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# The Nature of Entrepreneurial Opportunities: Understanding the Process Using the 4I Organizational Learning Framework

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In this article, we drew upon insights from two rather disparate streams of literature—entrepreneurship and organizational learning—to develop an informed understanding of the phenomenon of entrepreneurial opportunities. We examined the nature of entrepreneurial opportunities from two contrasting views—Schumpeterian and Kirznerian—and delved into their ontological roots. By applying the 4I organizational learning framework to entrepreneurial opportunities, we were able to not only resolve the apparently conflicting explanations of opportunities arising out of the contrasting ontological positions but also to achieve a level of pragmatic synthesis between them. In highlighting the article's contributions to theory and practice, we suggest that just as research on entrepreneurial opportunities benefits from applying organizational learning theory, so is organizational learning informed by research arising within the field of entrepreneurship studies.

## The Importance of Entrepreneurial Opportunities in Entrepreneurship Research

As a field of scholarly inquiry, entrepreneurship is vitally important. This is not only because entrepreneurship serves as a linchpin between invention, innovation, and introduction of new products and services in the marketplace but also because entrepreneurs act as engines of growth in the economy (Ketchen, 2003; Venkataraman, 1997). However, research on entrepreneurship continues to remain at a crossroad. It is yet to acquire legitimacy as an independent field of business research. Aldrich and Baker note that entrepreneurship continues to be in a “chaotic pre-paradigmatic state of development” (1997,

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p. 396). To evolve into a discipline in its own right with its own mix of theoretical paradigms, methodological tools, and research contexts, what the field requires is a broadening of its research domain, i.e., going beyond simply studying entrepreneurial characteristics of individuals and including in its investigation a broader understanding of the context in which entrepreneurial decisions are made. This is because “... entrepreneurial activities, features and characteristics are not ‘objects’ given a fixed or static ontological status as they come into being. Instead, they are dynamic and constantly emerging, being realized, shaped and constructed through social processes” (Fletcher, 2003, p. 127). It is in this backdrop that focusing research attention on the phenomenon of entrepreneurial opportunities assumes critical significance.

Busenitz, West, Shepherd, Nelson, Chandler, and Zacharis believe that as a field, entrepreneurship research will make the most rapid strides in terms of its future development, provided it concentrates on studying the nexus of “... opportunities, individuals and teams, and mode of organizing within the context of wider environments ...” (2003, p. 296). Recognizing the critical role of entrepreneurial opportunities, Shane and Venkataraman go so far as to incorporate it in their definition of entrepreneurship research by suggesting that research in this domain involves “... the scholarly examination of how, by whom, and with what effects opportunities to create future goods and services are discovered and evaluated” (2000, p. 218). Accordingly, we base this article on the premise that any effort at understanding the phenomenon of entrepreneurial opportunities, and more specifically, how opportunities emerge in the decision horizon of an entrepreneur, will yield rich dividends in our quest for strengthening entrepreneurship research and scholarship. Eckhardt and Shane define entrepreneurial opportunities as “... situations in which new goods, services, raw materials, markets and organizing methods can be introduced through the formation of new means, ends, or means-ends relationships” (2003, p. 336). For the purpose of this article, we broadly define entrepreneurial opportunities as being a set of environmental conditions that lead to the introduction of one or more new products or services in the marketplace by an entrepreneur or by an entrepreneurial team through either an existing venture or a newly created one.

Prior research on entrepreneurial opportunities has been somewhat limited in its focus. In their recent treatise on “The language of opportunity,” Gartner, Carter, and Hills (2003) pose certain fundamental questions with respect to how the phenomenon has been examined by previous researchers. According to these authors, entrepreneurial opportunities have been studied from two contrasting ontological positions. The first is the primarily positivist/realist position predominant among North American researchers, which suggests that opportunities exist independently in the environment, waiting to be discovered. The second is an alternate interpretive or social constructionist position, more prevalent in the European research tradition, which suggests that entrepreneurial opportunities emerge, i.e., are enacted, on the basis of the entrepreneur’s perception, interpretation, and understanding of environmental forces. Although research in both these traditions has produced a significant body of knowledge explaining how entrepreneurs engage with opportunities, the phenomenon continues to remain poorly understood. Thus, Kickul and Gundry (2000), having adopted a positivist view on opportunities, remark that entrepreneurial opportunity recognition is a complex, multidimensional process, incorporating within its ambit not only the search for new opportunities but also the recognition of feasible opportunities and their selection over other nonfeasible ones. On the one hand, entrepreneurs must receive and utilize all the information that they obtain from the external environment to create, shape, and maintain a kind of information asymmetry that allows them to notice new opportunities that are either not seen or are disregarded by the other groups of the population (Stewart, Watson, Carland, & Carland,

1999). On the other hand, they must do this selectively: assimilating, organizing, categorizing, and prioritizing information that help them to make decisions about emerging opportunities, and selecting one opportunity over others at any specific instance of time. Similar challenges of understanding also arise if the alternate social constructionist view is adopted with regard to how opportunities are enacted on the basis of the multitude of experiences that entrepreneurs go through in the field.

The primary purpose of this article is to extend our cumulative understanding of entrepreneurial opportunities as an enduring phenomenon of interest. Given the importance of the opportunity construct in the field of entrepreneurship as well as the current difficulties associated with respect to its adequate understanding, we believe that knowledge about the phenomenon stands to gain substantially if researchers import appropriate frameworks, perspectives, and theoretical paradigms from allied fields to suitably inform and enhance their overall understanding of the phenomenon. Therefore, in this article, we seek to understand the process(es) comprising entrepreneurial opportunities by adopting an organizational learning perspective. We believe that in engaging with opportunities, entrepreneurs essentially follow a path of self and organizational learning. Barnett and Sorenson (2002) find that the processes of organizational creation and growth emerge from ecologies of learning organizations, which seems to suggest that the creation of new ventures based on opportunities (the focus of entrepreneurship) and on organizational learning are intricately connected. To develop our arguments, we draw upon insights from Crossan, Lane, and White's (1999) 4I (Intuiting, Interpreting, Integrating, and Institutionalizing) organizational learning framework. By doing so, we indicate how each of the four processes delineated in the framework yields insights about the processes that comprise the life cycle of the entrepreneurial opportunity construct.

The foremost strength of the 4I framework is that it adopts a process orientation to learning. It recognizes that learning has both a positivist/realist (or cognitive) side to it as well as an interpretive (or situated) side. Therefore, in using the 4I framework as a theoretical lens, we are able to recognize the dynamic nature of opportunities unfolding as entrepreneurs engage with them. This allows us to resolve some of the apparently conflicting views of entrepreneurial opportunities that arise out of the two contrasting ontological positions and provide a synthesis between them. Our article contributes and responds to the call by entrepreneurship researchers to identify specific antecedents of entrepreneurship that go beyond the individual entrepreneur (Busenitz et al., 2003; Venkataraman, 1997) and to incorporate context into our understanding. Insights from organizational learning help us to redefine and to develop a wider, "shared" definition of the phenomenon of entrepreneurial opportunities. Kreuger poses a question when he says, "This area cries out for extensive theory-driven research. However, we have less theory to guide in studying entrepreneurial learning—or do we?" (2003, p. 130). We contend that even though entrepreneurial opportunity as a construct of interest remains rather underdeveloped, a wealth of insight about it may be obtained from the related field of organizational learning. At the same time, organizational learning as a field of research stands to gain immeasurably provided that it gives cognizance to some of the dynamic aspects of new firm learning recorded in the entrepreneurship literature. We, therefore, take our analysis further by attempting to build a bridge between opportunity and learning in this article by comparing and contrasting insights from the twin fields of entrepreneurship and organizational learning and by indicating how research insights from one field can suitably enhance our understanding about the other.

