

COGNITION AND ENTREPRENEURSHIP: THE EXPERTISE APPROACH

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Origins

Research connecting cognition and entrepreneurship in the entrepreneurship research literature arose as a solution to an impasse that reached its high point in the mid 1980's. The reason for the impasse? Personality-focused entrepreneurship research was the victim of several studies which falsified the claim that people become entrepreneurs due to their personality traits. Researchers found that several common traits (e.g., need for achievement, risk-taking propensity, high locus of control) were found to be no different in managers than they were in entrepreneurs. This led entrepreneurship scholars to wonder: Where is the entrepreneur in entrepreneurship research?

Meanwhile, strategy-focused entrepreneurship research in the mid-1980's was providing a viable alternative, showing that industry structure and venture strategy was related to entrepreneurial firm performance. But these findings were at the firm level. So the search was on for how entrepreneurs – as individuals – mattered in entrepreneurship explanations. In the ensuing decade (by the mid 1990's) two approaches were emerging to explore an explanation that put the "E" back into entrepreneurship. The new premise? Entrepreneurs DO influence the venturing process, not through their personalities as originally thought, but through their thinking – through entrepreneurial cognition. Two early approaches at this point in time suggested that individual entrepreneurs can be distinguished by their thinking patterns: (1) entrepreneurial cognitions based upon heuristics and biases, and (2) entrepreneurial cognitions based upon entrepreneurial expertise.

Heuristics and biases. The heuristics/ biases approach to understanding entrepreneurial cognition argues as follows: that because individuals use simplifying strategies to make decisions, and because individuals and situations vary in the extent to which these decision shortcuts are used, entrepreneurial decision making is subjective, influenced by beliefs in specific problem-solving methods, and based on informal processes and experience. The positive findings in this research stream suggest that entrepreneurs may regularly find themselves in situations that tend to maximize the potential impact of heuristical or biased cognition, where entrepreneurs make significant leaps in their thinking leading to innovative ideas that are not always linear and fact-based. This argument suggests that entrepreneurs are more susceptible to biased cognitions (e.g., representativeness errors, affect infusion, planning fallacies, and illusion of control errors); but also show reduced susceptibility to certain other cognitive biases (e.g., sunk cost avoidance). Effectively, then, heuristic/bias-based entrepreneurial cognition is thought to enable entrepreneurs to make sense of uncertain and complex situations more quickly and, when compared to more orthodox approaches to decision making, may also expedite the learning needed to make better entrepreneurial decisions.

Entrepreneurial expertise. The other approach (the one that has been the primary focus of my research over the past two decades, and which is the primary subject of this invited essay),

uses the idea of entrepreneurial expertise to explain entrepreneurial cognition. The expertise approach relies upon expert information processing theory to examine differences in decision-making between entrepreneurs and non-entrepreneurs; and it traces its roots to the following idea: that entrepreneurs develop unique knowledge structures and process information differently (they transform, store, recover, and use information differently than non-entrepreneurs). Thus, the expertise approach suggests that entrepreneurs prevail in the face of uncertainty due to their “entrepreneurial” expertise. Entrepreneurial expertise is considered to be a specialized type of cognition – manifesting itself when compared to nonentrepreneurs in differences in the way an entrepreneur’s mind processes information.

According to expert information processing theory, entrepreneurs are “experts” in the specialized thinking domain of entrepreneurship. Those who possess entrepreneurial cognitions (also referred to as entrepreneurial scripts or entrepreneurial knowledge structures) are enabled to use information in the marketplace significantly better than non-experts/ non-entrepreneurs. The expertise literature suggests that experts perform at or above 2 standard deviations beyond the mean in the population at large; and the expertise branch of entrepreneurial cognition theory suggests that entrepreneurs are thus a type of cognitive “outlier” in the domain of business.

However, recent developments in cognitive psychology suggest that the heuristics/ biases approach and the expertise-based approach take a somewhat static view of cognition in general. As research in entrepreneurial cognition has grown in volume and interest, there has also been some movement in entrepreneurial cognition research toward more dynamic views, and away from the static view. As discussed in the next section, the research on entrepreneurial expertise has also followed this course more closely than may previously have been supposed.

