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A TRANSACTION COGNITION THEORY OF GLOBAL ENTREPRENEURSHIP

Ronald K. Mitchell

ABSTRACT

Global entrepreneurship may be defined to be the creation of new, value-adding transactions or transaction streams anywhere on the globe. The objective of this chapter is to present and examine a theory of global entrepreneurship. At the World Economic Forum held in Davos, Switzerland, in January 1999, UN Secretary General Kofi Annan called for global entrepreneurship to meet the needs of the disadvantaged and the requirements of future generations. This chapter first presents a transaction cognition theory of global entrepreneurship that is intended as a path for research that responds to this call. Second, this chapter examines the theory from three critical viewpoints: (1) capability for explanation; (2) theoretical and operational utility; and (3) verifiability through the logic of scientific inference, and presents likely propositions that are surfaced by the analysis. Finally in this chapter, some of the likely implications of this theory within the context of globalization are discussed.

INTRODUCTION

It has been suggested that global entrepreneurship is: *the creation of new, value-adding transactions or transaction streams anywhere on the globe* (Mitchell,

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Smith, Morse, Seawright, Peredo & McKenzie, 2002). Until it was understood within the scholarly community that a new global economy had emerged (Friedman, 2000), traditional entrepreneurship theory – especially in the West – focused on such definitions of entrepreneurship as “the creation of new ventures” (Low & MacMillan, 1988) and “the pursuit of opportunity without regard to resources currently controlled” (Stevenson & Jarillo, 1990). Questions have arisen within the global scholarly community about how such Western definitions apply in the global setting (Busenitz & Lau, 1996; Hofstede, 1994; McDougall & Oviatt, 1997). Entrepreneurship scholars throughout the world are reaching the inescapable conclusion that, with the globalization of the world’s economy, they also need to globalize entrepreneurship theory (McDougall & Oviatt, 2000).

In this chapter I explain how global entrepreneurs use planning, promise and competition cognitions to organize exchange relationships that utilize the imperfections inherent in market systems to create new value. It appears to be probable that this process is a cross-border phenomenon, and that it occurs regardless of culture or version of the market system (see, e.g. Mitchell, Smith, Seawright and Morse, 2000; Mitchell et al., 2002). Accordingly, further development of these ideas might provide a foundation for the globalization of entrepreneurship theory.

This two-section chapter presents a transaction cognition theory of global entrepreneurship that is intended to help to open a path for globalized entrepreneurship research. In the first section, I provide a brief summary of transaction cognition theory, which suggests a relationship between transaction cognitions – mental models guiding certain economic behaviors – and the success of transactions. In the second section, I explore the implications of this theory for an experimental science of global entrepreneurship, using concepts from scholars who have offered standards for assessing philosophy of science implications in theory development (Freeman, 1986; Kuhn, 1970; Popper, 1979; Stinchcombe, 1968). The purpose of this second section is, further, to establish a sound foundation for research, teaching, and practice in global entrepreneurship, and to present likely propositions that arise from the analysis.

SECTION 1: A THEORY OF GLOBAL ENTREPRENEURSHIP

Transaction cognition theory (TCT) is derived from a fundamental model of transactions using principles from cognitive science and transaction cost economic (TCE) theory. In this section of the chapter, I explain how transaction cognition theory provides the foundation for a working definition of global entrepreneurship that itself “crosses borders” (McDougall & Oviatt, 1997, p. 293).

Transaction cognition theory decomposes a transaction into its three basic elements: an individual, other persons, and the work. According to this theory, variability in human performance can be attributed to variability in cognitions related to these elements of a transaction. In particular, bounded rationality is a source of variability in cognitions related to the individual who is creating the work; opportunism has its impact due to cognitions that occur because of the presence in the transaction of other persons who are using the work; and work specificity has its impact on cognitions related to the work itself. The exact link of these cognitions to performance by and large follows the lines suggested by Williamson (1975, 1985, 1991, 1996; Schure, 2001 personal communication).

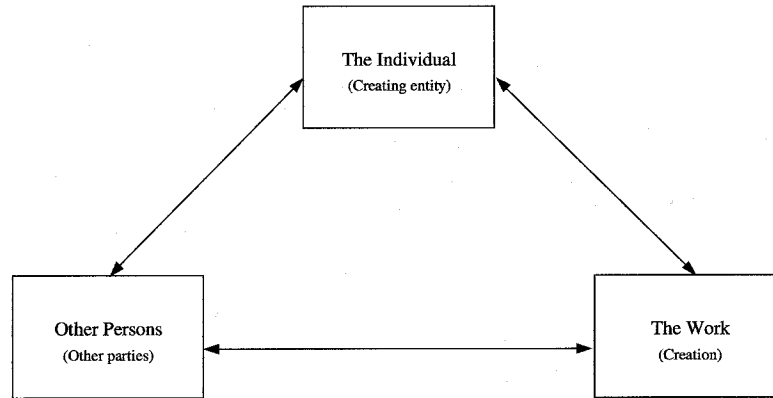
As is described in more detail elsewhere (Mitchell, 2001b), the path that I have followed to develop a transaction-cognition-based foundation for studying global entrepreneurship follows a direction suggested by Arrow (1969) who drew attention to a parallel between physical systems and economic systems. Arrow (1969, p. 48) asserted that “transaction costs” are the economic equivalent of friction in physical systems. With this suggestion as a starting point for the development of a theoretical model of global entrepreneurship, I have asked two relevant questions:

- What model in physical systems is sufficiently basic that it crosses borders? and
- Is there a comparable socioeconomic structure?

Through discussions in various meetings with colleagues from around the globe, I have identified a suitable exemplar in answer to the first question. I find common agreement that the planetary model of the atom is a physical system-model that is sufficiently basic that it crosses borders. This being the case, one can then ask: what is the equivalent, in economic systems, to the planetary model-atom in physical systems? Figure 1 illustrates an answer that provides a basis for a model of global entrepreneurship. It is a socioeconomic system-model that also appears to be basic enough to cross borders: both geographical and cultural. The transaction, as represented in this model, is the basic unit of analysis.

However, in pursuing the physical/economic analogy further, one encounters a second standard that must also be satisfied: The economic model suggested must correspond to socioeconomic laws that *also* cross borders. Transaction cost economic theory suggests such principles.

Arrow (1969, p. 48) defined transaction costs to be the costs of running an economic system. Notice that this definition does not appear to be limited by any particular borders, or to be confined to any particular economic system within such borders. The notion of transaction costs as defined by Arrow is useful to us then, because regardless of the base economic system considered, it enables us to specify the factors that cause socioeconomic costs – the (human nature-introduced) features of an economic environment that (due to the social



Based on Csikszentmihalyi (1988), Gardner (1993)

Fig. 1. The Elements of a Basic Transaction.

aspect) are not perfect. Transaction costs in social systems are thus thought to be the equivalent of friction in physical systems (Williamson, 1985, p. 19). We can then reason that if one can similarly relate the manner in which transaction costs are used to achieve results in economic systems to the way that friction is used to achieve results in physical systems, principles and laws that cross borders can thereby be identified (Mitchell, 2001b).

Williamson's (1975, 1985) TCE approach to understanding the effects of transaction costs and the TCT approach differ fundamentally¹ in at least one respect (Schure, 2001, personal communication). Williamson (1985) stressed that absences of bounded rationality, opportunism, and asset specificity have differing impacts on the contracting arrangements of agents. For example, when bounded rationality is absent (agents are perfectly rational), the contracting process greatly relies on planning (1985, p. 31). In this case, hierarchies (firms) are likely to govern transactions because planning is "cheap" and brings transaction costs down. Another example: when the asset to be traded in the transaction is not specific, low transaction costs are achieved by competition. A market transaction occurs with no need for the firm. Williamson therefore claimed that institutions (markets and hierarchies) arise to minimize transaction costs.

