lower the odds of that person actually starting a business (Renzulli et al. 1998).

Greene and Brown (1997) proposed that different kinds of entrepreneurial efforts require different levels of family and individual social capital, depending on the degree of innovation and the rate of growth. Companies that have low rates of growth and are not particularly innovative tend to be based on social capital from the family. Highly innovative-rapid growth firms, on the other hand, rely on the use of individually developed social capital. Firms that have high rates of growth but are not particularly innovative rely on both family and individually developed social capital. Although these propositions are promising, they need to be embedded in an explicit evolutionary approach. For example, evolutionary theory would lead us to ask if social capital is a response to the levels of innovation and growth, or if the original profile of social resources determines the growth and the innovation levels of a particular firm.

In recent years, researchers within the network tradition have tried to empirically test the usefulness of different network strategies. In his study of the apparel industry in New York, Uzzi (1997) found that high degrees of embeddedness between an organization and its suppliers improved the survival capabilities of these organizations. However, too much embeddedness had negative effects on survival chances. Thus, some dependence on close and more exclusive relationships between an organization and its suppliers helped organizations, but too much closeness and complete exclusivity jeopardized their survival. In similar line of work, Keister (1998) found that hierarchical relationships with other "sister" organizations decreased the ability of firms to perform effectively. She found that in Chinese groups, firms belonging to a relatively democratic non-hierarchical group had higher levels of efficiency and performance.

Finally, the important role of brokers is another aspect of social networks whose importance has been highlighted by research in the last ten years. Not all nascent entrepreneurs have direct linkages with people who may be important for their needs. *Indirect* links with people in advantageous social locations can be created through the work of brokers. For example, venture capitalists often play broker roles because they bring together technical experts, management consultants and financial planners to supplement an entrepreneur's limited knowledge and experience.

Our brief review highlights three very important advances in our understanding of the entrepreneurial process. First, knowledge is just as vital as capital for entrepreneurs, and they are forced to learn at a significantly faster pace than people in non-entrepreneurial organizations. Second, although the availability of resources motivates entrepreneurs and protects them from rough times in the beginning, most startups begin with very little besides knowledge. Finally, the ideal combination for acquiring both knowledge and resources is a blend of diverse and strong connections with other individuals and organizations.

Context: Mapping the Organizational Environment

We have accumulated a great deal of knowledge about the environmental forces and challenges that entrepreneurial ventures face. Much of our knowledge of contextual constraints and opportunities comes from studies focused on populations and/or communities of organizations. As we noted in our discussion of the difference between innovators and reproducers, most organizations are founded within existing and relatively stable populations, imitating the goals, structures, and routines of established organizational forms. A second option for entrepreneurs is to position themselves at one extreme end of the continuum between innovators and reproducers: founding firms that are pioneers in new or emerging populations. We first consider the difference between entrepreneurs in established and emergent populations, and then turn to the community context of entrepreneurship.

Established Populations. Low and MacMillan acknowledged the contribution of population ecology to our knowledge of the contextual elements of entrepreneurship (Aldrich, 1979). Since that recognition, new findings have provided a more complex and sometimes contradictory picture of the impact of environmental forces. Despite controversies in the field, Low and MacMillan's emphasis on the importance of population ecology is very well taken. The environment of any start-up is formed, among other forces, by the characteristics of other organizations in its population. Two linked population characteristics affect the survival and growth chances of firms: population density and relational density.

Although the original measure for population density developed several decades ago was just the number of organizations in a population, researchers have been experimenting with other measures, such as population mass and the size distribution of organizations (Barnett and Amburgey, 1990; Baum and Mezias, 1992; Hannan and Carroll 1992; Hannan and Freeman 1989). From this extensive research, two conclusions can be drawn. First, although density does matter, it does not have the same effect in all populations. Second, no single aggregate measure of density can capture the effects of complex competitive forces on foundings or any other population phenomenon.

Debates on the effects of density have taken an interesting twist in the last twelve years. Some critics claimed that density may be just a proxy variable for other processes (Baum and Powell, 1995; Delacroix and Rao, 1994; Miner, 1993; and Zucker, 1989). Baum and Oliver (1992) issued the most provocative of these challenges. They assumed that density was an imperfect measure for the relationship of a population with its environment and so they created the concept of relational density, defined as the set of direct ties between organizations in a population and their institutional environments. Both population density and relational density are important to entrepreneurs. Individuals trying to create new companies in population with high density will find more opportunities to learn effective knowledge and create extensive social networks, but they will also encounter more intense competition. Relational density, by increasing the legitimacy of a whole population, protects new start-ups from potential constraints (or even attacks) from other social forces.