The Entrepreneurial Expertise Research Stream

The entrepreneurial expertise research stream began with a static view of cognition, primarily because it relied upon an information processing theory logic for describing cognition: an input, processing, and output approach. Under these assumptions, an entrepreneur’s mind is considered to be the processing “box” that remains relatively static as it handles the inflows and outflows of information, with the mind processing inputs according to: (1) problem solving processes and (2) knowledge bases, each resident within a given mind at a given point in time. Then, this mind is thought to output decisions or actions based on what was contained in that “processing box” at the time the input arrived. More recently in the cognitive psychology literature, such static-type approaches have come to be termed “boxologies.” Research on entrepreneurship and cognition has been moving away from the static boxology view toward more dynamic views represented by such approaches as, for example, socially situated cognition theory.

The exploration pathway of the entrepreneurial expertise research, as I have conducted it, has followed this movement from static to dynamic; and consequently has required a progressively more-complex critical-thinking approach as it has developed over the years – delving ever more deeply into the complexities of entrepreneurial cognition. Accordingly in this section of the essay, as requested, I have summarized my contributions to entrepreneurial expertise research according to the six critical-thinking levels suggested in Bloom’s taxonomy¹: knowledge, comprehension, application, analysis, synthesis, evaluation – with knowledge and

¹ Benjamin S. Bloom 1956. Taxonomy of educational objectives. Published by Allyn and Bacon, Boston, MA. Copyright © 1984 by Pearson Education

comprehension forming the simpler foundation elements; application and analysis constituting the more-detailed elaboration; and synthesis and then evaluation representing research at ever higher levels of complexity.

Knowledge and comprehension. At the knowledge and comprehension level of critical thinking, work centers on definition, interpretation, and translating from one medium to another. Four knowledge and comprehension-focused works (1994 – 1999) explored the composition, classification, and creation of new venture formation expertise, the first of these² suggesting: (1) that three primary variables affect new venture formation: arrangements scripts, willingness scripts, and opportunity-ability scripts (composition); (2) that expert entrepreneurs could be distinguished from novices on the basis of their cognitive entrepreneurial scripts (classification); and (3) that these scripts could be altered based upon experiential learning (creation). In 1995, the outlines of an experiential pedagogy based upon expertise creation through experiential learning were proposed and tested,³ the results showing that non-entrepreneur students' entrepreneurial expertise could be enhanced through experiential participation, journal-keeping in the form of metacognitive (thinking about thinking) flowcharts that document the sequences and norms of the participative experience, and group-level cross-checking of fellow students' experiences.

However at that time, the boundaries of entrepreneurial expertise research were fuzzy, which suggested that in-depth interviews with entrepreneurs about where (for example) emotion and trauma might fit into theories of entrepreneurial cognition, based upon the information processing model. This 1996 study explored success and failure as it applies to entrepreneurs' expertise, and was helpful in better understanding the role of fear and failure in the development of entrepreneurial cognitive scripts.⁴ These findings, in turn, provided early intimations that powerful factors such as cultural values (e.g. power distance, individualism, uncertainty avoidance, masculinity, and time orientation) might also be influential in the nature of entrepreneurial cognitions. Consequently, a pilot study was conducted and reported (1999)⁵ to further identify the theoretical boundaries of cultural-value influence. This exploration centered on the components of entrepreneurial expertise, which were divided into various dimensions based on theory, and examined using 39 boundary-setting hypotheses. As a result of the foregoing foundation-laying studies, the subsequent application of the theory was then possible. Expertise-based entrepreneurial cognition theory was therefore applied to a variety of contexts, each different, to ascertain the creditability level of the expertise theory of entrepreneurial cognition. Also during this period, Saras Sarasvathy (unknown to the author at the time – circa 1998) was also exploring entrepreneurship using the expertise lens.