By way of contrast, the assumption in TCT is that different individuals have different levels of planning, promise, and competition skills at a given time (though these skill levels can change over time). Bad planning skills lead to high transaction costs, especially in an environment that is characterized by opportunism and asset specificity. And bad competition skills imply high transaction costs if bounded rationality and opportunism are both present and assets

		Level of Friction Present	
		LOW FRICTION	HIGH FRICTION
Effects of Friction	HELPS	1. Glide	2. Traction
	HINDERS	3. Slippage	4. Drag

Fig. 2. The Effects of Friction.

are not specific. In contrast, then, TCE derives social structure (markets versus hierarchies) from transaction costs, while TCT explains how social cognitions (Fiske & Taylor, 1984) change transaction costs by changing social structure. Williamson asserted that: “our understanding of complex economic organization awaits more concerted study of the sources and mitigation of friction” (1996, p. 87). Transaction cognition theory enables the beginning of such concerted study.

A further examination of how physical system-friction is utilized assists with such study. For example, within the construction of automobiles, we find combinations of friction uses that demonstrate how friction is well employed in physical systems. Figure 2 illustrates four states of friction.

To paraphrase Williamson (1981), in a well-working automobile, the bearings “glide,” the tires have “traction,” the gears do not “slip,” and there is low “drag” from wind resistance. This successful physical-system result is accomplished through the design of well-working physical interfaces that utilize friction where it is needed and minimize it where it is not. Elsewhere (Mitchell, 2001b), I have argued in more detail that high economic performance might also be designed into a system by creating and using effective levels of transaction cognitions, that – as in the physical systems case – minimize the effects of transaction costs.

It is therefore useful to inquire what, in more detail, are transaction cognitions? And since the term “transaction” has already been specified, the explanation next requires an understanding of the concept of cognitions.

Cognitions have been defined as all the processes by which sensory input is transformed, reduced, elaborated, stored, recovered, and used (Neisser, 1967). Transaction cognitions are the specialized mental models or scripts (Arthur, 1994; Read, 1987) that guide individuals’ economic responses to the three principal sources of variability in their economic behavior introduced by the fundamental nature of transactions (Figure 1). Individuals/ transaction creators introduce bounded rationality due to the cognitive limitations of individuals, the addition of “others” to the transaction introduces opportunism due to the lack of clarity about the extent of self-interest-seeking guile in the individual/ other relationship, and the work introduces specificity (once time and effort have been expended in the creation of a particular work, that time cannot be recaptured and redeployed for the creation of some other work (Williamson, 1985)).

These three attributes of frequent transacting cause transaction costs under uncertainty and frequency of transacting (Williamson, 1985: 31). Bounded rationality produces the human cognitions that cause costs by converting intendedly rational behavior into limitedly rational behavior (Simon, 1979; Williamson, 1985: 30; Williamson, 1996: 326-327). Opportunism—a behavioral condition of self-interest-seeking with guile (1985: 30)—creates the cognitions of social friction and increases transaction costs due to moral hazard and distrust. Asset specificity refers to nontrivial investment in transaction-specific assets (Williamson, 1985; Williamson, 1991: 79); and such investment increases social friction through cognitions associated with commitment and nonreployability (Ghemawat, 1991; Williamson, 1985), which also increase transaction costs. Hence, the presence of bounded rationality, opportunism, and asset specificity creates particular cognitions that give rise to transaction costs (Williamson, 1996: 326-327).

It stands to reason that as a result, the parties to an exchange will think through (adopt cognitively based) social arrangements that take these market-imperfection-creating cognitions into account, to ensure that transactions can, in fact, be completed. Williamson (1985: 31) identified three special social structuring/contracting arrangements—planning, promise, and competition—that organize exchange relationships subject to transaction costs within imperfect markets. Planning is defined to mean a socioeconomic arrangement where all the relevant issues in a transaction are identified and settled by the parties, and that any dispute will be effectively resolved within a court system (1985: 30-31). Promise is defined to be a socioeconomic understanding where the word of the transacting parties is as good as their bond (1985: 31). Competition is defined to mean a socioeconomic contracting situation where markets are efficacious, fully contestable, and where even natural monopolies are subject to bidding processes (1985: 31-32). The transaction attributes of bounded rationality, opportunism, and asset specificity have implications for the social organization of the contracting process into planning-, promise-, and competition-based exchange relationships as suggested in Table 1.

{Insert Table 1 about here}

As illustrated in Table 1, in an imperfect economy, one in which behavioral assumptions and social organization are connected, the following three special cases arise: (1) in the absence of bounded rationality, planning will suffice to ensure the completion of transactions; (2) in the absence of opportunism, promise is sufficient; and (3) in the absence of specificity, competition enables transacting (1985: 31-32). One can infer from this analysis, then, that this special set of cognitions—

planning, promise, and competition—is also likely to impact the behaviors that give rise to market imperfections.

In the real world one can observe and can therefore assume, that individual transaction creators introduce transaction costs due to bounded rationality, other persons introduce transaction costs due to opportunism, and the nature of the work itself introduces transaction costs due to specificity, into a given transaction. When these observation-based assumptions are mapped onto the basic transaction as illustrated in Figure 3, the relationships denoted in Table 1 lead to derivation of the three cognition sets that are essential to a successful transaction: planning, promise, and competition cognitions.

{Insert Figure 3 about here}

Table 2 presents definitions for planning, promise, and competition cognitions and suggests the relationship between these cognitions and bounded rationality, opportunism, and specificity, respectively.

{Insert Table 2 about here}

Thus, three types of cognitions—cognitions about planning, which are mental models that help individuals develop analytical structures for solving previously unstructured problems; promise, which are mental models that promote trustworthiness in economic relationships (Mitchell et al., 1997); and competition, which are mental models that can create sustainable competitive advantage—are expected to impact transaction costs, the success of transacting, and therefore the amount of new value added by transactions that can now succeed which otherwise would have failed due to transaction costs. Entrepreneurial opportunity (Kirzner, 1982) may therefore be thought to occur when entrepreneurs use planning, promise, and competition cognitions to enact transactions that would otherwise fail owing to transaction costs. Entrepreneurship can in this respect be conceptualized as an essentially cognitive process (Mitchell, et al., 2000).

The Microsoft - IBM transaction, wherein Microsoft became the supplier of the operating system for all IBM personal computers, can illustrate each of the three cognitions and how it contributes to a successful transaction. As the model diagrammed in Figure 3 suggests, a completed transaction between Microsoft and IBM required use of all three of these cognitions. A review of the actual circumstances illustrates the role of each type of cognition.¹

First, for the product they envisioned to be competitive, it was necessary that Microsoft's Bill Gates and colleagues acquire rights to use the early DOS (disk operating system) source code—not then owned by Microsoft—that would form the foundation of the product (Zone **C**: the Individual – Others link). Through the use of bargaining and competitive techniques (Figure 3: Zone **C**), this key element of the product was acquired (transaction costs owing to specificity were reduced).

Also necessary was the development of a relationship of trust between the IBM executives and Microsoft, which assured IBM that they could rely on the Microsoft team (Zone **B**: the Individual - Work link). Through the use of references and in-person meetings, the promise of reliable production

¹ Interestingly, most events in the transaction creation sequence seem to follow steps that successively answer the questions: (1) What do I have to offer? (2) Can I make a deal? And (3) Can I produce and deliver it? This suggests that the order of cognition use may not, in practice, be planning, promise, competition, but rather, competition, promise, planning. Bounded rationality would not, then, be the first transaction attribute that transaction creators would address. Instead, the sequence appears to be first specificity, then opportunism, and then bounded rationality. Planning is thus made practical because bounded rationality has itself been “bounded” in the enactment of the transacting sequence.

and delivery (Figure 3: Zone **B**) was communicated in such a way that the possibility of transaction costs from opportunism could be diminished to an acceptable point in the Microsoft - IBM deal, an action that made transaction completion more likely.

Finally, before the transaction could occur, Bill Gates and his associates had to overcome their limited knowledge of the market for their services (Zone **A**: the Work - Others link). Gates and Co. reduced these knowledge limits through a series of events that can be labeled “the planning process” (Figure 3: Zone **A**), while knowledge limits remained relatively higher for potential rivals. This permitted the fledgling Microsoft to minimize the effect of transaction costs—an action that, again, made a completed transaction more likely. Thus, three necessary pre-conditions for the occurrence of the Microsoft - IBM transaction, one of the signal high-performance economic events in computing history, were satisfied.