Emerging Populations. Because populations appear and disappear with great regularity, studying entrepreneurial activities only in the context of relatively stable large populations is a mistake. We also need to study entrepreneurs in emerging populations. Entrepreneurs who create competence-destroying innovations may become the source of an entirely new form of organization, thus potentially initiating a new population. Founders of these very innovative firms operate in situations with few precedents. Such organizations must construct their own niche instead of just occupying an existing one. Potential constraints they will face include the lack of pertinent entrepreneurial and organizational knowledge and the lack of legitimacy for their activities (Aldrich and Fiol, 1994).

The first constraint involves rapid knowledge acquisition under conditions of uncertainty. Because there are few previous founding attempts and therefore no other organizations to imitate, knowledge about possible successful strategies is very limited. Although all startups face uncertainty and the possibility of painful mistakes, such problems take a more acute form for real innovators. The second constraint, concerning legitimacy, is more complicated. Entrepreneurs in uncharted territories lack legitimacy along three important dimensions: cognitive, moral, and regulatory. The lack of cognitive legitimacy refers to the fact that the new product, process, orservice has not yet been accepted as a taken for granted feature of the environment by individuals. Moral legitimacy refers to the conformity of the start-up and its components with cultural norms and values. Finally, regulatory legitimacy refers to conformity with governmental rules and regulations.

More research is needed on the strategies innovative new ventures might follow to overcome both the lack of available knowledge and legitimacy. Aldrich (1999: pp. 223–258) created a taxonomy of possible strategies that can be carried out by new organization within populations, between populations, and within communities. For example, at the level of a population, entrepreneurs can pursue several cognitive strategies. On the learning front, they can deepen their knowledge base by encouraging convergence around a dominant design. On the legitimacy front, they can collaborate to create standard setting bodies. They can also pursue several sociopolitical strategies, such as fostering perceptions of reliability by mobilizing to take collective action in crises, and by presenting a united front to political and governmental officials. Notice that all of these strategies are linked with the topics we reviewed in our previous section: acquiring knowledge through experimentation, creating and using network linkages, and accumulating resources (human and otherwise) to overcome difficulties.

Communities. Following Hawley (1950), we define a community as "a set of co-evolving organizational populations joined by ties of commensalism and symbiosis through their orientation to a common technology, normative order, or regulatory regime" (Aldrich, 1999: p. 302). Relations between populations in an evolving community simultaneously reflect symbiotic and commensalistic axes. Symbiosis denotes a mutual dependence between dissimilar units, whereas commensalism means that units make similar demands on the environment. A population within a community, and therefore new ventures within it, may relate to other populations that share the same niche by either competing or cooperating with

each other (commensalism). Populations occupying different niches may benefit from the presence of the others (symbiosis). Entrepreneurs must be aware of both commensalistic and symbiotic relationships not only for competitive purposes, but also to detect and use advantages derived from complementary populations.

Societal Influences. Up to this point, we have discussed environmental characteristics related to populations and communities, and we turn now to the level of entire societies. At least two aspects of society shape the environment for organizations: cultural norms and values, and governmental and political activities and policies. Changing norms and values alter entrepreneurial intentions and the willingness of resource providers to support new ventures. Government actions and political events create new institutional structures for entrepreneurial action, encouraging some activities and thwarting others (Dobbin and Dowd, 1997).

Governmental and political activities have particularly strong effects on entrepreneurs. First, political turbulence can disrupt established ties between organizations and resources, rearranging organizational boundaries and freeing resources for use by new organizations (Carroll et al. 1988; Stinchcombe, 1965). For example, the European Union's removal of many barriers to trans-European marketing of goods and services has affected organizations that were not prepared to work in a multi-national space with no formal boundaries. The new conditions encouraged the foundings of new types of organizations (Delacroix, 1993). Second, government regulation affects the fate of organizations through protective legislation and by changing the rules regulating a population.