Application and Analysis. The application and analysis level of critical thinking captures (respectively), work that examines and tests information to produce some result (application),

² Mitchell, R. K. 1994. The composition, classification, and creation of new venture formation expertise. Management Department. Salt Lake City, UT: University of Utah.

³ Mitchell, R. K., & Chesteen, S. A. (1995). Enhancing entrepreneurial expertise: Experiential pedagogy and the entrepreneurial expert script. Simulation & Gaming, 26(3), 288-306.

⁴ Mitchell, R. K. (1996). Oral history and expert scripts: Demystifying the entrepreneurial experience. Journal of Management History, 2(3), 50-67.

⁵ Morse, E. A., Mitchell, R. K., Smith, J. B., Seawright, K. W. (1999). Cultural values and venture cognitions on the Pacific Rim. Global Focus (formerly Business and the Contemporary World) volume 11(4): 135-153, Dec. 1999.

and work which derives underlying structure (analysis). As the expertise approach to cognition and entrepreneurship began to develop further, a series of additional studies (2000 – 2005) involved application and analysis of the entrepreneurial expertise approach, and thereby continued the advancement of expertise-focused entrepreneurial cognition theory. For example, in 2000, the application of the expertise approach to the analysis of Pacific-rim data introduced the idea to the literature that despite cultural values, the pervasiveness of entrepreneurial scripts in multiple and different country-cultures suggested the existence of a “universal” culture of entrepreneurship.⁶ Further analysis of these data also revealed (surprisingly) that regardless of the universality of entrepreneurial scripts across the country-cultures found in this sample, there also existed significant differences based upon cultural values.⁷ Furthermore the differences identified were shown to be supportive of a cross-culture typology that could distinguish among the predominant expertise dimensions (i.e., arrangements, willingness, and opportunity ability scripts), those that are to be expected in various country-cultures.

These applications of expert entrepreneurial cognition theory formed part of groundwork that led to the additional theory building which occurred at the Victoria (BC, Canada) Conference on Entrepreneurial Cognition (2002), from which several likely implications arose requiring further investigation. Among these implications were the development of theory to support revisiting the role of “people” in entrepreneurship theory,⁸ the demarcation of the distinctiveness/inclusiveness boundary in the domain of entrepreneurial cognition research,⁹ and theoretical exploration of global entrepreneurial cognition-¹⁰, family business cognition-¹¹, cognition and intuition-¹², and global entrepreneurial cognition education¹³-based analyses, each of which being helpful in further developing the theoretical structure of expert entrepreneurial cognition approach. A brief description of these exploratory theoretical analyses follows in the next few paragraphs.

⁶ Mitchell, R. K., Smith, J.B., Seawright, K. W., Morse, E. A. (2000). Cross-cultural cognitions and the venture creation decision. Academy of Management Journal 43(5) Oct. 2000: 974-993.

⁷ Mitchell, R. K., Smith, J. B, Morse, E. A., Seawright, K. W., Peredo, A-M, McKenzie, B. (2002). Are entrepreneurial cognitions universal? Assessing entrepreneurial cognitions across cultures. Entrepreneurship Theory & Practice, 26(4), Summer, 2002: 9-32.

⁸ Mitchell, R. K., Busenitz, L., Lant, T., McDougall, P. P, Morse, E. A., Smith. (2002) Entrepreneurial cognition theory: Rethinking the people side of entrepreneurship research. Entrepreneurship Theory & Practice; Volume 27(2), Winter 2002: 93-104.

⁹ Mitchell, R. K., Busenitz, L., Lant, T., McDougall, P.P, Morse, E. A., Smith. (2004). The distinctive and inclusive domain of entrepreneurial cognition research. Entrepreneurship Theory & Practice; Volume 29(2), Winter 2004: 505 – 518.

¹⁰ Mitchell, R. K. (2003). A transaction cognition theory of global entrepreneurship. In J. A. Katz and D. Shepherd, Cognitive Approaches to Entrepreneurship Research. In JAI Press: Advances in Entrepreneurship, Firm Emergence and Growth Entrepreneurship Series, Vol. 6: 183-231.

