OPPORTUNITY RECOGNITION: A COGNITIVE PERSPECTIVE

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ABSTRACT

A model is proposed that relates opportunity recognition to pattern recognition—the process through which individuals perceive emergent patterns among seemingly unrelated stimuli or events. This model suggests that because of their unique knowledge structures (e.g., prototypes, exemplars), specific persons perceive patterns among emerging changes in technology, markets, demographics, etc. that others overlook. They then compare these patterns with their existing concept of “business opportunity.” If the match is sufficiently close, they may then decide to launch a new venture. Implications of this model are examined.

INTRODUCTION

Opportunity recognition has long been viewed as a key step in the entrepreneurial process—one from which, in many cases, all else follows (e.g., Venkatraman, 1997). For this reason, it has been the subject of much research and theory in the field of entrepreneurship (e.g., Bhave, 1994; Gaglio & Katz, 2001). While this previous work has added greatly to our knowledge (e.g., Hills, et al., 2002), it is suggested here that additional, and potentially valuable insights into the nature of opportunity recognition, can be gained from basic theories of human cognition and perception (cf., Matlin, 2002.) The remainder of this paper examines ways in which such theories—especially theories of pattern recognition and theories pertaining to pattern verification—can be applied to the process of opportunity recognition.

DEFINITIONS AND PROPOSITIONS

While many definitions of the term opportunity have been proposed (e.g., Herron & Sapienza, 1992; Shane, 2003), most include reference to three central characteristics: potential economic value (i.e., the potential to generate profit), newness (i.e., some product, service, technology, etc. that did not exist previously), and perceived desirability (e.g., moral and legal acceptability of the new product or service in society). For purposes of this paper, therefore, opportunity will be defined as perceived means of generating economic value (i.e., profit) that have not previously been exploited, and are not currently being exploited by others. If opportunity is defined in this manner, then within the context of the present discussion, opportunity recognition can be viewed as the cognitive process (or processes) through which individuals conclude that they have identified an opportunity. This, of course is only an initial step in a continuing process, and is distinct both from detailed feasibility evaluations of opportunities and from active steps to actually develop them.
Propositions Concerning the Nature of Opportunities and Opportunity Recognition

The logic of this paper involves applying theories of perception and cognition to the task of understanding opportunity recognition. Because this task, in turn, rests on several assumptions about the nature of opportunities and opportunity recognition, it is crucial that they be stated explicitly. These assumptions (offered as propositions) are as follows:

**Proposition 1:** Opportunities emerge from a complex pattern of changing conditions—changes in technology, economic, political, social, and demographic conditions. They come into existence at a given point in time because of a juxtaposition or confluence of conditions which did not exist previously but is now present.

Perhaps a concrete example will be helpful in illustrating this point. The idea for an online travel service through which users could make airline, hotel and automobile reservations (e.g., Expedia.Com) could not occur until changes in technology, social, and market conditions generated the potential for such an opportunity. Specifically, such a business was not feasible until appropriate technology was available (e.g., software that could display all flights between any two destinations), until tens of millions of persons owned personal computers, and until the belief that one could safely make purchases on the internet became widespread. In short, the opportunity identified by the founders of Expedia.Com and similar businesses emerged from changing technological, market, and social conditions that, together, brought the potential for such a business into existence.

**Proposition 2:** Recognition of opportunities depends, in part, on cognitive structures possessed by individuals—structures that are the result of their previous life experience. These structures (e.g., concepts, prototypes, exemplars) help specific persons to perceive connections between seemingly unrelated changes or events; it is the perception of these connections that constitutes the core of opportunity recognition.

The question of why some persons but not others recognize opportunities has long been of interest to the field of entrepreneurship. It is suggested here that part of the answer may involve the cognitive structures generated by continuing life experience. These structures are unique across individuals and strongly shape perceptions of the external world (e.g., Matlin, 2002). In a sense, they provide the “lock” into which the “key” of emerging changes must fit for opportunity recognition to occur. In short, the cognitive perspective offered here suggests that specific persons recognize particular opportunities because their existing mental frameworks enable them to do so.