Our article is structured as follows: We begin with a brief background of the two ontological positions on which entrepreneurial opportunities research has been based. This discussion allows us to compare and to contrast two familiar explanations of entre-

preneurial opportunities—Schumpeterian and Kirznerian—and to summarize the often divergent insights that they reveal about the phenomenon. Next, we introduce the 4I organizational learning framework by highlighting its process nature, levels of analysis, as well as cognition-action backbone. Having established this background, we then use the 4I framework to study entrepreneurial opportunities as a process, thus developing conceptual insights for its many attributes noted in practice. This section of the article enables us to develop several propositions elaborating the nature of the phenomenon, essentially treating it as a series of processes that facilitate learning at individual, group, and organizational levels. Finally, the last section of the article provides a discussion of the lessons learnt, in terms of the article's contribution to theory building on entrepreneurial opportunities, the fields of organizational learning and entrepreneurship, as well as additional contribution to managerial practice.

## **Entrepreneurial Opportunities: Contrasting Ontological Positions on the Phenomenon Opportunities: Discovered or Enacted?**

Despite its central importance as the impetus for entrepreneurial action (Davidsson, 1991), opportunities as an area of research remain highly underdeveloped (Kaisch & Gilad, 1991; Stevenson & Jarillo, 1990). Eckhardt and Shane (2003) suggest that to successfully explain entrepreneurship, it is essential to adopt a disequilibrium approach to the phenomenon of entrepreneurial opportunities. This is because (1) price as the equilibrating mechanism for resource allocation does not work with respect to provision of goods and services that are yet to be created; (2) much of the creative activities engaged in by entrepreneurs for the creation of new ventures cannot be identified in terms of information that can relate to a price; and (3) many of the decisions made by entrepreneurs are not optimizing decisions within given constraints, but rather, creative processes in which constraints are often set by the entrepreneurs themselves. Even after adopting this disequilibrating view, however, it is not clear as to what extent factors involving the entrepreneur affect this process. Although one of the foremost characteristics distinguishing entrepreneurs from other groups in the population relates to the former's ability to identify market opportunities and to exploit them for the creation of business ventures (Casson, 1982; Knight, 1942; Schumpeter, 1971), most economic theories have failed to explain convincingly why entrepreneurs engage with opportunities. In the traditional neoclassical view, entrepreneurship is the "mystical" element that delivers external shocks to a state of equilibrium in the marketplace by introducing new products and services (Alvarez & Barney, 2000). If entrepreneurship emerges when the neoclassical theories of equilibrating events fail, it is important to understand the exact nature of the relationship between entrepreneurs, entrepreneurship, and entrepreneurial opportunities.

Gartner et al. (2003) suggest that prior research on the phenomenon seems to have adopted one of the two opposing ontological positions. The more predominant view is anchored in the positivist or realist position that there is an objective reality outside the observer waiting to be discovered—the "discovery approach." This line of reasoning is intimately linked to an objective view of the environment (e.g., Aldrich, 1979; Dess & Beard, 1984; Thompson, 1967) and suggests that opportunities exist independent of the entrepreneurs discovering them. Having accepted the independent occurrence of opportunities, research in this tradition is mainly concerned with identifying factors that allow entrepreneurs to discover and to act on opportunities. As noted by Gartner et al., scholars such as Kaisch and Gilaad (1991), Busenitz (1996), Gaglio (1997), Shane and

Venkataraman (2000), and Gaglio and Katz (2001) are some of the foremost proponents of this first school of research on entrepreneurial opportunities. The discovery approach basically adopts an “efficiency perspective” on entrepreneurial opportunities. Its aim is to inform researchers, practitioners, and educators about how to equip entrepreneurs with skills that allow them to seize and to make the most of opportunities. For example, in developing a theory of opportunity recognition, Ardichvili, Cardozo, and Ray (2003)—owing allegiance to the discovery approach—are concerned with factors such as the entrepreneur’s personality traits, social networks, and prior knowledge as being the primary antecedents of an entrepreneur’s alertness to business opportunities.

In contrast, there has developed a significant parallel stream of research on entrepreneurial opportunities, which adopts a predominantly interpretive or social constructionist perspective on reality (Gartner et al., 2003)—the “enactment approach.” Although research in this tradition parallels the notion of a perceived environment (e.g., Covin & Slevin, 1989; Duncan, 1972; Dutton & Jackson, 1987; Lawrence & Lorsch, 1967; Smircich & Stubbart, 1985), it goes beyond and adopts an “enacted” view of the environment. In the enactment approach, individuals as actors “construct, rearrange, single out, and demolish many ‘objective’ features of their surrounding . . . The organizing model is based on the view that order is imposed rather than discovered, on the grounds that action defines cognition” (Weick, 1979, pp. 164–165, cited in Gartner, Carter, & Hills, p. 109). Thus, this alternate view suggests that opportunities are “enacted” by entrepreneurs rather than simply discovered. In effect, this approach suggests that opportunities are socially constructed, vary across entrepreneurs, and can only be retrospectively recognized. According to Gartner et al., scholarly work that belongs to this tradition include Weick (1979), Gartner (1985), Gartner, Bird, and Starr (1992), Levenhagen, Porac, and Thomas (1993), and Hill and Levenhagen (1995), among others. It is important to note that the enacted school does not deny that certain objective truth can and does exist outside of the observer (or the entrepreneur); however, what it suggests is that this truth constantly interacts with and is shaped by the observer’s action, such that the observer’s continuing action itself becomes a part of the truth.

In view of the differing assumptions of the two ontological positions, it becomes important to identify to what extent the popular conceptualizations of entrepreneurial opportunities are rooted in one or the other of these two paradigms. In the following paragraphs, we compare and contrast two of the most popular descriptions of how entrepreneurial opportunities arise, viz., that of Schumpeter and Kirzner, and trace their ontological roots as coming from one or the other of the two dominant positions indicated above.

## **Entrepreneurial Opportunities: The Schumpeterian View**

In the Schumpeterian view, opportunities emerge out of the entrepreneur’s internal disposition to initiate changes in the economy. According to Schumpeter (1934), the entrepreneur is the innovator who “shocks” and disturbs the economic equilibrium during times of uncertainty, change, and technological upheaval. Schumpeter distinguishes between the entrepreneur and the resource provider and suggests that while the former initiates change within the economy, it is the latter who bears the risk by providing capital. Following this conceptualization, Schumpeter suggests a rather broad-based range of entrepreneurial actions that include (1) introducing new goods and services or new qualities of existing goods and services; (2) introducing new methods of production; (3)

opening up new markets; (4) utilizing new sources of supply of raw materials or intermediate goods; and (5) defining certain new organizational forms in the industry (Ripsas, 1998; Schumpeter, 1934).