The key point to note in this example is that without the presence of the requisite planning, promise, and competition cognitions, or mental scripts (Glaser, 1984, Mitchell, 2001b), the transaction would likely have failed owing to the transaction cost-based social frictions. With a sufficient level of these cognitions present, a completed transaction—despite, or perhaps because of the effective use of transaction costs/social friction²—resulted.

I therefore argue that in the cognitions of entrepreneurs as the designers of new transactions, one can identify certain fundamentals that one can expect to observe across borders. It then remains to elaborate how design (Simon, 1981) or effectuation (Sarasvathy, 2001) activity in the arrangement of socioeconomic systems (the creation of new transactions) ought to take place.

This elaboration can be accomplished by our establishing a theoretical linkage between thinking (cognitions) and the reduction of social friction (transaction costs). Recall in the previous automobile example, the paraphrase of Williamson (1981: 552), which reads:

With a well-working (socioeconomic) interface, as with a well-working machine, these (transactions) occur smoothly. In mechanical systems we look for frictions: do the gears mesh, are the parts lubricated, is there needless slippage or other loss of energy? The economic counterpart of friction is transaction cost: do the parties to the exchange operate harmoniously, or are there frequent misunderstandings and conflicts that lead to delays, breakdowns, and other malfunctions?

One might then ask: How is it that harmony can be increased, and malfunctions decreased in transacting systems? Psychologist William James wrote that the greatest discovery his age was the idea that, in essence, we become what we think about (James, 1890). This notion may provide a key to answering the question about increasing harmony and decreasing malfunctions in transacting systems.

Recent entrepreneurship research suggests that common economic thinking patterns exist globally (Busenitz & Lau, 1996; McDougall & Oviatt, 2000; Mitchell, et al., 2000; Mitchell et al., 2002). Transaction cognition theory implies that new transactions are more likely to succeed when an individual transaction creator possesses sufficient levels of planning, promise, and competition cognitions. Thus, I can offer these general and specific definitions of global entrepreneurship:

General—Global entrepreneurship is defined to be: the creation of new (value-adding) transactions or transaction streams anywhere on the globe.

² For more information, please see the more detailed discussion of social frictions in a related research monograph (Mitchell, 2001b).

(Global entrepreneurship therefore might be thought generally to occur because global entrepreneurs cause transactions to succeed that would have otherwise failed, or not occurred at all because of transaction costs/social frictions.)

Specific—Global entrepreneurship is defined to be:

- *The use of transaction cognitions (planning, promise, and competition cognitions)*
- *to organize exchange relationships (among an individual, other persons, and the work)*
- *that reduce the transaction costs/social frictions caused by sources of market imperfections (bounded rationality, opportunism, and specificity)*
- *to create new value.*

Who, then, are the designers of new transactions anywhere on the globe? Transaction cognition theory suggests that these economic actors are, in fact, global entrepreneurs.

Transaction cognition theory thus provides a basis for a definition of global entrepreneurship that is highly integrative and is useful for research, teaching, and for the development of practical technology for the creation of new (value-adding) transactions or transaction streams anywhere on the globe (Mitchell, 2001b). In my view, it is this border-spanning attribute that qualifies this theory as global. In the following section I examine the transaction cognition theory of global entrepreneurship from three critical viewpoints: (1) its capability for explanation, (2) its theoretical and operational utility, and (3) its verifiability through the logic of scientific inference, and presents several propositions that surface in this analysis.

Section 2: An Examination of the Theory

Previously in this chapter, drawing on the cross-level theories of transaction cost economics (Williamson, 1985) and social cognition (Fiske & Taylor, 1984), I have presented general and specific definitions of entrepreneurship that, I believe, are not only realistic—in that they correspond to actual economic behavior in the real (imperfect) economic world—but are also plausible bases for scholarly analysis. Such analysis relies on two key ideas—(1) the composition of a basic transaction that does not vary across borders, and (2) cross-border cognitions that explain the basic transaction’s occurrence in imperfect markets—which together suggest a transaction cognition theory of global entrepreneurship. In this section I hope to demonstrate that the general and specific definitions presented previously can provide the basis for further analysis in both this chapter and in future research.

Also specified in Section 1, are the market imperfections basic to transacting, their impacts on exchange relationships, and the resulting cognitions, which are critical to successful transacting. These specifications, I hope, will help researchers to interpret prior work and to propose entrepreneurship theoretical models that flow from first principles, and contribute to the development of an entrepreneurship research paradigm.

However, like most paradigmatic research (Kuhn, 1970), global entrepreneurship research at present might be described to consist of mostly “random fact gathering” (Leahey, 1987: 16). Thus, in the search for better theory and measures in the field of entrepreneurship, an appeal to other disciplines for analogues has been suggested (MacMillan & Katz, 1992). I consider physics and

genetics as both offering cases that illustrate the development of a composition theory³ (Rousseau, 1985) that provides a basic unit that applies across units of analysis. In physics, as noted earlier, Neils Bohr's planetary model of the atom was a theoretical structure that could explain matter at the subatomic, atomic, and molecular levels while providing a basic "unit," or integrating model. In genetics, Crick and Watson model of DNA provided a theoretical structure that could explain the development of living organisms at multiple levels of analysis based upon a basic "unit" in a way that is similar to the planetary atom model in the physical-system case. These analogues motivate the investigation and identification of an economic equivalent to physics' planetary model and genetics' double helix, which produces the basic transaction model as its result.

But the need for a common basis upon which to successfully organize and interpret a set of random facts, poses commensurability problems—the need for a least common denominator. A problem of this nature prompts the following paradigm organizing "shared exemplar" - type challenge to the field (Kuhn, 1970): Produce a theoretically and empirically valid set of common terms for field of global entrepreneurship. Each expression in an analysis of global entrepreneurship needs to be representable using these common terms. Since entrepreneurial phenomena occur on at least two levels of analysis: the individual and the firm (Mitchell, 2001b), common terms must—like their arithmetic counterparts—enable cross level analysis. As such, they should represent theory that extends across levels of analysis but remains testable with "data at the lowest measurement level possible" (Rousseau, 1985: 29, 31). It is in the service of this objective that the global entrepreneurship assertions of transaction cognition theory will now be examined from several critical viewpoints: (1) their capability for explanation, (2) their theoretical and operational utility, and (3) their verifiability through the logic of scientific inference.

The analysis in these three subsections proceeds as follows: In the first, I examine prior research to see if the theory can serve as a common term, explaining previously observed phenomena, even phenomena that prior theory has been unable to explain (Popper, 1979: 46). In the second subsection, I evaluate how useful the transaction cognition model might be for resolving some theoretical difficulties in entrepreneurship research, relating previously unconnected things, and predicting phenomena that have not so far been observed, as well as how testable the theory is (Popper, 1979: 47-48). In addressing testability, I present analyses relating to the operational utility (susceptibility to operationalization) of the theory (Freeman, 1986; MacMillan & Katz, 1992; Mitchell, 1994). I conclude this section with an examination of verifiability, using the "logic of scientific inference" (Stinchcombe, 1968) to evaluate the theory's external validity.

2.1 Capability for Explanation

Somewhat fortuitously, the extant literature on entrepreneurship might be seen to fall quite easily into three groupings that respectively focus attention on individuals (entrepreneurs themselves), work (firms), and others (economies). This body of theory and findings, a foundation for thinking about entrepreneurship, chronicles both explained and unexplained phenomena. Table 3 summarizes representative work from this foundation literature in three parts corresponding to: individual, work, and other, respectively.

{Insert Table 3 about here}

³ Composition theory contains constructs that are functionally similar across levels. A properly specified compositional model is a prerequisite for the specification of multi-level models (Rousseau, 1985: 29).