¹¹ Mitchell, R. K., Morse, E. A., Sharma, P. (2003). The transacting cognitions of non-family employees in the family business setting. Journal of Business Venturing 18(4): 533 – 551.

¹² Mitchell, J. R., Friga, P., Mitchell, R. K. (2005). Untangling the intuition mess: Intuition as a construct in entrepreneurship research. Entrepreneurship Theory and Practice Volume 30 (November): 653-679

¹³ Mitchell, R. K. (2005). Tuning up the value creation engine: On the road to excellence in International Entrepreneurship Education. J. A. Katz and D. Shepherd, Cognitive Approaches to Entrepreneurship Research. In JAI Press: Advances in Entrepreneurship, Firm Emergence and Growth Entrepreneurship Series, Vol. 8: 185-248.

The objective of the paper exploring global entrepreneurial cognition¹⁰ was to investigate and identify a theory of entrepreneurial cognition that crosses borders. This paper defined global entrepreneurship as the creation of new (value-adding) transactions or transaction streams anywhere on the globe; and it presented a transaction cognition theory of global entrepreneurship to open a path for globally-focused entrepreneurship research. The proposed theory was examined critically for its capability for explanation, theoretical and operational utility, and verifiability through the logic of scientific inference.

The paper on family business cognition analyzed the family and business interface by taking a cognitive approach to explore the expertise needed for non-family employees to function within a family business.¹¹ This theoretical analysis demonstrated how the transacting cognitions expected of non-family employees are substantially more demanding in family business than in business in general. By suggesting that a family business is fundamentally an intersection of two systems, it was then possible to derive the cognitions expected of non-family employees when working within family business, and to relate transacting expectations to family vs. business system. This analysis suggested that what scholars have heretofore considered to require a simple additive explanation (i.e., understanding family business = business thinking + family thinking) is really a factorial-based explanation that dramatically increases with the number of new parties added. In this paper, ten cognitions/ mental maps were shown to be needed for effective transacting by a non-family employee in family business—requiring far more cognitive capability and understanding than had previously been supposed. By systematically identifying the extent of cognitive complexity experienced by non-family employees, factors within the cognitive situation that could improve family/ non-family compatibility were identified, and suggested for future entrepreneurial cognition research.

The result of the analysis reported in the paper on entrepreneurial intuition was to propose a definition of entrepreneurial intuition that departed from the strict information processing view of expertise-based entrepreneurial cognition, and yet was more explicit than prior studies about the mechanisms involved. Instead, a model that represented intuition as more of a process than as a processing “box” was proposed, based upon levels-of-consciousness research from cognitive psychology. In this paper,¹² entrepreneurial intuition was defined to be: *the dynamic process by which entrepreneurial alertness cognitions interact with domain competence (e.g., culture, industry, specific circumstances, technology, etc.) to bring to consciousness an opportunity to create new value.* This analysis proposed theory to help to organize approaches to studying the complex phenomenon of entrepreneurial intuition, with the specific goal in mind of contributing to progress in the explanation of entrepreneurial intuition-based variance.

And in the paper which focused on global entrepreneurship education,¹³ the expertise view of entrepreneurial cognition was employed to argue that prevailing beliefs about entrepreneurs actually limit the emergence of entrepreneurs within society. This limitation occurs because current beliefs about entrepreneurs (that they are born “special”) limit a way of thinking that may otherwise be virtually unlimited when viewed in the light of the emerging deliberate practice explanation for the acquisition and successful employment of specialized knowledge. The deliberate-practice approach considers expert entrepreneurial cognition to be a domain expertise that can be taught and learned. This paper therefore argues that as a global society we have in certain ways been wrong in our approach to entrepreneurship education (looking for the special outlier), and that as a result that current entrepreneurship education approaches (for example, business-plan sifting for “gold”) are out of date – or at least imprecise in their effectiveness. In