Public policy shapes the rules of competition and creates niches where investment and entrepreneurial activities seem more attractive. Governments also play a role in regulating populations that involve public goods or affect public welfare. For example, the beer and wine industries have been severely regulated in the US (Swaminathan, 1995; Wade et al. 1998. Swaminathan found that winery laws had a more powerful effect on the foundings of specialist wineries that the forces increasing wine consumption. Finally, macro-economic policy affects entrepreneurs by affecting unemployment levels and economic growth. However, evidence on the effects of economic growth and decline on organizational creation is, at best, weak.

Our understanding of environmental forces affecting organizations has increased dramatically in the last twelve years. Although we now understand more about the environment, it is also true that we are less certain about the effects of environmental forces for particular organizations. Much of the research we reviewed was not originally developed with entrepreneurial activities in mind. Furthermore, the complexity that ecological and evolutionary researchers introduced into their models of the environment makes them more difficult to apply to entrepreneurial development.

Fitness: Relating Process, Context and Outcomes

Despite our advances in understanding the process and context of entrepreneurial activities, we still have a long way to go before achieving Low and MacMillan's

vision. They not only suggested a need to study process and context, but also to integrate them into a coherent theoretical framework. We would like to go a step beyond their statement and suggest that we also need to *empirically* integrate process and context. Interaction between entrepreneurs' chosen strategies and the particular environmental forces they face determine entrepreneurial success or failure. In this respect, Low and MacMillan's critique is still valid: in most ecological and evolutionary studies, strategies are ignored or taken for granted, whereas studies focusing on strategies tend to ignore the existence of evolutionary forces. Either of these alternatives provides a very partial and perhaps inaccurate understanding of entrepreneurial success.

The empirical integration of strategies, environments and outcomes represents an area in which entrepreneurship researchers can learn from colleagues in related fields. For example, Britain and Freeman (1980), Lambkin and Day (1989), and others noticed that organizational forms display a great of variation, and that some forms are more favored in certain environments than others. Ecologists identified two important dimensions for analyzing organizational form: r versus k strategists, and specialists versus generalists.

Low and MacMillan (1988) mentioned the distinction between r versus k strategists as one important advance for research in entrepreneurship. The effectiveness of an organizational strategy depends on the density of a particular environment. Organizations following an r strategy have an advantage in the early stages of the density cycle. R-strategists reproduce rapidly and move quickly to obtain resources. By contrast, k-strategists, which efficiently use their resources but are not necessarily quick in seizing opportunities, have a distinctive advantage under environments with a population approaching carrying capacity.

Although they noted the importance of the r versus k strategy typology, Low and Macmillan (1988) neglected the distinction between "generalists" and "specialists." In their initial formulation, Hannan and Freeman (1977) asserted that specialist organizations concentrate their competence, activities, and fitness on a narrow niche in the larger market or environment. If the environment is relatively stable and the niche is not subject to changing environmental forces, specialists have a strategic advantage. Generalists, on the other hand, spread their competencies and strive to fit in a wider, more complex environment that usually requires them to simultaneously manage different strategies, product lines or even businesses. This wider scope is a strategy that firms use to protect themselves from very uncertain environments; because they are not dependent on the fate of any single activity or business, their chances for survival increase.

The basic formulations of both specialists vs. generalists and r versus k strategists have been empirically tested in the last twelve years. Researchers have also cross-classified the two dimensions to produce a taxonomy of four strategy types: r-specialist, r-generalist, K-specialist, and K-generalist. Carroll (1984, 1985), among others, noted that different organizational forms co-exist within the same population or market. Borrowing from biological ecology, he developed the theory of resource partitioning, which argues that environmental niches are segmented into a portion held by specialists and another by generalists.

Resource partitioning has been empirically documented in studies of the brewing, music, recording, book publishing, and microprocessor industries. All four industries are characterized by economies of scale in production and all have experienced the founding and economic success of specialist producers after the industries were dominated by K-generalists for quite some time (Carroll and Swaminathan, 1992). For example, as concentration increased in the American brewing industry between 1975 and 1990, the disbanding rate of microbreweries decreased, although the disbanding rate for large mass production breweries was unchanged. In the American microprocessor industry, as concentration increased, new entrants in the industry were K-specialists, rather than generalists (Wade, 1995). They served specialist segments of the microprocessor market that placed a premium on high performance.