The phenomena observed in previous research are varied and extensive (column 1), although some observations have been contradictory (column 2), which understandably has created an obstacle to further theory building, especially to explaining global entrepreneurship phenomena. However, these observations appear to be coherent when examined using the lens of transaction cognition theory (column 3). The proposed transaction cognition theory explanations demonstrate the theory's ability to serve as the necessary common term that might explain observed phenomena, both the previously explained and the previously unexplained. An examination of this assertion for each of the groupings in Table 3 follows.

2.1.1 The Individual (Entrepreneur)

As summarized in Table 3, at least eight major theoretical reasons for entrepreneurship among individuals were investigated in the period 1961–86, the most recent active period of investigation at this level of analysis. Support was found for explanations based upon age, immigration, religion, and social learning; mixed support was found for gender; and findings have been contradictory in the case of locus of control, need for achievement, and risk-taking propensity. The equivocality of this research has led many in the management sciences to view entrepreneurship theory at the individual level with distrust (MacMillan & Katz, 1992).

However, as shown in the table and discussed below, transaction cognition theory suggests a common-term explanation that accounts well for each of these previously observed phenomena. At the individual level of analysis, the previously observed phenomenon in question is the regular, but not adequately explained, appearance of individual entrepreneurs. As the lead article in an issue of the *Journal of Business Venturing* dedicated to theory building in the field of entrepreneurship earlier stated,

[In] over 200 years of the study of entrepreneurship . . . no theory of entrepreneurship has been developed that would explain or predict when an entrepreneur . . . might appear or engage in entrepreneurship. (Bull & Willard, 1993: 183)

Further, in one of the most comprehensive studies of this phenomenon, Shane demonstrated that the rate of entrepreneurship in the U.S. economy has varied over time and that these variations have not been random (Shane, 1996: 761). He stated the need for a theory that could account for all of the findings he examined from earlier studies (Evans & Leighton, 1986; Steinmetz & Wright, 1989). Shane characterized research in the field as ad hoc hypotheses in need of new theory to “identify forces that change the propensity of Americans [individuals] to become entrepreneurs” (1996: 773). Of course, it would be even better if such theory also explained—in a reciprocal manner—why some individuals choose jobs instead of entrepreneurship.

The transaction cognition model also sheds light on the entrepreneurship/ job trade-off. As noted earlier in the chapter, transaction costs are the consequences of social friction in exchange behavior. At the organizational level of analysis, scholars have extensively used the concept of transaction costs to argue that hierarchies (firms) and markets are alternative systems for governing transactions that are based on transaction-cost-driven “substitutions at the margin” (Coase, 1937: 387; Williamson, 1975). But there appears to be no reason to suppose that the application of transaction-cost-driven substitution at the margin is limited solely to questions of how firms form when markets fail (Coase, 1937). Theoretically, transaction costs can explain a variety of alternative system choices at various levels of analysis, including the individual level.

Thus, for example, scholars who have conducted research using prospect theory have found that that losses loom larger than gains to individuals in psychological “prospect” (Kahneman & Tversky, 1979: 288) and that actual utility tends to be less than expected utility—a difference that (although not suggested specifically by the authors) may, when viewed through the lens of transaction cognition theory, be suggested to likely occur as a consequence of the transaction costs that are generated within the situations studied.⁴ A person’s choice between a job and self-employment might therefore be explained by a transaction-cost-induced substitution at the margin (a decision to transact with a “boss” rather than with multiple customers in a marketplace), as perhaps could success or failure in a job (“in” or “out” of a particular economic governance system: e.g. “boss system” or “self-employed” system). Choosing whether venturing or job holding will be more reliable requires the use of specialized cognitions about creating social arrangements based upon promise. Promise cognitions help individuals assess the likelihood that those with a “stake” (Clarkson, 1995; Mitchell, Agle, & Wood, 1997) in their economic well-being (or “stakeholders”) will, in fact, be reliable in exchange relationships.

Under the assumptions of the transaction cognition model, the social commitments made by individuals—such as choosing a job—should be related to costs that attend the transactions associated with that social choice. Thus, where the cognitions of an individual might result in work-specificity (whether the preferred work is a job or self-employment) the costs of transacting in the alternative system become prohibitive. For example, if my exchange cognitions center on “work that I like and can do,” and if work that I like and can do involves using highly sophisticated equipment that is only available to people who take jobs in particular organizations, self-employment involves higher transaction costs, and I may see more “promise” in employment with a well-equipped organization. Alternatively, if I have been raised in a setting where mental models of self-employment have been readily available and I have internalized them along with a sense of positive self-efficacy (Gist & Mitchell, 1992; Krueger & Dickson, 1993, 1994), then I may view a job to have relatively higher transaction costs and see more promise in a venture. The transaction cognition model is therefore likely to account—through a logical extension of transaction cost economic theory—for the broad range of social commitment/promise decisions made in exchange relationships. Accordingly, it is expected that, regardless of geography or culture:

Proposition 1. The effective level of the transaction cognitions (planning, promise, and competition cognitions, but especially promise cognitions) of individuals is associated with their venturing behavior v. job holding (the substitution at the margin of one state of individual transacting, venturing behavior, for its alternative, a job).

Table 3 demonstrates the idea of transaction cognitions explaining a wide variety of alternative system choices in the area of individual exchange relationships in an imperfect economy. As is shown in the table, both contradicted and supported findings are explainable using transaction cognition theory. Furthermore it is noteworthy within this analysis, that the explanation logic appears to be

⁴ Kahneman and Tversky provide one of the clearest illustrations of the transaction costs that arise from bounded rationality. Essentially, they found that the actual value of economic choices made by individuals (actual utility) was less than the possible value (expected utility) because the individuals ignored or overweighted highly unlikely events or neglected or exaggerated highly likely events. These errors stemmed from *reflection effects*—risk aversion in the positive domain and risk seeking in the negative domain (1979: 268)—and *isolation effects*: disregarding the shared attributes of decisions to focus on the distinguishing ones (1979: 271). According to prospect theory, these effects arise from cognitive errors that occur in individuals’ *coding*, *combination*, and/or *cancellation* (1979: 274) of relevant information, which taken together limit, or bound, rationality.

unbounded by geography or economic system. This framework thus offers the possibility that the phenomenon of global entrepreneurship exists within a theoretically tractable domain, and it further suggests that specific planning, promise, and competition skills might be identified. Of course, one natural consequence of the identification of the specific skills within a domain is an increase in their teachability. I have explored the educational implications of the existence of a theory of global entrepreneurship in greater detail elsewhere (Mitchell, 2001b).

But entrepreneurship is a cross-level (Rousseau, 1985) phenomenon. Thus, transaction cognition theory also suggests that individuals create firms using transaction cognitions. Four of the more common explanations of the phenomenon of firm creation are examined next.

2.1.2 The Work (Firm/Venture)

Between 1986 and 1993—during a period of more intense focus on venture-based explanations for entrepreneurship—general support was found for theories that look to the characteristics of the venture, the environment, the number of ventures created, and venture strategy to explain entrepreneurial phenomena. As summarized in column 3 of Table 3: Part 2, transaction cognition theory accounts for each of these findings and, again, suggests a common-term explanation, that—at the firm level of analysis—accounts for both previously explained phenomena and for phenomena that prior theory has been unable to explain. At the venture level of analysis, the phenomenon in question is the formation and performance (success versus failure [Birch, 1988; Shapero & Giglierano, 1982]) of ventures.

Transaction cost theory suggests that an alternative governance system will be invoked when the costs of organizing an extra transaction within an existing governance system become equal to the costs of carrying out the same transaction through an exchange on the open market (Coase, 1937: 396). Thus, when exchange behavior by a firm is no longer effective, transaction costs will drive the transactions into the open market (i.e., a venture will fail). It follows that transaction failure and venture failure are closely related (Venkataraman, Van de Ven, Buckeye, & Hudson, 1990). According to the transaction cognition model, ventures fail when plans fail, because planning scripts (cognitions that help individuals cope with bounded rationality) reduce the transaction costs that arise from bounded rationality.