In Schumpeter's view, opportunities emerge as a process of "creative destruction." Entrepreneurs do not discover opportunities, rather, they create them by taking advantage of technological change, of an innovation occurring in the economy. Entrepreneurial opportunities arise in the economy as an outcome of "... a self-transformation process, the driving element of which is an innovating 'entrepreneur-hero'...". Consequently, Schumpeter elaborates upon the psychology of his 'entrepreneur-hero'" (Witt, 1995, pp. 84–85). In other words, by attributing to the entrepreneur the role of a "heroic" change initiator in the economy, Schumpeter gives cognizance to the importance of the personal traits and motivation of the entrepreneur. He suggests that entrepreneurs are the rare breed of individuals motivated intrinsically to utilize the benefits of technological, demographic, and social changes to create upheavals in the current state of equilibrium and to usher new products and services or new ways of working (Schumpeter, 1934). Thus, even though he does not state this explicitly, Schumpeter believes that the entrepreneur is high in terms of intuition, creativity, and the power to overcome skepticism and hostility—*intrinsic personal qualities* that are difficult to imitate. In taking this view further, Lumpkin and Dess (1996) indicate that these attributes lead to the development of an entrepreneurial orientation, which incorporates within itself characteristics such as autonomy, innovativeness, risk taking, proactiveness, and competitive aggressiveness. At the same time, Schumpeter is silent on the role of information or the knowledge that the entrepreneur must have access to in order to initiate a specific change outcome. To summarize, the Schumpeterian view on entrepreneurial opportunities suggests that opportunities are created rather than discovered. Also, in the overall process of the emergence of entrepreneurial opportunities, entrepreneurs' personal attributes, rather than their personal knowledge resources, play the most critical role. In other words, following the Schumpeterian view:

**Proposition 1:** Entrepreneurial opportunities are associated more strongly with the intrinsic personal traits of entrepreneurs rather than with their idiosyncratic knowledge base.

## Entrepreneurial Opportunities: The Kirznerian View

In contrast to the Schumpeterian view, Kirzner's (1979, 1997) theory of entrepreneurial alertness and discovery is concerned with understanding how certain individuals secure profits on the basis of knowledge and information gaps that arise between people in the market. Drawing upon the early work of Austrian economists Mises (1966) and Hayek (1945, 1948), Kirzner suggests that the entrepreneur discovers opportunities by acting as an arbitrageur or a price adjuster in the marketplace, capitalizing on knowledge or on information asymmetries. By taking recourse to asymmetries associated with individual level "day-to-day" knowledge (Hayek, 1945, 1948), certain individuals are able to engage in "... discovery of particular 'facts' that are useful for achieving specific, transitory purposes ... [allowing] entrepreneurs [to] perceive changes in economic circumstances, discover imperfect coordination between individual decisions and adjust prices to new market conditions" (Harper, 2003, pp. 20–21). According to Kirzner, the price-adjusting process capitalizing on information disparities or on ignorance in the marketplace engaged in by the entrepreneur allows entrepreneurial alertness to flourish. Entrepreneurial alertness becomes an idiosyncratic resource with the following charac-

teristics: (1) It is more than simply superior knowledge about market opportunities, but rather, “. . . the abstract, very general and rarefied kind of knowledge which we must ultimately credit with discovering and exploiting the opportunities unearthed . . .” (Kirzner, 1963, p. 69). (2) It is nondeployable and tacit, and decisions to deploy it across multiple opportunities are difficult to decide on the part of the entrepreneur. (3) No market exists for hiring entrepreneurial services—rather, entrepreneurial resources have to be realized and utilized by the entrepreneurs themselves. (4) Entrepreneurship is costless in that it is spontaneously learnt or acquired by the entrepreneur without deliberately searching for the information gaps that lead to emerging opportunities (Harper, 2003; Kirzner, 2000).

Being concerned with how opportunities arise out of the entrepreneur’s alertness to information asymmetries existing in the economy, the Kirznerian view holds that opportunity recognition cannot occur in the absence of the entrepreneur’s day-to-day knowledge. In fact, alertness and day-to-day knowledge go hand-in-hand, in order for opportunities to be discovered by the entrepreneur. Moreover, the process of opportunity recognition is more complex than simply identifying knowledge gaps in a particular market by the entrepreneur. It can take the form of a complex web of information discontinuities and knowledge gaps across markets, technologies, and substitutes over time-frames. Therefore, idiosyncratic knowledge pools that are available with individual entrepreneurs assume critical importance in recognizing entrepreneurial opportunities. Entrepreneurship emerges when certain individuals capitalize on their unique day-to-day knowledge and are able to discern unique opportunities in the marketplace, on the basis of “. . . discovery of previously unsatisfied wishes and desires of the consumers, including the goods and services which they demand and the prices they are willing to pay” (Hayek, 1948, p. 96). In other words, in the Kirznerian view:

**Proposition 2:** Entrepreneurial opportunities are associated more strongly with the idiosyncratic knowledge base of entrepreneurs rather than with their intrinsic personal traits.

## The Two Views Compared: Essential Differences

Even though the Schumpeterian and the Kirznerian views have similarities in that both treat the entrepreneur as being the primary actor with respect to entrepreneurial opportunities, there are certain fundamental differences between them. The first of these relates to the level of equilibrium that is assumed to exist in the economy and the extent of disturbance or turbulence that is expected to be caused by the entrepreneur. In elaborating on how these differences are manifested, Kirzner says:

In Schumpeter it appears that the entrepreneur acts to *disturb* an existing equilibrium situation. Entrepreneurial activity *disrupts* the continuing circular flow. While each burst of entrepreneurial innovation leads eventually to a new equilibrium, the entrepreneur is presented as a disequilibrating force . . . In contrast, our discussion . . . indicates that the existence of an as yet unexploited opportunity for entrepreneurial profit means that the existing state of affairs, no matter how evenly it seems to flow, is a disequilibrium situation. It is a situation in which some decision makers are at least partly ignorant of the decisions being made by others . . . Thus in our discussion the entrepreneur is seen as the equilibrating force. More precisely, we see the entrepreneur as bringing into mutual adjustment those discordant elements that constitute the state of equilibrium. His role is created by the state of disequilibrium

and his activities ensure a tendency toward equilibrium. (1979, p. 111 [italics in original])

In other words, the Schumpeterian entrepreneur is primarily involved in a process of creative destruction in which entrepreneurial opportunities arise essentially as a result of a disequilibrating action of the entrepreneur. In contrast, the Kirznerian entrepreneur is essentially concerned with restoring balance in the economy by embarking on entrepreneurial opportunities that arise out of knowledge and of information asymmetries among its constituents.

A second more fundamental difference arises between the Schumpeterian and the Kirznerian views on the basis of Austrian economics' idea of subjectivism. As noted by Kirzner, subjectivism challenges the "... classical tenet that ultimately the only determinant of social-economic phenomena is the objective physical environment" (1995, p. 11). Subjectivism suggests that although objective reality exists, it can only be adequately studied provided the subjective mental states of the actors concerned are also taken into account (Horwitz, 1994). This allows for incorporating the actors' human action on the basis of their subjective perceptions into the analysis. The resulting understanding of reality, thus, is more meaningful. This idea of subjectivism permeates Kirzner's view of entrepreneurial opportunities when he suggests that although the entrepreneur uses day-to-day idiosyncratic knowledge in identifying opportunities, "... the knowledge presupposed by the action postulate is *not* of a character that permits it to be seen as packaged along with the objects or ideas that constitute the means and the ends for action. Instead, subjectivism sees action as inextricably *embedded* in the complex of perceptions and images that make up the consciousness of the human agent at each moment" (1979, p. 152, italics in original).

We suggest that subjectivism, as incorporated into the Kirznerian view of entrepreneurial opportunities, takes it close to the ontological position that suggests that opportunities are enacted by the entrepreneur. This is because of the essential interpreting process engaged in by the entrepreneur: both of the entrepreneurial context and of the idiosyncratic knowledge available about it. Although it accepts the existence of an objective truth, subjectivism endorses the Austrian view that "... without references to meaning our understanding of the social world is of a meager and unsatisfactory kind" (Horwitz, 1994, p. 18). Therefore, in seeking an explanation for entrepreneurship, Austrian economists such as Kirzner focus not only on entrepreneurial alertness and the idiosyncratic knowledge base of the individual but also on how this knowledge combines with entrepreneurial imagination and interpretation in order to lead to opportunities. "Despite the changes over time in Austrian entrepreneurial constructs ... it seems reasonable to attribute the perennial Austrian interest in the entrepreneur to the tradition's consistent subjective thrust" (Kirzner, 1994, p. 110). This has close similarities with the essential ontological position of the opportunity enactment perspective summarized by Gartner, Carter, and Hills, as follows: "The gist of an enactment perspective is not to deny that certain concrete characteristics of an individual's (organization's) circumstances exist and have an impact ... Rather, the opportunity enactment perspective offers sensitivity towards viewing an environment as having features that are determined by the scope of an individual's (organization's) actions" (2003, p. 109).