Although resource partitioning represents an integration of strategy and environmental forces, it is not completely in agreement with Low and MacMillan's vision. Resource partitioning may integrate strategy and environment, but it does not necessarily integrate process and context. We need to go beyond the use of abstract categories such as "specialist" or "generalist" to investigate the way that entrepreneurs, as actors, create such organizations. In fact, we have little systematic knowledge of how nascent entrepreneurs create specialist (or generalist) organizations. Do the entrepreneurs who build generalist organizations, versus those who become and remain specialists, require anything different in their actions or resources? Do nascent entrepreneurs actually have such intentions, and do their intentions matter?

What, then, do we know about the way entrepreneurs use knowledge, resources and social capital in their struggle with environmental forces? Our brief review has provided some hints. However, much of this knowledge is based on limited accounts, which raises two problems. First, evidence from selected populations should only be a first step toward understanding the interactions between environments and strategies, as generalizability should be our final goal. Second, much of this evidence comes from studies of successful organizations, and thus it is tainted with selection bias. Can we really get to know the key features of those individuals who enter the heaven of successful entrepreneurship if we do not see the actions and circumstances of those who "were not chosen"?

Discussion

We have offered a brief review of the advances made toward an integrated and evolutionary study of entrepreneurship. Perhaps the most astonishing advances are in the area of theory. We have moved away from the figure, characteristics, and intentions of entrepreneurs themselves to concentrate more on their actions and the outcomes. By emphasizing the varied actions they take to create and manage their firms, we have achieved a more evolutionary view of entrepreneurial activities. Empirically, we have also gained a great deal of knowledge. We now know more about how entrepreneurs use and acquire knowledge and resources to construct organizations. With regard to selection forces, we have recognized the different

units of analysis (population, communities and societies) that form the environment for entrepreneurs, and have discovered that distinct selection forces emanate from different levels.

The weakest point in the field entrepreneurship is, perhaps, the most important one for an evolutionary perspective and for the integrated vision of a field sought by Low and MacMillan. We understand strategic choices and environmental selection process, but we know far less about how they interact with each other over time. Perhaps the idea of "strategic choice" has gotten in the way of our integration. In reality, strategies are not just choices, but also plans. Strategies are constructed, molded and adapted in processes of interaction with environments. Entrepreneurs have the potential of learning during the process of constructing their firms, based on feedback from their outcomes. It is this feedback process that we still need to understand.

How is it possible to advance so far and yet to have such a long way to go? The answer lies in the reciprocal relationship between theory and research design. An integrated view of the context, process, and outcomes of entrepreneurial activities requires more complex empirical tests. Twelve years ago, testing hypotheses in our field was relatively easy. Entrepreneurial success "depended" on relatively simple and static variables. Complexity was minimized.

Today, integrating process, contexts, and outcomes requires the simultaneous and repeated measurement of complex variables located at different levels of analysis. Endogeneity is an ever-present problem, because many variables have reciprocal causal relationships. For example, feedback from outcomes modifies entrepreneurs' strategies, which, in turn, alter the likelihood of achieving a new outcome. At least in theory, if entrepreneurs learn, then outcomes also shape strategy. Paradoxically, the more we learn as researchers, the more we discover what else we need to know.

The last twelve years have been marked by an exploration of the different dimensions, variables, and issues that an integrated study of entrepreneurship should consider. The main task set by Low and MacMillan, integration, is still unfulfilled. But, how can we accomplish such an overwhelming task? Many of Low and Macmillan's basic recommendations still apply. We need more longitudinal studies that may help us find causal linkages among variables, and that can also provide a picture of on-going adaptation processes. This means that entrepreneurial research desperately requires the collection and creative use of original data. We also need to improve our measurements of environments and strategies. In an evolutionary study, it is not sufficient to imply the existence of selection forces by simply observing the dual outcomes of survival or failure. In the same way, measuring a strategy just by the presence or absence of something (for example, multiple product lines, network relationships, or TQM programs) is an inadequate form of dealing with strategies. If we cannot measure the environmental forces that affect nascent entrepreneurs and the sometimes-subtle changes in response to them, how can we aspire to understand the reciprocal relationships between them?

Following an evolutionary approach, the next step in entrepreneurial research is very clear: we need to stop a posteriori explaining the interaction between strategy and environment and between process, context, and outcomes. Our challenge is to

generate theoretically derived hypothesis, develop measures, collect longitudinal data, and apply state of the art statistical techniques. This is not a small task, but is surely worth our efforts over the next decade.

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