**COGNITIVE PROCESSES IN OPPORTUNITY RECOGNITION**

If opportunity recognition is construed as a cognitive process involving, at least in part, recognition of complex patterns, then three basic questions about it must be addressed:

1. What is the process (or processes) through which opportunities are initially identified? In other words, how do specific persons come to perceive emergent patterns among diverse changes in the external world? (This refers to opportunity recognition).
2. Once they have perceived such patterns, how do such persons decide whether these perceived patterns are strong or clear enough to be viewed as bona fide business opportunities—ones that, perhaps, warrant further consideration? (This refers to opportunity verification.)
3. What specific mental structures play a role in opportunity recognition? In
other words, what structures, acquired through experience, contribute to the capacity to perceive connections among highly diverse conditions and changes?

These questions will be considered in the context of two groups of cognitive theories: models of pattern recognition, and theories concerning the decision mechanisms through which individuals conclude that the patterns they have perceived are, or are not, sufficiently clear to be viewed as actual opportunities.

Models of Pattern Recognition: Opportunities as Complex, Discernible Patterns

If opportunities emerge from changes in technology, demographics, markets, and other factors (Proposition 1), then it follows logically that they involve complex patterns of stimuli, that can, potentially, be perceived as such. Whether these patterns are or are not noticed is, in a sense, the central question of opportunity recognition. Basic research on perception refers to this task as object or pattern recognition—the process through which diverse and seemingly unrelated patterns of stimuli are perceived as constituting recognizable objects or patterns (e.g., Matlin, 2002). Several distinct but closely related views of pattern recognition exist.

One important view of this process, prototype models of pattern recognition, suggests that through experience, individuals construct prototypes—idealized representations of the most typical member of a category. (In cognitive science, a category is a class of objects or events that seem to belong together, while a concept is a mental representation of this category; Smith, 1995). Newly encountered stimuli or events are compared with existing prototypes to determine whether they belong to specific categories. With respect to opportunity recognition, prototype models suggest that individuals compare events or stimuli they have observed with their existing prototypes of “business opportunity.” The closer the match, the more likely they are to conclude that they have identified an opportunity. Much evidence suggests that prototypes do indeed exist and are frequently utilized by individuals, so they may well play a role in the process of opportunity recognition.

An alternative model of pattern recognition emphasizes the importance of specific knowledge rather than idealized, highly typical prototypes. Such exemplar models (Hahn & Chater, 1997) suggest that as individuals encounter new events or stimuli, they compare them with specific examples (exemplars) of relevant concepts already stored in memory. For instance, an individual’s concept of “business opportunity” would not consist solely of an idealized representation of the most typical “business opportunity” he or she can imagine (a prototype); rather, it would be composed of numerous examples of “business opportunities” this person has actually encountered.

Overall, research in cognitive science suggests that both prototype and exemplar models may be necessary to fully understand how individuals identify complex patterns (Knowlton, 1997). For example, some findings suggest that initially, before they gain expertise in a specific area, individuals may rely heavily on prototypes but that later, after they gain expertise in a given domain, they may shift to greater reliance on exemplars, which allows them to perform the process of identifying complex patterns (“business opportunities”) in a less effortful, more automatic manner (e.g., Johnson & Mervis, 1997).

Are The Perceived Patterns Real? Pattern Verification

Perception is always a probabilistic process. While some stimuli in the external world are so clear that they will be recognized by virtually everyone, many others are weaker and less
distinct, so that recognizing them is far less certain. Moreover, as a result of underlying biological processes, sensitivity varies over time, so that a specific individual may perceive a given stimulus at one time but fail to perceive it at another time. These principles also apply to pattern recognition. While some patterns are so clear as to leave little room for error, many others are far more subtle and difficult to observe. This suggests that in many instances, individuals will be uncertain as to whether they have, or have not, perceived a pattern constituting a business opportunity. How do they then decide whether the pattern they have tentatively identified is indeed real? Several cognitive theories are relevant to this task, but one that seems especially applicable is signal detection theory (Swets, 1992).

This theory suggests that whenever individuals attempt to determine whether a stimulus is present or absent, four possible outcomes exist: the stimulus is actually present and the perceiver recognizes this fact (a hit or correct identification); the stimulus is present but the perceiver fails to recognize it (a miss); the stimulus is absent and the perceiver concludes, erroneously, that it is present (a false alarm); the stimulus is absent and the perceiver correctly concludes that it is absent (a correct negative or correct rejection).