In contrast, the Schumpeterian view is silent on whether subjectivism of the entrepreneur plays any significant influence in the emergence of entrepreneurial opportunities (Keizer, 1995; Witt, 1995). "The 'trick' by which Schumpeter evades such considerations is simple ... All that matters in his theory is the pioneering initiative, the 'doing it', the carrying out of what is already available but which no one has yet ventured to realize"

(Witt, 1995, pp. 84–85). To summarize, it can be said that while the Schumpeterian view of entrepreneurial opportunities faithfully follows the “opportunities discovered” ontological position, the Kirznerian view—and in general, the view emanating from Austrian economics—attempts to go beyond and even leans toward the ontology proposed by the “opportunities enacted” approach by incorporating the idea of subjectivism into the opportunity process. Accordingly, any framework that seeks to offer a reasonably complete explanation of the process of entrepreneurial opportunities needs to be able to reconcile or even to synthesize the apparently conflicting positions of the two ontological approaches into a coherent explanation that recognizes the inherent complexities associated with the process of entrepreneurial opportunities. We show that Crossan et al. (1999) 4I organizational learning framework is able to achieve this aim.

## The 4I Organizational Learning Framework

Organizational learning is defined as the capacity or the process within an organization to maintain or to improve performance on the basis of experience (Nevis, DiBella, & Gould, 1995), a capacity to encode inferences from history or from experience into routines that guide future activity and behavior (Levitt & March, 1988), systematic problem solving, and ongoing experimentation (Garvin, 1993). Therefore, it is the process by which management teams reshape their shared cognitive maps of the firm, its markets and competitors (DeGeus, 1988), and through which the organization detects and corrects errors (Argyris & Schon, 1978) or improves its actions on the basis of increased knowledge and understanding (Fiol & Lyles, 1985). Different “schools of thought” in organizational learning exist—from the economic (learning based on experience and “production”) to the developmental (the “learning organization” being a stage in the evolution of the firm), the managerial (concerned with prescriptive learning outcomes), and the process (learning as “socially constructed” and grounded in the cognitive and behavioral capability of individuals) (Bell, Whitwell, & Lukas, 2002). In their discussion on the state of the progress of research in the field of organizational learning, Easterby-Smith, Crossan, and Nicolini (2000) suggest that research on organizational learning has progressed exponentially in recent years. Beginning with the notion of learning as being primarily cognitive and simply equal to the sum of learning of individuals (Simon, 1991), research has progressed to recognize the phenomenon as being socially constructed and “situated” (Lave & Wenger, 1991) in the learning activities of individuals, groups, organizations, and interorganizational networks.

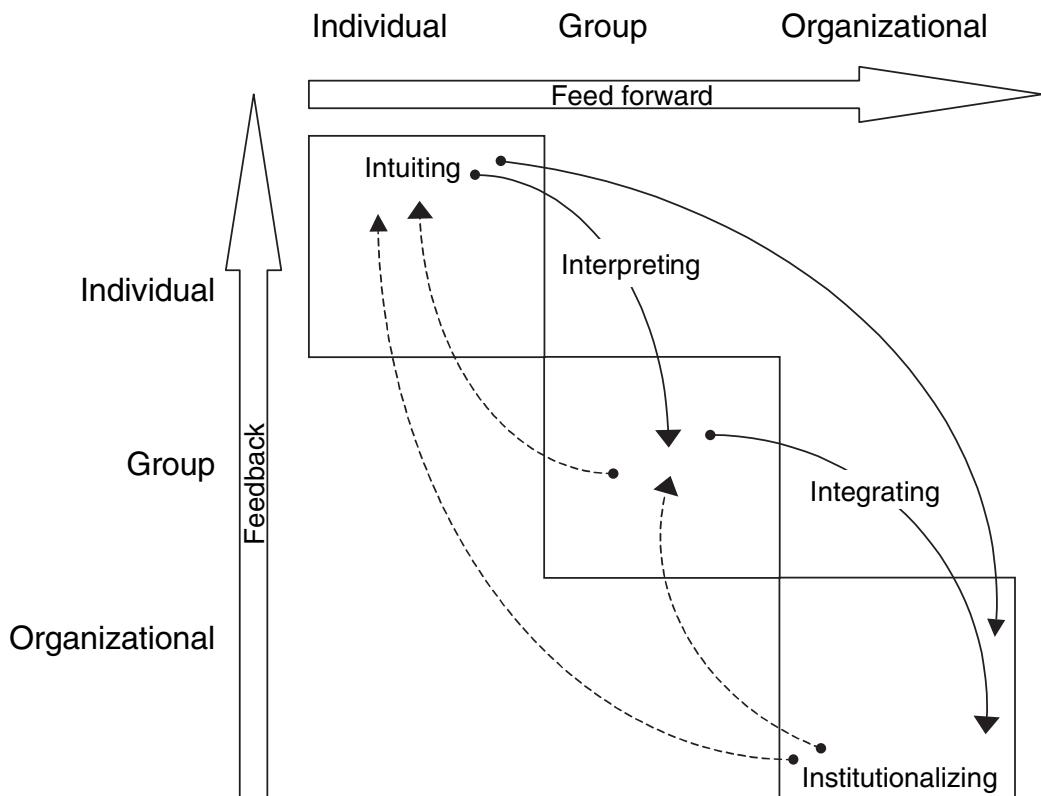
According to the 4I framework, learning occurs at multiple levels within an organization. It arises as an ongoing tension between assimilating new learning (or exploration) versus making use of what has already been learned (exploitation) (March, 1991). Not only does this tension and resolution occur at the level of the individual, but also transgresses to the group and the organization. In this multilevel model of learning, four sociopsychological processes link learning from the individual to that of the organization. These are intuiting, interpreting, integrating, and institutionalizing or the 4I. Learning is seen as a combination of stocks and flows of knowledge: even as individuals, groups, and the organization act as repositories of knowledge, learning flows across these levels through the 4I processes in the form of feedback and feed-forward linkages. This is depicted in Figure 1.

Crossan et al. define the 4I learning processes as follows:

*Intuiting* is the preconscious recognition of the pattern and/or possibilities inherent in a personal stream of experience. This process can affect the intuitive individual’s

Figure 1

### Organizational Learning as a Dynamic Process\*



\*Excerpted from Crossan, Lane, and White (1999)

behavior, but it only affects others as they attempt to (inter)act with that individual . . . *Interpreting* is the explaining of an insight, or idea to one's self and to others. This process goes from the preverbal to the verbal and requires the development of a language . . . *Integrating* is the process of developing shared understanding amongst individuals and the taking of coordinated action through mutual adjustment. Dialogue and joint action are crucial to the development of shared understanding. This process will initially be ad hoc and informal, but if the coordinated action taking is recurring and significant, it will be institutionalized . . . *Institutionalizing* is the process of ensuring that routinized actions occur. Tasks are defined, actions specified and organizational mechanisms put in place to ensure that certain actions occur. Institutionalization is the process of embedding learning that has occurred by individuals and groups into institutions of the organization including systems, structures, procedures and strategy. (1999, p. 525)

In other words, learning begins when individuals develop an intuition with respect to a business opportunity on the basis of their prior experience and recognition of patterns as external events unfold. The individual uses these patterns to make sense of what is going on—to interpret an insight or an idea and to put it into words. Individual inter-

pretation can be strengthened or reinforced by sharing it with a group who can then engage in joint exploration, interpretation, and integration of the idea, to develop it into a shared understanding of a feasible business proposition. Over time, shared understanding can be institutionalized at the organizational level in the form of systems, structures, strategy, and procedures, for example. Learning that originates with individuals and is transferred to groups and to the organization is referred to as feed-forward learning. Feed-forward learning relates to exploration. However, learning is also transferred from the organization to individuals and groups through a feedback process. For example, reward systems may guide what individuals pay attention to, while organization structure certainly impacts group learning. Feedback learning relates to the exploitation of learning.