This simple but powerful idea appeals to the very essence of transaction cost economics, confirming the notion that economizing on transaction costs is the best plan (Williamson, 1991: 76, 90). Williamson suggests that such “first-order” economizing (e.g., waste elimination) can have many times more influence on results (e.g., “ten times”) than the ordinary cost and pricing decisions made in exchanges (1991: 79). It stands to reason, then—using the other half of this bi-directional argument—that lack of a plan for transaction cost economizing will have a great deal to do with the failure of exchange behaviors. For example, a plan to manage opportunism in a competitive marketplace can save a job or a customer (first-order economizing): a far more important result than the successful negotiation of wage rates or sale prices (“second-order” economizing). It is therefore likely that the success or failure of ventures will be correlated with effective planning for (or first-order economizing on) transaction costs—a very appealing public policy opportunity (e.g., cut waste, not wages; increase productivity, not prices).

Most of the analyses cited above were conducted using the U.S. economy as a data source. Accordingly, it might be expected that the Western framing of the questions and the research (Hofstede, 1994) might limit the generalizability of the research into global theory. However, the

reader is reminded of evidence that cognitive models (Busenitz & Lau, 1996), specifically, cross-cultural cognitive models of entrepreneurship (Mitchell et al., 2000; Mitchell, et al., 2002) can explain venture creation decisions.

Thus, it might be expected that, regardless of geography or culture,

Proposition 2. The effective level of the transaction cognitions (especially the planning cognitions) of individuals is associated with the venture creation decision (the substitution at the margin of one state of hierarchical transacting, the decision to form a firm, for its alternative, the failure to form a firm).

2.1.3 Other Persons (The Economy)

The study of the effects of an economy on entrepreneurship levels has spanned most of the last 50 years. Included in Part 3 of Table 3 is a summary of seven representative and generally supported theories of entrepreneurship according to which changes in technology, demand for entrepreneurs, failure rates (contradictory), interest rates, political change, unemployment, and wealth are examined for their relationship to the size of the entrepreneurial group within an economy. Transaction cognition theory also accounts for these findings and provides a common-term explanation. At this level of analysis, the economy level, the previously observed phenomenon in question is the level of entrepreneurship within an economy.

Transaction cognition theory suggests that the level of entrepreneurship within an economy will be affected by the level of competition scripts (specifically, cognitions that can create competitive advantage) because engagement in the exchange process is based upon decisions as to whether to bargain/exchange/transact, or not. The need for economic security has been defined as “the desire to have provisions in store for an uncertain future” (Durant, 1935: 2), and in modern society, “provisions” are mainly obtained through exchange relationships. Logically then, the reason why people in an economy may or may not enter into exchange relationships should relate primarily to the level of this need. By definition, a low level of the need for economic security could result from an absence of desire, from uncertainty, or both, and higher levels of this need—and the resulting competition cognitions—could explain why change, demand, and other factors (Table 3: Part 3) lead to variance in entrepreneurship levels within an economy.

The propensity to “compete” may be higher or lower, given specific circumstances, but given the effect of provisions in store, desire, and uncertainty on the creation of competition scripts, the transaction cognition model is expected to account for levels of entrepreneurship. According to the model, those who do not seek to enter exchange relationships see the transaction costs of competing within them as just too high. For those who do enter into exchange relationships, the transaction costs of *not* doing so are unacceptable. Thus, there is reason to expect that, regardless of geography or culture,

Proposition 3. The effective level of the transaction cognitions (especially the competition cognitions) of individuals is associated with the level of entrepreneurship within a society (the substitution at the margin of entry into exchange relationships for nonparticipation in exchange).

The implications of this proposition are quite broad, and they illuminate the earlier-stated transaction cognition definition of global entrepreneurship. Whereas Schumpeter wrote that “everyone is an entrepreneur when he actually carries out new combinations, and loses that character as soon as he has

built up his business when he settles down to running it as other people run their businesses” (1934: 78), the transaction-cognition-theory-based definition implies that entrepreneurial status occurs transaction by transaction, instead of business by business (unless, of course, each transaction constitutes a business). Thus, high economic performance, such as sustained growth, occurs when the obstacles to transacting are minimized (Williamson, 1996: 332). Under transaction cognition theory, it is entrepreneurship that accomplishes this objective, through transformations of socioeconomic “slippage and drag” into “glide and traction” (Figure 2). (Please also see Mitchell, 2001b.)

2.2 Theoretical and Operational Utility

The foregoing discussion provides reasons for the inclusion of transaction cognition theory within the body of mainstream entrepreneurship theory as a theory of global entrepreneurship, and accordingly, suggests the necessity for an evaluation of its theoretical utility: the capability of the transaction-cognition model to contribute to that body of theory. Philosophers of science have repeatedly demonstrated that more than one theoretical construction can always be placed upon a given collection of data (Kuhn, 1970: 76). Thus, for new theory in a field to be taken seriously, it must be useful: (1) in resolving theoretical difficulties, (2) in simply relating previously unconnected things, (3) in predicting phenomena that have not yet been observed, and (4) in being more readily testable than other theory (Popper, 1979: 47-48).

2.2.1 Resolution of Some Present Theoretical Difficulties

The field of entrepreneurship needs better theory (Low & MacMillan, 1988; MacMillan & Katz, 1992). Politicians (e.g., Newt Gingrich, former Speaker of the U.S. House of Representatives) have often called for the encouragement of “maximum entrepreneurial behavior” in the U.S. economy (Kimbro, 1995), and academicians have also called, for more and better teaching of entrepreneurship within universities (Porter, 1997; Porter & McKibbin, 1988). Yet weak theory leaves the field of entrepreneurship open, at best, to over dependence upon the unsystematic, such as the “war stories” of successful entrepreneurs (Katz, 1995), to provide guidance for scholars, policy makers, and practicing and aspiring entrepreneurs. And further, the lack of strong theory can, at worst, lead to the abuse of the entrepreneurship concept by a wide variety of individuals who are free to invoke entrepreneurship to support or explain virtually any means, end, or phenomenon (Harwood, 1982: 91; McMullan & Long, 1990: 57-58).

Existing entrepreneurship theory does explain some phenomena, such as the behavior of venture capitalists under various conditions (Hall & Hofer, 1993; Manigart, Wright, Robbie, Desbrieres, & DeWale, 1997). It has been unable to explain others, such as (as previously noted) when an entrepreneur might appear or engage in entrepreneurship (Bull & Willard, 1993: 183). Further, the fields from which existing entrepreneurship theories have been drawn each impose domain-based limitations on theory development. For example, economics provides elegant theory, but it is difficult to operationalize in the case of individual entrepreneurs (Baumol, 1993). Psychology provides a rich analysis of individual characteristics, but psychology-based studies do not consistently relate individual characteristics to performance outcomes because these studies appear to be case-specific and not replicable (Brockhaus & Horowitz, 1986; Sexton & Bowman-Upton, 1991). Strategy research provides tools for explaining performance outcomes but heretofore has had limits for linking these to the behaviors of individual entrepreneurs (Cooper, Willard, & Woo, 1986; Kunkel, 1991; MacMillan & Day, 1987; Sandberg, 1986).

Transaction cognition theory resolves some of these theoretical difficulties (as demonstrated above) through its ability to explain previous findings at several levels of analysis. Further, when using transaction cognition theory, researchers are no longer constrained to view the economic, psychological, and strategic performance views as competing explanations; rather, they can view them as elements of an overall transaction cognition “composition” explanation (Rousseau, 1985). For example, transaction cognition theory reconciles strategy-based theories of entrepreneurship with those based on economics or personality by suggesting that individual cognitions influence venture strategy through competition cognitions. And further (if one takes the liberty of making a few substitutions in order to draw parallels), one can argue that some of the earliest entrepreneurship scholarship contains the outlines of transaction cognition theory.