The theory further notes that many factors determine the relative rate at which individuals experience hits, misses, and false alarms in any given situation. Some of these relate to the properties of the stimuli themselves (e.g., the stronger the stimulus, in physical terms, the easier it is to be certain that it is present). Additional factors relate to the current state of the perceiver (e.g., is this person fatigued? highly or weakly motivated to be alert and observant?). Still other factors involve the subjective criteria perceivers apply to the task. These can be set high or low, depending on the relative benefits of hits, misses, and false alarms. For instance, if an entrepreneur has identified an opportunity that can be started in her spare time and requires little capital, it makes sense to set her subjective criterion for concluding “This is a good business opportunity” quite low. The costs of a false alarm are minimal (a little wasted time and effort) while potential profits from a hit are large. In contrast, if an entrepreneur has identified an opportunity that cannot be pursued on a part-time basis and for which large amounts of start-up capital are required, it makes sense to set the criterion for concluding “This is a good opportunity” somewhat higher. The costs of a false alarm are very high and potential rewards are reduced by the large proportion of equity that will be owned by investors.

Signal detection theory further suggests that whether entrepreneurs set their subjective criteria for concluding “This is a real opportunity” relatively low or relatively high may also be influenced by other factors, such as their motives and traits. For example, entrepreneurs who are strongly motivated to minimize risks may set their subjective criteria high, while those who are relatively tolerant of risk and more concerned about overlooking bona fide opportunities may set their criteria lower (e.g., Busenitz & Barney, 1997; Miner & Raju, 2004).

In sum, signal detection theory describes several mechanisms through which individuals decide that a pattern of events or stimuli they have tentatively identified as a “business opportunity” is real—close enough to their concept of “business opportunity” to warrant further consideration. Only when they reach this conclusion do they proceed to subsequent phases of the process, such as actually starting a new venture.

IMPLICATIONS OF A COGNITIVE PERSPECTIVE FOR FUTURE RESEARCH

As noted elsewhere by the present author (e.g., Baron, 2004), a cognitive perspective can assist the field of entrepreneurship in answering several of its basic questions. In this final
section, implications of the present model for one such question—“Why are some persons better at recognizing opportunities than others?”—will be considered.

The Cognitive Perspective and Contrasting Abilities to Recognize Opportunities

That some individuals are better at identifying opportunities than others is clear. Moreover, some research findings suggest that such differences can play a role in the success of new ventures (Baum, Locke, & Smith, 2001). The cognitive model proposed here offers several insights into the possible origins of such differences. First, individuals who are highly successful at opportunity recognition (e.g., repeat or serial entrepreneurs) may possess better-developed prototypes for opportunities, or draw upon a richer store of exemplars relevant to this task, than do other persons. This, in turn, can enhance their ability to recognize opportunities.

Second, recent findings in cognitive science suggest that working memory, the cognitive system in which stored knowledge and experience interacts with newly encountered information, may play a key role in the performance of many complex tasks, such as reasoning and identifying complex patterns (e.g. Engle, Tuholski, Laughlin, & Conway, 1999). Additional research suggests that this may be the case because the more effectively working memory operates, the greater is individuals’ ability to focus their attention on what is important and relevant in a given situation (Engle, 2001). It seems possible that individuals who are adept at recognizing opportunities may possess more efficient working memories than other persons, and this, in turn, provides them with an important edge in relating newly encountered events or stimuli to information already present in semantic memory, including information pertaining to the concept “business opportunity.” Research methods for investigating both of these hypotheses exist in the field of cognitive science, and can readily be adapted for use in the field of entrepreneurship.

Concluding Comments: Further Thoughts on The Value of a Cognitive Perspective

The main point of this paper can be succinctly stated: a cognitive perspective can provide valuable insights into the nature of opportunity recognition. To the extent this is true, several important benefits may then follow. For example, opportunities sometimes exist for years or even decades before they are recognized or exploited. Enhancing opportunity recognition by current or potential entrepreneurs could, therefore, speed the flow of useful, new products or services to society—a highly desirable outcome.

Similarly, although emphasis is often placed on the personal wealth acquired by entrepreneurs, it is important to note, as Venkataraman (1997) has suggested, that entrepreneurs often create wealth for their societies as well as themselves. Enhancing entrepreneurs’ opportunity recognition, therefore, has the potential to yield important social benefits.

To conclude: It is suggested here that specific persons recognize opportunities because they possess cognitive frameworks that help them to “connect the dots” between diverse and seemingly unrelated changes and trends in the external world. By explicating the nature of these cognitive frameworks and the manner in which they influence recognition of the complex patterns that are the core of opportunity recognition, the model offered here can contribute to our understanding of this basic and crucial aspect of the entrepreneurial process.