Crossan et al. (1999) acknowledge that there is an environment, or more accurately, “stimuli” that influence individual and organizational learning. They suggest that the “nature or texture of the domain within which individuals and organizations operate, and from which they extract data, is crucial to understanding the interpretive process. The precision of the language that evolves will reflect the texture of the domain given the tasks being attempted. The well-known example of the Inuit having over a dozen different words for (various types of) snow illustrates the rich interaction between the task domain and the sophistication of language. Moreover, people with very rich and complex cognitive maps of a domain, like the chess master, will be able to see things and act in ways that others cannot” (p. 528). Furthermore, they acknowledge that individuals will interpret the same stimulus differently on the basis of their established cognitive maps, because stimulus can evoke a different or an equivocal meaning for different people.

To summarize, the 4I framework provides a multilevel and dynamic process framework that encompasses the entire cycle of learning—from intuition to institutionalization of insights and ideas. It is important to recognize that by viewing learning as occurring at multiple levels (individual, group, and organization) based upon a set of social and psychological processes (intuiting, interpreting, integrating, and institutionalizing), the 4I framework recognizes an inalienable “. . . interactive relationship between cognition and action . . . Understanding guides action, but action also informs understanding” (Crossan et al., 1999, p. 524). If intuiting, which occurs at a preconscious level within the individual mind, entails a recognition of patterns or possibilities emanating out of the individual’s collective experience, interpreting enables the individual to engage in a process of sense making to bring this understanding to the conscious level. Both these processes, thus, directly focus on the enactment attributes of learning. Integrating and institutionalizing relate to the development of a collective or shared view of that learning. To a certain extent, that which becomes “institutionalized” forms the objective reality or the context within which the entrepreneur operates. Therefore, we suggest that the adoption of the 4I framework to explain the process of entrepreneurial opportunities holds the potential to reconcile the currently divergent views on opportunities as being discovered versus being enacted. In the next section of the article, we elaborate on how this reconciliation may be achieved.

## **Understanding Entrepreneurial Opportunities as a Learning Process: Applying the 4I Framework**

In this section, we demonstrate that the application of the 4I framework to entrepreneurial opportunities provides us with a fresh perspective on how entrepreneurial opportunities can be conceptualized as a process and as one which not only reconciles but also

integrates conflicting elements of the two contrasting ontological positions discussed earlier.

## **Entrepreneurial Opportunities and Intuiting (or the First I)**

The 4I framework recognizes that a critical part of learning about opportunities by the entrepreneur occurs when the individuals develop insights based on their intuitive patterns relating to the emerging business environment. In other words, the seed of any entrepreneurial action lies in an initial preconscious reflection by an individual (an existing or would-be entrepreneur) about a potential business idea that the individual feels holds some potential in meeting a current or an emerging requirement of customers/potential customers. It is important to understand that at this stage, the idea is subtle or even so “fuzzy” that the individual concerned only has a belief that it holds promise and is worth pursuing. Irrespective of whether this idea or opportunity is discovered or is enacted by the entrepreneur, there is no denying the fact that entrepreneurial intuition plays a very critical role in this process of investigation, interpretation, recognition, and/or enactment. Hayek (1945) suggests that by its very nature, knowledge of an everyday nature (or day-to-day knowledge) is partitioned or diffused among individuals, such that no two individuals hold the same repository of knowledge. Given its idiosyncratic nature (Venkataraman, 1997), efforts at utilizing this knowledge and transforming it into specific business opportunities begin with deep intuition on the part of the individual concerned. Before the contours of the opportunity are identified and a business proposition is developed, it is important that entrepreneurs engage in an intuiting process to clarify in their own minds what the idiosyncratic knowledge entails in terms of an unmet need. Irrespective of whether an opportunity is seen as existing or enacted, we suggest that the entrepreneur goes through this intuiting process.

Although the 4I framework acknowledges that the environment presents stimuli that form the basis for learning (i.e., the discovery approach), the 4I processes have a strong enacted orientation. In the words of Crossan et al., “. . . intentions are preverbal . . . no language exists to describe the insight or to explain the intended action . . . Imagery . . . and metaphors aid the individual in his or her interpretation of the insight . . . Early in a company’s development, when it is far from equilibrium, small differences in the metaphors employed and the ways in which conversations unfold and language develops may ultimately result in great differences in where the company ends up” (1999, pp. 527–28). This is certainly an enacted view of entrepreneurial opportunities and one that suggests that entrepreneurial learning occurs in situated practice and is subject to a process of social construction involving continuous interpretation and enactment of multiple realities. In effect, “opportunities [emerge as the] the result of what individuals do, rather than the result of what they [simply] see” (Gartner et al., 2003, p. 110).

At the same time, Crossan et al. (1999) recognize that the driver for the intuiting process may arise in more than one form—expert intuition versus entrepreneurial intuition. Expert intuition is based on pattern recognition. This parallels the Kirznerian view—it emphasizes the complex knowledge base of the individual as being the primary means by which patterns are recognized. In contrast, entrepreneurial intuition relies less on the knowledge base of the individual, but rather, on their creative capacity to recognize gaps and to identify possibilities. Thus, “. . . entrepreneurs are able to make these novel connections, perceive new or emergent relationships, and discern possibilities that have not been identified previously. Whereas expert intuition may be past pattern ori-

ented, entrepreneurial intuition is future possibility oriented” (Crossan et al., p. 526). Entrepreneurial intuition parallels the Schumpeterian view of opportunity recognition, in that entrepreneurs act as change agents and initiate innovation and transformation in the economy on the basis of their intuition about the emerging future. Therefore, we suggest:

**Proposition 3a:** Expert intuition is associated with the process of discovery.

**Proposition 3b:** Entrepreneurial intuition is associated with the process of enactment.

**Proposition 3c:** Entrepreneurial engagement with opportunities encompasses both discovery and enactment linked through the 4I learning processes: intuiting, interpreting, integrating, and institutionalizing.

## Entrepreneurial Opportunities and Interpreting (or the Second I)

In Crossan, Lane, and White words, “. . . interpreting begins picking up on the conscious elements of the individual learning process . . . Interpreting is a social activity that creates and refines common language, clarifies images, and creates shared meaning and understanding” (1999, p. 528). We suggest that interpreting forms the second critical process that explains how entrepreneurial opportunities arise. We see interpreting as occurring both within the minds of the individual entrepreneurs as well as in their interaction with other critical stakeholders such as venture capitalists, banks, consultants, and government agencies involved in the process of new venture creation. By engaging in this process of interpretation, the entrepreneur not only achieves greater coherence on a business idea but is also able to successfully share the idea with other stakeholders—using the threads of a common language and associated vocabulary—and, thus, elicit their increasing support in its implementation.