As an illustration, consider the writings of Nicholas Baudeau (parentheticals added), who provided part of the foundation for the study of the entrepreneurial function within economics. He argued as follows: “Nothing is more evident [than that] we need a numerous race of farmers or chief farmers endowed with the knowledge [cognitions] of their art . . . who are willing to translate that into [economic] action” (1910: 51). The outlines of planning, promise, and competition cognitions can also be inferred from the writings of a seminal psychologist, Jean Baptiste Say (parentheticals also added). He wrote this: “Those who are not possessed of a combination of these necessary qualities [cognitions] about the complex operations needed to surmount abundant obstacles [plans] the process of reducing anxiety and repairing misfortune [promise], and of devising expedients [competition] “are unsuccessful in their undertakings [transactions do not occur]; their concerns soon fall to the ground” (Say, 1847/1964: 331). A stretch? Perhaps; but perhaps not, if Say’s statement is viewed with the intention of evaluating whether transaction cognition theory can resolve theoretical difficulties in three previously separate streams in entrepreneurship theory.

2.2.2 Simply Relating Previously Unconnected Things

Prior to development of the relationships suggested in this chapter, the notions of planning, promise, and competition as implied contracting processes (Williamson, 1985) were theoretically unrelated to the organization of exchange relationships among the components of the basic transaction (the individual, the work, other persons). Further, these social processes were not explicitly suggested to be associated with types of cognitions that affect transaction success either locally or globally. In addition, none of these ideas had yet been associated with the notion that the use of the general market imperfection creators (bounded rationality, opportunism, and specificity) to advantage through the use of specific cognition sets might be the essence of global entrepreneurship (Section 1).

It is beyond the scope of this chapter to develop more than a few of the implications of this new set of theoretical relationships for entrepreneurship research. Some of the most obvious are the need to investigate and specify geographically and/or culturally what cognitions are included within each set of effective planning, promise, and competition cognitions. Another line of research would be an attempt to link the notion of specific creators of market imperfections, such as isolating mechanisms (Rumelt, 1987), to the more general set of market imperfection creators (bounded rationality, etc.). Still another line of research might reexamine cross-level problems in prior research to ascertain whether applying transaction cognition theory provides new insight. Also, since much more theory and many more findings about entrepreneurship exist than I have excerpted in Table 3, a more complete evaluation of the capability of transaction cognition theory to explain prior literature should be undertaken. And, of course, the basic theoretical propositions that form the foundation of transaction cognition theory should be tested for external validity in new research at the individual,

firm, industry, economy, and society levels of analysis. Further, an examination of the theoretical utility of transaction cognition theory should also explore the capability of the theory to help researchers frame new questions—to predict new phenomena.

2.2.3 Predicting Phenomena That Have Not So Far Been Observed

In the field of entrepreneurship—as a social science—“phenomena that have not so far been observed” may take at least three forms: (1) they may be manifest in new levels on existing relationships; (2) they may appear as new relationships; or (3) they may not yet be known to exist. The following paragraphs are a nonexhaustive discussion further examining transaction cognition theory as a theory of global entrepreneurship as to its capability to enable the prediction of phenomena that have not so far been observed.

2.2.3.1. New levels of existing relationships. Above, I have developed the idea that existing relationships among entrepreneurship phenomena can be observed at least three levels of analysis: the individual, the firm, and the economy. At present, data show that roughly 90 percent of the individuals in the U.S. labor force at any given time are not involved in entrepreneurship (Evans & Leighton, 1986) and that approximately 80 percent of those individuals spend their entire careers in jobs (Steinmetz & Wright, 1989). Even research showing the doubling of the number of new businesses created per 1,000 individuals in the 1980s, from approximately 20 to approximately 40 (from 2 to 4 percent) (Gartner & Shane, 1995) does not indicate much movement toward an equally probably career choice between “jobs” and “entrepreneurship.” And, of the ventures created, a significant proportion fail—50 to 80 percent, depending upon the analytic technique applied to the data (Cooper, Dunkelberg, & Woo, 1988; Kanter, North, Bernstein, & Williamson, 1990: 424; McMullan & Long, 1990; Shapero & Giglierano, 1982). Data also show that most of society participates in some exchange behavior through participation in the labor force (Levi, 1998). Transaction cognition theory suggests that entrepreneurship occurs at the transaction level. Under this new definition of entrepreneurship, it is likely that we might discover new proportions on levels of job holding and entrepreneurial employment. Under this construction, it is further possible that the percentage of individuals who are known to act entrepreneurially would be much higher than previously reported, thereby also suggesting new levels on existing relationships. Additionally, transaction cognition theory suggests a relationship between transaction cognitions and transaction success. One might therefore expect the revision of another type of level to be expected on existing relationships: that, as the level of transaction cognitions/scripts acquired by individuals increases, the levels of entrepreneurship at various levels of analysis should also increase.

Also, as suggested in Figure 4 (and previously in Footnote 3), it is logical to expect that a transaction-cognition-acquisition sequence begins with competition cognitions and continues with promise and planning cognitions, in that order. Further, it appears likely that a given population will have some proportion of individuals at each stage of this sequence of cognitions.

{Insert Figure 4 about here}

However, every society contains a range of motivations to acquire and utilize transaction cognitions⁵. We might therefore expect susceptibility to the acquisition and use of transaction

⁵ For example, in every society there are individuals who lack the desire to exchange. This desire may be absent for many reasons; a nonexhaustive list includes the following: a value choice (for instance, self-denial for a spiritual purpose); age (for instance, individuals being too young or old to care for themselves); a disability (for instance, no awareness of the need owing to developmental difficulties); or an individual judgment that provisions in store are

cognitions to vary geographically and culturally depending upon the proportion of this group that exists as an initial condition at each stage, producing a further new set of levels on existing relationships.

2.2.3.2. New relationships. One of the reasons that MacMillan and Katz (1992) give for suggesting an appeal to other disciplines for assistance in the development of entrepreneurship theory is that these somewhat more mature fields have encountered and solved problems that commonly occur in newer fields. As one example of new theoretical relationships that might be predicted in entrepreneurship theory, I wish to introduce into entrepreneurship and development theory and idea from another “milieu” (1992: 1): the field of electrical engineering.

A problem that has been studied extensively in electrical engineering, and that is analogous to a similar problem in entrepreneurship, is the problem of *inductance*. Inductance, or reactivity, occurs in electromechanical situations such as electric motor acceleration or deceleration, where either sparks (from the application of more electricity to a motor than its inertial characteristics can transfer into motion) or shocks (from the energy remaining in an electric motor when motion is arrested: the generator effect) are created. In electrical engineering, the level of this reactivity is termed inductance (*I*) and can be computed as a function of a reactivity constant (*C*) that represents the inertial characteristics of the mechanism, multiplied by the rate of change (*a derivative*) as shown in the formula below.

$$I = C \cdot \frac{di}{dt}$$

Transaction cognition theory suggests new inductance-based relationships. Transaction cognition-based inductance—the propensity for a transaction to fail (“sparks” or “shocks” in economic transacting)—might be thought of as a function of *C*, the level of planning, promise, and competition cognitions (the reactivity constant), multiplied by the rate of change in transaction flow. When conceptualized in this manner, new relationships in global entrepreneurship are suggested, especially in the area of value conservation.

For example in the electric motor case, “sparks”-type (start-up) inductance has been managed through the creation of new motor designs that have lowered the level of inertia (represented in the above formula by the reactivity constant “*C*”) to result in the invention of the coreless motor in the late 1940’s. “Shocks”-type (slow down) inductance is usually managed through the use of some type of capacitor (such as in the 2003 Honda Civic Hybrid Gasoline/Electric car which uses the braking process to recharge its batteries) to store excess energy.

In the entrepreneurship case, one of the key implications of the theory proposed in this chapter is that the level of cognitive inertia in entrepreneurship (such as the capability to manage a startup without a lot of failure-generating waste) is susceptible to change (entrepreneurship as transaction cognitions can be taught), and therefore is susceptible to design. Also, the study of new methods to enhance the storage of previously wasted energy (to increase levels of created value that is retained/conserved), such as the study of learning from entrepreneurial failures, is only beginning (e.g., McGrath, 1999). Thus, one new relationship suggested by the theory might therefore be an

sufficient, given the perceived level of uncertainty (for instance, being rich, or rich enough—a perception that, of course, also varies by case). Further, some locations on Earth are so congenial, and the societal norms so structured, that economic uncertainty, and thus exchange behavior, is virtually irrelevant.

association between the teaching of entrepreneurial cognitions (lowering levels of transaction reactivity/ transaction costs: levels of “C”) and increases in the capacity of venturers, organizations, industries, or economies to sustain: more rapid growth, accelerated change, or sustained environmental turbulence (i.e., in lowering transaction inductance: levels of “I”).