this paper, the argument is presented that, while entrepreneurs ARE special, creating them is general—that there is, in actuality, a commonly available process for creating the entrepreneurial expertise: the “practice school” of entrepreneurship education for the creation of global entrepreneurs. In the past, the entrepreneur-emergence process has been viewed to be an uncommon and somewhat inaccessible process; whereas the new view – based upon the expert entrepreneurial cognition approach – is readily accessible to those who are willing and able to deliberately practice the needed expertise-enhancing skills with sufficient intensity, for sufficient duration, and using content that comports accurately with the knowledge bases and problem solving processes used by practicing entrepreneurs.

This broad application and analysis/theory building phase then set the stage for research that could begin to pull together the expert entrepreneurial cognitions approach with other entrepreneurial cognition-based approaches. This synthesis could then further distill the theory development and empirical work from the preceding “decade-plus,” and could further set the stage for a more-precise examination of the complex implications of entrepreneurial expertise-focused cognition theory in a variety of new contexts, to address additional research questions.

Synthesis. The synthesis level of critical thinking consists of work that combines a variety of ideas to form a new whole. One of the focal points that has needed synthesis as the entrepreneurial cognition research stream has gained momentum, has been the need, at some point, to specify the central question in entrepreneurial cognition research¹⁴ – as a potential meeting point for work that intended to further expand and contribute to the entrepreneurial cognition literature. At this point in time (2006 – 2011) synthesis-focused research was enabled to make a contribution included several empirical studies that considered expertise-based entrepreneurial cognition: (1) in the context of opportunity formation,¹⁵ (2) in the cross level context of entrepreneurial phenomena,¹⁶ (3) in situations where the institutional environment varies,¹⁷ and (4) in the examination of specialized group cognitions (specifically franchisee cognitions) to empirically delineate the theoretical boundaries of entrepreneurial v. managerial thinking patterns.¹⁸ A brief description of these four synthesis-focused empirical analyses follows.

The paper on opportunity formation,¹⁵ in a synthesis that extended the boundary setting qualitative research reported over a decade earlier,⁴ examined the extent to which the recognition of new venture failure impacts entrepreneurial thinking, and specifically explored the implications of the interaction between failure recognition and the entrepreneurial cognitions surrounding an entrepreneur’s decision to continue or abandon opportunity creation efforts. The

¹⁴ Mitchell, R. K., Busenitz, L., Bird, B., Gaglio, C. M., McMullen, J., Morse, E., Smith, B. (2007). The central question in entrepreneurial cognition research 2007. Entrepreneurship Theory & Practice, (January 2007): 1-27.

¹⁵ Mitchell, R. K., Mitchell, J. R. Smith, J. B. (2008). Inside opportunity formation: Enterprise failure, cognition, and the creation of opportunities. Strategic Entrepreneurship Journal 2: 225-242.

¹⁶ Smith, J. B., Mitchell, J. R., Mitchell, R. K. (2009). Entrepreneurial scripts and the new transaction commitment mindset: Extending the expert information processing theory approach to entrepreneurial cognition research. Entrepreneurship Theory & Practice, (July 2009): 815-844.

¹⁷ Lim, D. S. K., Morse, E. A., Mitchell, R. K. (forthcoming 2011). Institutional environment and entrepreneurial cognitions: A comparative business systems perspective. Entrepreneurship Theory & Practice.

¹⁸ Smith, I., Mitchell, R. K., Seawright, K. W., McClendon, R. J. (forthcoming 2011). Exploring entrepreneurial cognition in franchisees: A knowledge-structure approach. Entrepreneurship Theory & Practice.

results suggest that recognition of failure does indeed impact entrepreneurs' cognitions and that, by extension, such recognition can enable opportunity creation. This synthesis empirically and explicitly links the opportunity creation and the entrepreneurial cognition literatures.