In addition, the process of interpreting also encompasses the entrepreneur’s interaction with a wider network of individuals who share a similar pursuit to realize opportunities, i.e., entrepreneurial networks. It is widely known that entrepreneurial networks perform a critical role of facilitating the creation of new ventures (Elfring & Hulsink, 2003; Flynn & Forman, 2001; Friar & Meyer, 2003). We suggest that interpreting emerges on the basis of the social interactions of the members of entrepreneurial networks. It is through these interactions, as the entrepreneur explains and defends the business concept, that the concept is developed and refined. Essentially, it is through these evolving conversations that the entrepreneur sharpens the interpretation. Entrepreneurial research has examined network ties but not from the perspective of how those ties enables organizational learning. For instance, in studying the importance of network ties among venture capitalists, Shane and Cable (2002) show that the strength of such ties benefits members by reducing information asymmetry between them. It is also reasonable to expect that by engaging in such an exchange, the entrepreneur not only learns and benefits, but the entrepreneurial opportunities themselves may undergo a change. Therefore, we suggest:

**Proposition 4a:** Entrepreneurial engagement with an opportunity evolves from intuiting to interpreting through conversations that enable entrepreneurs to develop a more coherent language to describe the opportunity.

**Proposition 4b:** Opportunities that have progressed from intuiting to interpreting have a higher chance of implementation compared to opportunities that have remained at the intuiting stage.

## **Entrepreneurial Opportunities and Integrating (or the Third I)**

Interpreting is closely linked to the next stage in the 4I framework, which is termed integrating. This is the stage where “individual interpretive processes come together around a shared understanding of what is possible, and individuals interact and attempt to enact that possibility . . . Whereas the focus of interpreting is change in the individual’s understanding and actions, the focus of integrating is coherent, collective action” (Crossan et al., 1999, p. 528). In the context of entrepreneurial opportunities, we see interpreting and integrating (i.e., the second and the third of the 4I) as being the integral processes that crystallize the several interim steps that arise between the generation of a new business idea in the entrepreneur’s mind and its successful implementation as a new venture. It is important to note here that although we have taken the example of the entrepreneur’s links with external network partners to explain the nuances of the interpreting and integrating processes, these processes can just as easily form the basis of explanation for the situation where a group of individual entrepreneurs collaborate to create a venture. Similarly, these processes explain the interactions that arise in an existing entrepreneurial venture that has one lead entrepreneur who is supported by other members of a coalition. Continuing innovation and change in these entrepreneurial firms arises as a constant process of interpretation and integration among members of the dominant coalition.

Recognizing the existence of the interpreting and integrating processes under entrepreneurial opportunities allows us to explain why certain business ideas initially generated lose their significance and are not carried forward to the venture creation stage. In effect, by suggesting that entrepreneurial opportunities involve interpreting and integrating (i.e., the two intermediate stages in the 4I framework), we are able to broaden the scope of entrepreneurial opportunities beyond its current conceptualization of being an outcome of individual intuiting by the entrepreneur into a shared outcome that must necessarily go through stages and involve other network players. Furthermore, adopting this view also leads us to speculate that entrepreneurial ideas that have gone through the interpretation and integration processes involving network partners will have a greater chance of success, because the entrepreneur would have engaged in learning based on these experiences. Therefore, we suggest:

**Proposition 5a:** Entrepreneurial engagement with an opportunity evolves from interpreting to integrating through conversations that enable entrepreneurs to generate a shared understanding about the opportunity among critical stakeholders.

**Proposition 5b:** Opportunities that have progressed from intuiting and interpreting to integrating have a higher chance of implementation compared to opportunities that have remained at either the intuiting or the intuiting and interpreting stages.

## **Entrepreneurial Opportunities and Institutionalizing (or the Fourth I)**

Institutionalizing is the fourth and final process in the 4I framework. According to Crossan et al. (1999), institutionalizing allows learning to go beyond individual or even ad hoc groups into organizational-level learning processes and structures that encompass the whole venture. We see this as reflecting entrepreneurial efforts in ventures that have already been created and are thriving. Because organizations allow for both planned and situated learning, institutionalizing reflects, accommodates, and integrates the two contrasting views that entrepreneurial opportunities are discovered versus enacted.

Incorporating institutionalizing as a critical element in the process of entrepreneurial opportunities allows us to look beyond the individual entrepreneur and to include in the overall process the critical roles played by internal/external partners and members of the wider organization in the form of corporate entrepreneurship initiatives. In addition, it allows us to explain why, compared to single entrepreneur-led ventures, it is more difficult to incorporate a culture of corporate entrepreneurship (or intrapreneurship) in larger firms. This happens because “institutionalized learning cannot capture all the ongoing learning at the individual and group levels . . . As the environment changes, the learning that has been institutionalized may no longer fit the context; there may be a gap between what the organization needs to do and what it has learned to do” (Crossan et al., 1999, p. 530). Only those firms that are able to maintain a proactive approach to learning that is contextual and nonredundant will demonstrate a leading edge in innovation and intrapreneurship.

Finally, recognizing the force of the institutionalizing process operating at the level of the individual entrepreneurs allows us to understand how the entrepreneur incorporates learning about a successful venture creation—in terms of insights, heuristics, and routines based on experience—into their learning repertory. This, in turn, affects how successful the entrepreneurs are in their subsequent venture creation efforts. Therefore, we suggest:

**Proposition 6a:** Firms that engage in the process of institutionalizing learning with respect to entrepreneurial opportunities demonstrate a culture of corporate entrepreneurship (or intrapreneurship) compared to firms that do not do so.

**Proposition 6b:** Entrepreneurs who engage in the process of institutionalizing learning with respect to entrepreneurial opportunities demonstrate a stronger track record of venture creation compared to entrepreneurs that do not do so.

## Discussion

At the outset of this article, we had noted that the existence of more than one ontological position on the phenomenon of opportunities, along with its own body of empirical research, imposes difficulties upon theorists desiring to develop a general theory of entrepreneurial opportunities. Not only must theorists be able to acknowledge the differences between these intellectual traditions, but they must also attempt to bridge them in a way that improves our overall understanding of the phenomenon. Gartner et al. state in the conclusion of their paper that “. . . a belief in the importance of opportunity to entrepreneurship will need to be predicated on an appreciation of the necessity of entrepreneurial activity . . . In entrepreneurship, it is entrepreneurial activity that matters . . . Without action, there is no insight” (2003, p. 124). In this article, we have suggested that approaching entrepreneurial opportunities from an organizational learning perspective, and more specifically, the 4I organizational learning framework, offers a useful way of reconciling and building upon some of the apparently conflicting aspects of entrepreneurial opportunities that arise from the two ontological traditions and develops a more coherent explanation of the phenomenon. The application of the 4I framework to the process of entrepreneurial opportunities has also allowed us to perform a “levels-of-analysis” of the phenomenon and to draw its links to what is noticed in practice. By treating entrepreneurial opportunities as a process that involves intuiting, interpreting, integrating, and institutionalizing at multiple levels, we believe that we have been

able to provide a richer theoretical exposition on the phenomenon. In the process, we have responded to a call by Kreuger who said, “. . . if we wish to argue intelligently about whether entrepreneurial opportunities are ‘discovered’ or if they are ‘enacted,’ theory is crucial” (2003, p. 105). The major contribution of the article, its limitations, and its application to managerial practice, are noted below.

## Contribution to Entrepreneurship Theory

Prior research on entrepreneurial opportunities has predominantly tended to adopt the positivist/realist position that opportunities exist as independent entities and are discovered by entrepreneurs. At the same time, there has emerged a significant alternate body of research that bases its investigation upon a predominantly social constructionist position on entrepreneurial opportunities. Under this alternative view, opportunities arise as a culmination of the sense-making efforts of entrepreneurs on the basis of their interpretation of contextual forces. In that sense, opportunities are enacted rather than discovered. Furthermore, coming to explanations of the entrepreneur’s role in the economy, there are contrasting explanations as reflected in the work of Schumpeter and Kirzner, respectively. We show that the 4I learning framework is able to offer insightful explanations that reconcile, resolve, integrate, and, otherwise, advance the rather conflicting explanations available in entrepreneurship studies with respect to how entrepreneurs interact with opportunities.