The further development of such newly suggested relationships within entrepreneurship and economic development domains, and the analysis of related measurement issues, is beyond the scope of this chapter. Doubtless other new formulations relating entrepreneurial phenomena can be derived using transaction cognition theory as well. But while space does not permit further development along these lines herein, it should be noted that “transaction inductance theory” holds promise as a partial explanation of global economic phenomena at the individual, firm, and economy levels, and provides some evidence that transaction cognition theory is useful in suggesting such new relationships.

2.2.3.3. Phenomena not previously known to exist. One of the most exciting aspects of new theory development is that sound new theory also predicts phenomena not known to exist whose existence is subsequently confirmed by empirical investigation. Theory progresses no faster than its measures (Nunnally, 1978) because of the need for theoretical conceptualization to suggest what to look for next.

What does transaction cognition theory suggest that might exist but has not yet been measured? The theoretical developments introduced here, suggest that researchers might expect to find the existence of stable planning, promise, and competition transaction scripts in a variety of contexts; these would include technical fields, industries, cultures, and jobs. So, for example, it should be possible to map phenomena not previously known to exist, such as a global culture of entrepreneurship, among all individuals who have created ventures, regardless of their country of origin (e.g., Mitchell et al. 2000), or to map the expert scripts one can use to rise to the tops of organizations, industries, or for that matter, economies (e.g., Yew, 2000).

Also, like chess masters (Chase & Simon, 1972) and other superb performers (Ericsson, 1996), entrepreneurs should be susceptible to assessment as to level of expertise; such a rating scale would be a distinct advantage for those asked to finance their ventures. Another consequence of further development of transaction cognition theory, might be the advent of the professional entrepreneur (e.g., please see Mitchell, et al., 2002)—evaluated for entrance into the profession much as are accountants, lawyers, and doctors. And should this prove to be possible, the creation of new firms might even become susceptible to management and assessment using the well-developed systems of quality assurance that have managed to eliminate all but a minute fraction of quality problems in other domains. Accordingly, should transaction cognition theory prove to be efficacious in these areas, one might also expect growing dissatisfaction with the 50–80 percent failure rate of new ventures (Cooper et al., 1988; Kanter et al., 1990: 424; McMullan & Long, 1990; Shapero & Giglierano, 1982), especially in non-first-tier economies, where failure is an unwelcome luxury. Hence, social policies would be explicitly framed to enhance planning, promise, and competition cognitions, and to thereby enhance overall economic welfare.

2.2.3.5. Summary. The possibilities outlined above demonstrate the capability of transaction cognition entrepreneurship theory to predict phenomena that have not so far been observed. Additional possibilities can be expected as theory develops and as new studies are conducted. Next suggested, is the idea that improvement in the testability of entrepreneurship theory should also be possible through the introduction of a transaction cognition theory of global entrepreneurship.

2.2.4 Be Better Testable

Testability within the social sciences—at least as indicated by the structure of most empirical journal articles—revolves around data gathering, measurement, and data analysis. To be better testable, a theory should contribute to each of these activities, which together should enhance the theory's operational utility.

2.2.4.1. Data gathering. The creation of sampling frames has been problematic in the study of entrepreneurship, as it has been in most social science research (Freeman, 1986; McDougall & Oviatt, 1997: 303; Pedhazur & Schmelkin, 1991). One of the reasons for this difficulty is that the phenomena in question are idiosyncratic (MacMillan & Katz, 1992). However, when they are reduced to the transaction level, many of these idiosyncratic elements disappear, becoming part of the demographic or categorical aspects of a given sample. Whereas under prior theory it has been necessary to track entrepreneurs through venture entries and exits, it now becomes possible through the introduction of transaction cognition theory to identify entrepreneurs at the point of transacting. Entrepreneurship research will be well served by the creation of such a sampling frame, which will facilitate larger-sample studies that better capture the range of variance in independent variables (Freeman, 1986). Early results from studies drawing on transaction cognition theory suggest progress in the attainment of these standards; they demonstrate that although alternative explanations for differences in cognitions—such as age or country—may be significant, transaction cognitions still explain significant additional variance within and across countries (e.g., Mitchell, Smith, Morse, Seawright, Peredo, & McKenzie, 2002). These studies thereby illustrate possible ways to ameliorate difficulties in the development of a sampling frame for venture formation research conducted at the individual unit of analysis (Freeman, 1986: 301). Entrepreneurship theory may thus advance through the easing effect that improvement in methods of measurement (Nunnally, 1978) has upon the generation of sampling frames.

2.2.4.2. Measurement. I encourage scholars who wish to investigate cognition-based models of entrepreneurship but have been constrained by a lack of tested measures of cognitive constructs to explore use of the script cue recognition approach (Mitchell, 1994; Mitchell & Chesteen, 1995; Mitchell & Seawright, 1995; Morse, Mitchell, Smith, & Seawright, 1999; Mitchell et al., 2000). Prior measurement operationalizations in cognitive psychology can be characterized as following a micro approach; for instance, color recognition studies depend on micro observations such as eye movements. A script cue recognition approach, that uses a formative indicators measurement logic (Howell, 1987: 121; Nunnally, 1978; Pedhazur & Schmelkin, 1991: 54), might alternatively be characterized as a macro approach that enables significant results through sampling (Nunnally, 1978) rather than through enumeration of script cues.

Critics of transaction cost economics have long suggested that one of the critical flaws in the theory is its insusceptibility to measurement (Granovetter, 1985; Perrow, 1986). Linking cognitions to transaction cost theory to create a transaction cognition theory of global entrepreneurship represents a positive step toward the measurement of transaction costs. Just as cognitions (which are unobservable) can be measured by observing the behaviors they produce—such as eye movements (Posner, 1973)—transaction costs (which are also unobservable) can be measured by observing the transaction-cognition-based behaviors that transaction costs produce, such as the venturing behaviors indicated by venture creation script cue recognition (Mitchell, et al., 2000). Further research should focus on the elaboration of this measurement method as a means to suggest more generalized measurement techniques in the field of transaction cost economics and in transaction cognition entrepreneurship theory.

2.2.4.3.Data analysis. Early studies using transaction cognition theory to suggest sampling frames and measures have revealed no barriers to the use of advanced statistical analysis. Thus, where applicable, transaction cognition theory has produced theory and measures that have been used successfully in analysis of variance (ANOVA and MANOVA; Mitchell et al., 2000); exploratory, confirmatory factor, and multiple discriminant analysis (Mitchell, 1994; Mitchell & Seawright, 1995); regression analysis (Mitchell et al., 1999); and cluster analysis (Mitchell, et al., 2002). In short, the concepts and measures of a transaction-cognition-based theory of global entrepreneurship appear to be susceptible to the creation of interval-based scales consistent with the assumptions of inferential statistics (Mitchell, 1994; Nunnally, 1978).

2.2.5 Summary

With the foregoing two subsections as a foundation (the examination of the theory as to its capabilities for explanation and utility), the evaluation of a theory of global entrepreneurship based upon transaction cognition theory can proceed to address its third objective. In the following subsection, then, the capacity of the theory to stand up to tests of external validity will be examined using the logic of scientific inference.

Section 2.3 Application of the Logic of Scientific Inference

In this section, I employ one of the fundamental approaches to evaluating the construction of social theory (Stinchcombe, 1968) to examine the credibility of a transaction cognition-based theory of global entrepreneurship. Some exploratory research that was conducted in the early stages of theory development is summarized here and is evaluated according to Stinchcombe's criteria (1968: 20). These cited studies include primarily my own published empirical investigations between 1994 and 2002, which hopefully will serve as a template for replication and further evaluation of the external validity of the theory.