Another key area where entrepreneurship research can benefit from synthesis is in the exploration of the inherent nature of entrepreneurship to cross levels of analysis. Entrepreneurs affect firms; but their thinking can also affect entrepreneurial behavior at the industry and economy levels of analysis. The paper that expands entrepreneurial cognition research across levels¹⁶ accomplishes its synthesis by: (1) clarifying the nature of the relationship between entrepreneurial expert scripts and constructs that might represent an entrepreneurial mindset at the individual level of analysis, (2) identifying analogous relationships at the economy level of analysis where the structure found at the individual level informs an economy-level problem, (3) presenting a NAFTA-based illustration analysis to demonstrate the extent to which cognitive findings at the individual level can be used to explain economy-level phenomena, and (4) extrapolating from the analysis some of the ways in which script-based comparisons across country or culture can inform the more general task of making information processing-based comparisons among entrepreneurs across other contexts.

A third current zone of interest that benefits from a synthesis-focused empirical analysis of expertise-based entrepreneurial cognition, is to investigate the relationship between the institutional elements of the social environment and the entrepreneurial cognitions that lead to the entrepreneur's venture creation decision. The study reported in this paper¹⁷ examined the extent to which institutions influence venture creation decisions, where entrepreneurial expert scripts act as a mediator. Results show that various institutional elements, such as the legal and financial systems, affect two key entrepreneurial expertise constructs: venture arrangements and willingness scripts. Venture arrangements scripts, in turn, are shown to have a significant impact on an individual's venture creation decision.

Another zone of interest that can now benefit from development of expertise-focused entrepreneurial research is the examination of another boundary: where the distinction between entrepreneur and non-entrepreneur can be empirically examined based upon the thinking of the individuals in question. One salient question that has been problematic for entrepreneurship researchers is the extent to which those who operate franchises – especially those who buy the franchise and start up the business – are to be considered entrepreneurs. This is because franchisees participate in new business creation uniquely, i.e., in many respects, the development of franchisee ventures is under the direction of franchisors. In this study entrepreneurial scripts were used to compare the extent to which the cognitions connected to franchisee venturing are similar to and/ or distinct from individual-based entrepreneurial cognitions in non-franchise new ventures. By examining the entrepreneurial scripts of franchisees compared to two counterpart groups: independent entrepreneurs and managers (neither franchisee nor entrepreneur) franchisees were found to be less like entrepreneurs and more similar to non-entrepreneur managers. This synthesis has implications for the further examination of highly complex and interrelated systems such as those represented by franchising, where different entities perform different entrepreneurial tasks – but share in the outcomes. Expertise-based entrepreneurial cognition research has enabled such distinctions to be better made, and hopefully better understood.

Synthesis also includes the combination of the ideas developed in expertise-based entrepreneurial cognition theory to serve practice. This combination has taken two forms to

date: the first, a merger of the key ideas into a book on public policy – specifically policies directed toward the improvement of aboriginal economic development.¹⁹ This synthesis suggests the manner in which expertise-developed entrepreneurial cognitions can be made a part of a larger legal-social system, which when taken together and understood comprehensively, can provide guidelines for addressing some of the most difficult economic problems faced in modern economies, where demographic pockets of first peoples battle to retain culture, while achieving economic independence.

The second, the creation of a university-instruction focused casebook,²⁰ was designed to train students who desire to begin to acquire expertise in entrepreneurial thinking. This casebook combines a systematic view of expert entrepreneurial cognition development, to explain how the venture creation process: searching, screening, planning, financing, setup, startup, and ongoing operations can be invoked by the acquisition and practice of specific entrepreneurial skills.

But where does this progress of expert entrepreneurial cognition research: from developing knowledge/comprehension, through application/analysis, and further onward through synthesis, leave the entrepreneurial cognition field in 2011? This is where evaluative-level critical thinking has a role to play, as the work to date is considered for its import and usefulness.

Evaluation. Evaluation level critical thinking centers on making considered decisions or judgments about issues, assertions, or work. As the expertise-focused view of entrepreneurial cognition has developed, it has had its weaknesses and limitations, which must also enter into the evaluation so that further advancement of the field can be based upon a critically-salient foundation.