The emergence of entrepreneurial opportunities is rooted in the entrepreneurs’ personal dispositions as well as in their day-to-day knowledge (based on the Schumpeterian and Kirznerian views, respectively). The 4I framework takes both of these perspectives as being important. By its very definition, recognizing an opportunity has an element of the preconscious associated with it—in being able to combine and to recombine this day-to-day knowledge in unique ways to discern specific business opportunities in them. Essentially, the 4I framework is a process model of individual, group, and organizational learning. It thus incorporates within itself a dynamic interplay of knowledge flow between levels. Floyd and Woolridge (1999) suggest that in existing firms, new ideas get incorporated into the collective knowledge of the organization through an individual insight and belief system. In dealing with how such ideas transcend from the enterprising individuals to a wider organizational system, the 4I framework offers useful insights. It recognizes and gives importance to the entrepreneur’s previous experience and prior learning. At the same time, it suggests that there is an element of preconscious intuition that assumes importance in the discovery of a specific opportunity at a particular instance in time. With respect to intuition itself, the 4I framework makes a distinction between expert and entrepreneurial intuition, thus, reconciling the positivist/realist ontological position vis-à-vis the social constructionist one. While expert intuition is closely aligned to the positivist paradigm of entrepreneurial opportunities, entrepreneurial intuition emerges out of the social constructionist paradigm. In effect, the foremost contribution of this article is in offering an explanation of how these two contrasting ontological perspectives on entrepreneurial opportunities can be resolved by viewing the phenomenon as a learning process. Using the 4I framework, thus, allows us to recognize the many subtle but opposing nuances of entrepreneurial opportunities and enables us to offer a more compelling explanation of the phenomenon than had been possible in prior research.

Much of the existing literature on entrepreneurial opportunities and the field of entrepreneurship itself have been overly concerned with the individual to the detriment of

ignoring the possibilities of entrepreneurial activities occurring at the group and organization levels (Busenitz et al., 2003; Shane & Venkataraman, 2000; Venkataraman, 1997). This is where the application of the 4I framework provides us with an improved understanding of how entrepreneurial opportunities transcend the individual. This is the second contribution of the article. It arises from its efforts at mapping each of the 4Is to explain one or more characteristics of how entrepreneurship occurs in practice. Conceptualizing entrepreneurial opportunities as an expanded process that incorporates the elements of intuiting, interpreting, integrating, and institutionalizing allows us to explain how opportunities emerge as a process that goes from the individual entrepreneur to the entrepreneurial networks and involves the entire firm. By suggesting that learning about entrepreneurial opportunities in practice actually involves shared processes at group and organizational levels in addition to individual level intuiting, the framework provides us with an expanded conceptualization of entrepreneurial opportunities. It suggests that the development of individual-level intuition necessarily leads to group-based learning processes (interpreting and integrating) that encompass and depend upon group-level synergies. Traditional entrepreneurship literature would suggest that an entrepreneur discovers or enacts an opportunity (depending on which ontological position is adopted) and then liaises with external agents to realize or implement the opportunity. This is because the exploitation of an opportunity entails resource requirements as well as the fulfillment of institutional or regulatory norms, for all of which collaboration with external entities may be required. For instance, Lichtenstein and Brush (2001) find that as entrepreneurial firms develop, resource bundles within the firm undergo change and reconfiguration. However, we suggest that viewing external collaborations engaged in by the entrepreneur as simply a way of exploiting/implementing opportunities is taking a rather narrow perspective on the complex phenomenon. Instead, we believe that the life cycle of entrepreneurial opportunities involves several iterating stages before a particular opportunity emerges and is selected as being attractive enough for pursuit as a venture. It is during these iterative stages that a series of learning processes unfold with respect to a set of possible opportunities between the entrepreneur and related external stakeholders, moving from intuiting to interpreting and integrating.

The 4I framework suggests that as part of this wider opportunity emergence process, the entrepreneur will engage in the development of a shared understanding about the opportunity for a number of reasons, including the interpretation and integration of ideas. Using organizational learning insights, it becomes easy to notice that although the initial activity of opportunity recognition by the entrepreneur may be based on an intuition that leads to a brilliant concept or idea, in order to take it to fruition, it is necessary to develop collaborative linkages with multiple stakeholders who can work as a group in the formative years of the venture. For example, Crossan and Berdrow (2003) find that in a corporate context, individuals with intuitive insights, who had the capacity to also champion the insight through the processes of interpreting and integrating, were more successful than those who could not. Within the entrepreneurial firm itself, such collaboration can arise when entrepreneurial teams engage in the interpretation and integration of ideas initially laid down by a lead entrepreneur. Finally, over time, as the new organization is set up and takes roots, some of these shared understandings now transfer from the network of the entrepreneur and related external stakeholders to employees within the firm. At this stage, the opportunity would have been implemented by the creation of the new venture. However, even at this stage, further downstream or offshoot opportunities may emerge; if they do, they would again follow the 4I cycle, but this time, perhaps through a combination of stakeholders both within and outside the firm. Therefore, a third con-

tribution of the article is in being able to offer theoretical insights on several aspects of entrepreneurship as a phenomenon, e.g., (1) how personal attributes of entrepreneurs vis-à-vis their knowledge repository and/or information asymmetries contribute to entrepreneurship; (2) why certain entrepreneurial ventures succeed while others fail or are less effective; and (3) why is it comparatively more difficult to develop a culture of corporate entrepreneurship (intrapreneurship) in large firms.

## Bridging Entrepreneurship and Organizational Learning Research

Having demonstrated the usefulness of applying organizational learning theory—and more specifically, the 4I framework—to entrepreneurial opportunities, a question that can be asked at this stage is whether there may arise any additional benefits if these two fields of business research collaborate and inform each other. By expanding our discussion of the two fields beyond an application of the 4I framework to the phenomenon of entrepreneurial opportunities, we suggest that this may indeed be the case.

Going beyond the 4I framework, organizational learning in general offers other useful insights for the theory of entrepreneurial opportunities. For instance, in their inductive study on organizational improvisation and learning, Miner, Bassoff and Moorman (2001) find that improvisational learning, as opposed to planned learning, holds promise in explaining how entrepreneurs respond to day-to-day changes and pressures on their infant organization as they engage with an opportunity. Similarly, another stream of organizational learning literature—dealing with learning in alliances—can be usefully applied in the context of international entrepreneurship. Although an entrepreneurial venture does not usually engage in formal alliance partnerships with other firms in its formative years, nevertheless, it uses similar principles in garnering resources, competencies, and other benefits. Moreover, entrepreneurs have their own social networks and it is reasonable to assume that elements of network-level learning conditions as well as attributes come into play here (Krackhardt, 1995). In their study, Inkpen and Crossan (1995) find that the integration of learning experiences across firms coming from different geographical and cultural backgrounds (U.S. and Japan) is often problematic and is affected by the level of rigidity in managerial beliefs and the willingness or the lack thereof of unlearning. Drawing this analogy to the level of the individual entrepreneur in a wider network of entrepreneurs, it becomes interesting to speculate what the impact of learning collaborations among individuals on entrepreneurial opportunities might be, given the possible existence of individual-level learning rigidity among entrepreneurs. Just as collaboration among members of an entrepreneurial network is expected to raise the overall level of entrepreneurship within the network as well as among its members—thus, leading to the creation of new ventures—equally, certain learning rigidities may set in, which may negatively affect the process of entrepreneurship. This suggests that learning from failure can provide useful lessons in the context of opportunity recognition. Organizations learn from their own as well as from others' failures (Chuang & Baum, 2003). Similarly, while certain organizations learn from a “discourse of failure,” others tend to learn from a “discourse of success” (Betts, Clarke, & Clegg, 2002). Again, Denrell (2003) finds that with respect to failure, since organizations only have an undersampling of failed cases, it affects their ability to make generalizations and can give rise to a number of false beliefs about the effectiveness of management practices. When these insights are applied in the context of individual entrepreneurs, very interesting speculative dynamics arise with respect to how entrepreneurs might learn from each other in their quest for opportunity recognition. In our view, this transplantation of the ideas of learning from the organiza-

tional level back to the level of the individual entrepreneur becomes relevant, because at the stage of preorganization (or before an opportunity has been recognized and a venture created), the entrepreneur *is* the organization.