One limitation that has emerged concerns the extent of the explanations that the expertise-based cognitive approach offers. While it might be granted that this approach has been successful in reintroducing the entrepreneur into the entrepreneurship calculus, it should not be assumed that in doing so, the remaining unexplained variance in, for example, the emergence of entrepreneurs or the success of their ventures, should be now acceptable. A second limitation concerns the inherent measurement weaknesses in cognition research, because the phenomena in question are not directly observable. Hence, the use of physiologically-based methods (e.g. PET scans, eye movements, etc.) or symbolically-based methods (e.g. protocol analysis, script cue recognition,²¹ etc.) are, as yet, quite imprecise – and improvements in measurement are highly likely to contribute to further improvements in theory. A third possible limitation may be to assume – because the static view of entrepreneurial cognition has its weaknesses – that findings based upon use of this theoretical lens are no longer applicable. It may be possible that findings based upon static-view theory can still be somewhat prescriptive, while remaining weak in

¹⁹ Mitchell, R. K., Allen, W. G. (2003). Chapters 1, 2.2, Appendix A – New models for Native economic development: 1-22; Governance in support of on-reserve market institutions: The rationale for a prosperity code: 163-182; Assessing stakeholder interests in prosperity and cultural well-being: 37-46. In C. Nyce (Ed.) Masters in our own house: The path to prosperity, Terrace, BC: Skeena Native Development Society.

²⁰ Morse, E. A., Mitchell, R. K. (2005). Cases in entrepreneurship: The venture creation process (ISBN 1-4129-0976-7). Thousand Oaks: Sage Publications.

²¹ For a complete explanation of the script-cue recognition method, please see: Mitchell, R. K., Mitchell, B. T., Mitchell, J. R. (2009). Entrepreneurial scripts and entrepreneurial expertise: The information processing perspective. In Understanding the Entrepreneurial Mind: Opening the black box, pp. 97-140. Alan L. Carsrud and Malin Brännback (Eds.) New York: Springer Publishing Company.

description according to more recent theory. This assertion notwithstanding, however, the more dynamic views have much to offer in the task of evaluation.

Thus, while the static view of cognition has served an important purpose in drawing the attention of entrepreneurship researchers to the part played by individuals in entrepreneurship, observations from the developing literature continue to suggest that entrepreneurial cognitions are dynamic. For example, a growing number of articles have focused on entrepreneurial cognition that is: (1) action-oriented, and demonstrates a direct relationship between cognition and entrepreneurial enactment; (2) ‘embodied,’ in the sense that there is a reflexive linkage between the physical brain and body such that body and entrepreneurial cognitions are closely interwoven; (3) shaped by the communicative, relational, and group context within which an entrepreneur is situated; and (4) distributed among other people’s minds to the extent that interactions with others affect the construction of meaning about a new venture.²²

Thus, at this point in time (2011) a reevaluation of the field of entrepreneurial cognition away from static views and toward the more-dynamic view represented by the socially situated cognition approach is underway. Such dynamic approaches provide both catalyst and frameworks for the continuing emergence of “post-boxology” entrepreneurial cognition research.

The Future of Entrepreneurial Cognition Research

With the introduction of dynamic-view possibilities, the discussion is drawn to consider the future of entrepreneurial cognition research – especially as the dynamic view might apply to extending and refining the entrepreneurial expertise branch of this stream. In conclusion, I offer a few comments regarding the potential for: the dynamic view of entrepreneurial cognition, linking entrepreneurial cognition research more closely to the opportunity creation research stream, and examining the implications for a possible dynamic view of entrepreneurial expertise; and then conclude the essay.

The dynamic view of entrepreneurial cognition. Where the cognition of entrepreneurs is theorized to be reflexive: to be shaping and yet shaped by real-time situations, then it stands to reason that entrepreneurial cognition research will, of necessity, need to develop – and build upon – theories and methods that can accommodate the research required. There presently exists within the very recent entrepreneurship literature, research which proposes and in some cases tests theories of entrepreneurial action and entrepreneurial effectuation, theories that consider the attributes of an entrepreneur’s physical self – the embodiment thesis, theories suggesting social context implications, and theories of distributed cognition.²² These articles form a new foundation upon which another phase of research can build. It seems likely that the field of entrepreneurial cognition research is again – full circle – at the knowledge and comprehension stage of renewed and revitalized critical thinking about dynamic entrepreneurial cognition.

Linkage to opportunity creation research. The opportunity creation process represents one of the current puzzles that entrepreneurial cognition researchers can take on with some promise of fruitful results. Opportunity formation has been linked to entrepreneurial cognition.¹⁵ However, while there has been theoretical speculation regarding the process whereby an opportunity is actually formed, little empirical research exists to suggest how an opportunity is created – and more specifically, what factors affect, for example, rates of creation. It has long

²² Mitchell, R. K., Randolph-Seng, B., Mitchell, J. R. (forthcoming 2011). Socially situated cognition: Imagining new opportunities for entrepreneurship research. *Academy of Management Review*.

been understood by psychologists that thought and action are intertwined; and therefore it remains for researchers working in the future of entrepreneurial cognition research to theorize, design, study, and discover the cognitive factors that can relate specific entrepreneur cognitions to opportunity creation capabilities.

A dynamic view of entrepreneurial expertise? In the foregoing essay, the critical-thinking pathway for the development of the entrepreneurial expertise view of entrepreneurial cognition has been presented in a chronological format that can be interpreted to have moved from knowledge and comprehension, through application and analysis, on through synthesis, and to evaluation. One of the early criticisms of this approach was that the static view of expertise and scripts was an inadequate representation of role that entrepreneurial knowledge structures/ scripts play in new venture formation. As may be observed by the research summarized herein, this criticism was not entirely out of place; principally because the relatively sparse early (and later) work which demonstrated/ suggested the malleability of entrepreneurs' scripts/ cognitions was either overlooked or discounted, possibly due to its locus of publication.^{3,13}

Also, as conceptualized, the cross-sectional nature of the measurement and testing, is not suitable to refute this criticism. Nevertheless, the author has continued to observe that as novices engage in experiential learning and also in very specific deliberate-practice activities, the content, level of script cue recognitions, and complexity of novice scripts change.²³ It is thus a likely hypothesis that the power of the dynamic view (e.g. situated cognition theory) may possibly be quite applicable to expertise-based entrepreneurial cognition research. It is the author's "hunch" that the expertise-based view is not a truly static view of entrepreneurial cognition after all; but rather, that in its early stages of development the language within the literature was simply insufficient to convey dynamic attributes effectively.

Conclusion. So what are we to conclude about what expertise-based entrepreneurial cognition research can contribute to the question why people become entrepreneurs? Based upon the research summarized in this essay, we may at least conclude the following:

- Entrepreneurial cognition is associated with the explanation of why some people become entrepreneurs and not others.
- Expertise-based entrepreneurial cognition theory can explain at least some of the variation in individual-level entrepreneurship.
- There is a great deal of variation in the individual decision making that surrounds individual-level entrepreneurship.
- While some of the variation is explained by the expertise branch of entrepreneurial cognition research; the predominant portion remains under- or unexplained.
- Further explanations are likely as the dynamic view of entrepreneurial cognition is operationalized, and as measurement methods improve to match advances in theory.

It is therefore opportune to have the chance to offer this summary of the expertise approach to entrepreneurial cognition to the field. There is much yet to be done, however; and a great deal of it is possible now. The expertise-focused view of entrepreneurial cognition research has theory and methods that are current, effective; and I believe that it offers a helpful platform from which future research can be launched.

²³ Mitchell, J. R., Gustavsson, V., Smith, B., Davidsson, P., Mitchell, R. K. (2005). Thinking about thinking about thinking: Exploring how entrepreneurial metacognition affects entrepreneurial expertise. Frontiers of Entrepreneurship Research.