Similarly, a knowledge of the entrepreneurship theory offers highly useful insights that can expand our understanding of organizational learning. To demonstrate this, we draw upon insights from the entrepreneurship literature in three specific areas—psychological factors and entrepreneurship, resources and information accessibility, and timing of events—and apply them to organizational learning. In developing a multidimensional model of venture growth, Baum, Locke and Smith (2001) find that, consistent with psychological theories that explain individual performance, these traits also affect the growth of entrepreneurial ventures. Specifically, individual attributes such as tenacity, proactivity, and passion for work on the part of the entrepreneur increases the chances of a venture's success. While these individual qualities must be affecting many aspects of the newly created venture, it is reasonable to assume that they would guide the learning efforts of individuals within the firm as well. For instance, in their study of differences between entrepreneurs and managers of large organizations, Busenitz and Barney (1997) find that entrepreneurs are more susceptible to decision-making biases and heuristics than are managers under conditions of environmental uncertainty and complexity. Specifically, entrepreneurs tend to operate in an overconfidence domain compared to managers who tend to operate in a comparatively underconfidence domain. At the same time, entrepreneurs are less representative and tend to generalize from limited experience as compared to managers who look for higher representativeness of inputs before they draw conclusions. This seems to indicate that the two groups have differences in the way that they perceive business risk and act on it (Busenitz & Barney, 1997). In another study, Sarasvathy, Simon and Lave (1998) find that entrepreneurs and bankers act differently when it comes to perceiving and managing business risks; while entrepreneurs treat risk as given and act to maximize outcomes, bankers treat outcomes as targets and tend to control and to lower risk as they try to achieve targets.

When we apply these insights to the context of organizational learning, we begin to see that the entrepreneurship theory has much to contribute to our current understanding of learning. For instance, learning is not risk-free and organizations often engage in congenital learning (or learning from the previous experience of other firms in the industry) and vicarious learning (or learning in real time by considering the experiences of other firms in the same business) as opposed to learning on their own (Huber, 1991). They do this to minimize the possible risks and costs associated with self-learning. Empirical studies have reinforced the suggestions that organizations indeed approach their organizational learning efforts, incorporating the aspects of congenital and vicarious learning in their learning strategy (Greve, 2000; Ingram & Baum, 1997). Given that learning occurs at multiple levels within the organization and with individuals playing a critical role, it is reasonable to assume that many of the individual characteristics associated with risk aversion and situation-specific motivation will affect the learning process. However, this has not been explicitly recognized in the organizational learning literature yet. We suggest that, to build models of organizational learning that are more complete, there is a need for theorists to consider incorporating some of the individual and firm-level demographic and psychological factors identified in entrepreneurship models in their discussions.

A second consideration arises when we examine learning activities constrained by the availability (or lack thereof) of information and resources. By its very definition, firms engage in learning to bridge their information, knowledge, and resource gaps and to build capabilities. However, having endorsed this as an overall objective, most of the organi-

zational learning models fail to recognize that not having access to certain information or resources may actually prevent them from engaging in learning efforts that are ostensibly geared towards bridging these gaps. Entrepreneurship research informs us that having access to specific kinds and levels of day-to-day knowledge that bridge information asymmetries does affect the ability of individuals to notice emerging opportunities that are otherwise not discernible. Therefore, we suggest that in building models, organizational learning theorists need to make a finer distinction between knowledge categories—those that are even necessary to engage in learning and those that emerge as the outcome of learning efforts.

A final consideration relates to the time frame or the life-cycle state of the opportunity itself. Organizational learning theory does not specifically address how “windows of opportunity” open up at certain times but not at others, when learning becomes easier or more critical as far as the creation of an entrepreneurial venture is concerned. Instead, the theory seems to assume time invariance across learning processes. In contrast, most entrepreneurship researches suggest that opportunities have a life cycle associated with them, not only in terms of their profit-earning capacities but also in terms of the transitory nature of their existence (Eckhardt & Shane, 2003). As we have noted before, a predominant view is that opportunities arise out of information asymmetries across populations. So, if action is not taken at the moment in time when an opportunity is ripe for exploitation, it may fade away and disappear as new information comes into the market. This suggests that learning about the opportunities and the resulting courses of action must take into cognizance the time-dependent nature of the process. Thus, future research in organizational learning must incorporate the time dimension into its models and must explicitly recognize that some of the learning processes and mechanisms will be more short-lived or transitory as compared to others.

## Insights for Practice

Our article offers several insights for practitioners. First, it suggests that entrepreneurial opportunities may be usefully analyzed on the basis of either of the two contrasting ontological positions—positivist/realist versus social constructionist—provided that we adopt a learning perspective and that we recognize the critical role of learning in the process. A reconciliation of the opposing views that has continued to exist in prior research, we believe, makes it possible to develop a more expanded understanding of the phenomenon that is rooted in practice. Second, our article delineates how entrepreneurial learning goes beyond the individual entrepreneur to include other network partners and members of the organization. This, we believe, provides entrepreneurs with a very useful process view of opportunities, indicating that any engagement with opportunities not only involves a number of stakeholders going beyond the lead entrepreneur but also necessarily involves a recognition of multiple perspectives and a shared view of the phenomenon. We suggest that once entrepreneurs adopt this expanded process view of opportunities that cross multiple levels of analysis, they stand to benefit immensely by engaging in proactive associations with other stakeholders. Finally, by developing a set of indicative propositions, our article is able to offer reasons for why certain ways of approaching entrepreneurial opportunities will succeed over other ways. We believe that this has important performance implications for entrepreneurial ventures and offers guidelines on how to approach entrepreneurship, both in newly created ventures and in existing corporations.

## Conclusion

To conclude, our attempt in this article has been to bring together two currently disparate streams of literature—entrepreneurship and organizational learning—to understand how entrepreneurial opportunities evolve as a complex process of learning having multiple stages and involving other stakeholders beyond the entrepreneur. In this article, we demonstrated that the application of the 4I organizational learning framework to entrepreneurial opportunities helped resolve certain apparently conflicting insights about the opportunity construct arising out of contrasting ontological positions. In other words, applying research insights from the field of organizational learning to the process of entrepreneurial opportunities helps us to make the critical leap required to broaden the ambit of entrepreneurship research: to treat entrepreneurial opportunities as going beyond the individual entrepreneur and to include in the overall process the influence of context as well as association with other stakeholders. We suggested that entrepreneurs are essentially involved in a process of learning when they engage with entrepreneurial opportunities; as the entrepreneurial venture evolves through its life cycle, learning transfers across levels—from the individual entrepreneur to external/internal partners and the entire firm. Finally, we also indicated that just as research on entrepreneurial opportunities can benefit from insights drawn from organizational learning, so is the field of organizational learning also informed by research insights already available within the field of entrepreneurship. In other words, there is an advantage in cross-fertilization of these two fields of knowledge.

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