2.3.1 The Logic of Scientific Inference

Stinchcombe (1968) explained how, under the positivist, falsification logic that is a norm in the social sciences (Kuhn, 1970), theory that passes tougher tests is considered to be more credible than theory that passes only weak tests. Stinchcombe described four situations to illustrate this point; and Figure 5 (where "⇒" signifies "implies") presents these four situations. According to Stinchcombe, the relationships presented in Figure 5 suggest "both that the more different things we can derive (situation III), and the more different kinds of implications we can derive (situation IV), the stronger will be our test of the theory" (1968: 20).

{Insert Figure 5 about here }

Further, "If the theory stands up under a tougher test, it becomes more credible than it is if it stands up when we have subjected it only to weak tests. If it fails any of the tests, it is false, either in the underlying statement or in the specification of the observations which the concepts of the theory refer to" (Stinchcombe, 1968: 20).

To establish such a "guarantor of knowledge" (Mitroff & Turoff, 1973) at this point in the analysis, I depart somewhat from Hegelian skepticism as the primary means of proof and instead adopt a more Kantian integrative approach to address questions of external validity. When external validity is evaluated in light of Stinchcombe's four exemplars (Figure 5), it is, I hope, evident that any claim of substantial credibility for transaction cognition theory ought to be based more upon situations III and

IV (the more integrative guarantors) and less upon situations I and II (the skeptical/ falsification guarantors). This is not to say that the first two should be rejected, but rather—as I believe Stinchcombe does—should be treated as the foundation of an integrative ontology. As shown below, it is my assessment that the four cases of exploratory research cited as evidence constitute at least a “situation III” test. The research listed here has been underway for some time. In this case I consider these previous studies (that fall into the “ B_1 , B_2 , B_3 similar” category) to include:

1. B_1 , my dissertation research, in which three similar outcomes, the composition, classification, and creation of new venture formation expertise, were studied quantitatively at the individual/ firm level of analysis in a sample of entrepreneurs and business nonentrepreneurs from the western United States (Mitchell, 1994). In this study, the association of cognitive variables with new venture formation was tested, which resulted in an analysis of the composition, the capability to classify, and the capability for the creation of new venture formation expertise. B_1 thus demonstrated “similarity in implications across types of tests” through an examination of the relationship between cognitive variables and new venture formation.
2. B_2 , research that drew new samples from other countries, used the same or a similar research design to that of my dissertation (e.g., Mitchell & Seawright, 1995), and further explored the issues raised by the new sampling frames. Thus, in this study, with composition held constant, classification was tested in two countries beyond the United States: Mexico and Russia. B_2 represents other similar implications across sampling frames.
3. B_3 , qualitative research that explored in much more depth the nature and function of the expert scripts of entrepreneurs, while still utilizing expert information processing theory as the basic interpretive lens. In this study, the underlying concept that cognitive scripts are related to new venture formation was evaluated using qualitative methods with data from the same U.S. setting (Mitchell, 1996). B_3 demonstrated further similar implications across data type.
4. B_4 , quantitative research that expanded to utilize new types of analysis and additional sampling frames. In this study, 39 hypotheses based upon a finer-grained composition of new venture formation expertise scales were tested in seven Pacific Rim countries: Canada, the United States, Mexico (North America), Chile (S. America), Australia, China, and Japan (Asia) (Morse, et al., 1999). This list was further tested/ expanded in Mitchell et al., 2000, 2002, respectively. B_4 substantially expanded the list of similar implications across new types of tests and new sampling frames.

Please note that in this research stream the implications of the theory (Situation III) exist in a variety of dimensions:

- Across types of tests in B_1 ,
- Across sampling frames in B_2 ,
- Across data type in Study B_3 , and
- Across new types of tests and new sampling frames in B_4 .

2.3.2 Next Steps in the Inference Logic

Categorized within the Stinchcombe framework previously presented (Figure 5) are a set of suggestions developed and discussed with colleagues for further advancement of the credibility of transaction cognition theory itself. These suggestions have been divided into two lists: new implications of the Situation III list—research that can further render transaction cognition theory substantially more credible, and creation of a representative situation IV list: research that can lead to much more credibility.

2.3.2.1.Additions to the Situation III List. The following list of additions includes possible research initiatives that, if successful, will further support the idea that transaction cognition theory is—based on these tests—substantially more credible. The suggestions for new initiatives include:

1. B_5 , new quantitative research that, while still at the individual/firm level of analysis, develops new instruments from transaction cognition theory as introduced within this article, and collects data worldwide, perhaps utilizing the Web or another information technology to access respondents.
2. B_6 , new qualitative research designed to enlarge understanding of the nature of cognitions that may cancel or limit the efficacy of planning, promise, and competition cognitions; fatalism, refusal, and dependency, for instance, may be negatively linked to the three transaction cognitions in the order listed (Gurnell, 2000; Mitchell, 2001b).
3. B_7 , new quantitative research to calibrate such canceling cognitions (e.g., fatalism, refusal, and dependency cognitions) with the primary cognitions (planning, promise, and competition), and to develop a model for the use of resulting indexes in further research.

2.3.2.2.A Representative Situation IV List. These are research initiatives that have the potential to lead to much more credibility of a transaction cognition theory of global entrepreneurship. According to Stinchcombe (1968), to accomplish this task one needs to establish first that these implications as predicted by the theory are (in the Stinchcombe sense) “quite different” from one another, and second to establish the existence of these implications in the empirical world. At least seven possibilities are suggested:

1. B_1 , new research that expands the transaction model to include multiple nodes in place of the standard structure. Such research might explore, for example, partnerships as transaction creators (e.g., individual 1, individual 2, . . . n), or specific, theoretically-driven additions to “others” or to “works” (e.g., please see Mitchell and Morse, 2002; Mitchell, Morse, and Sharma, in press 2003 for a report on the first steps taken in this direction).
2. B_2 , cross-level research in which the constructs and propositions proposed within this chapter are operationalized and tested as hypotheses.
3. B_3 , new research that utilizes compatible theories (e.g., social exchange theory) to examine history and historical institutions for evidence of the interdependencies, processes, and relationships suggested by transaction cognition theory.
4. B_4 , new research that addresses the some of the problems within neoclassical economics that yet remain to be explained.
5. B_5 , new research that applies transaction cognition theory to issues in the management of currencies.

6. B_6 , new research that designed to explain the transitions among transacting systems (e.g., barter to market \leftrightarrow market to barter).
7. B_7 , new research that expands the transaction model to explain noneconomic phenomena, such as political transactions (e.g. Mitchell, 2001a) or religious transactions.

But the foregoing are only a few ideas to “prime the pump” for additional transaction cognition theory research, and to help the reader to perhaps envision the likelihood of continuing increases in the credibility of the theory. I am therefore hopeful that colleagues in multiple disciplines will interpret the suggestion of this list of ideas to be an invitation to participate in a transaction cognition-based exploration of multiple topics that is truly just beginning.

Section 2.4 Limitations

To be useful, a theory must have boundaries: the specification of where and when its application is likely to be less valuable (Bacharach, 1989). Transaction cognition theory is no exception. In this section, I discuss the limitations of transaction cognition theory as they relate to the context, composition, classification, and creation of transaction cognitions.

2.4.1 Context

Explicit in the transaction cognition theory argument is the idea that transaction cognitions exist within a social world. Accordingly, a primary boundary of transaction cognition theory is that it is intended to apply to the analysis and explanation of socioeconomic phenomena.⁶

Also implicit is the idea that the social world does not exist in isolation but rather, exists within an environment. Thus, the veracity of the theoretical relationships suggested here might depend heavily upon both the short and long term environmental conditions under which they occur; for instance in the short term, the transaction cognitions that occur in the midst of a typhoon may not at all resemble those that occur under normal weather conditions. Longer-term environmental considerations consist of, for example, the natural resource endowments available to transaction-creating individuals. Thus, although higher levels of transaction cognitions may be related to higher levels of resource acquisition and use, physical limitations of climate, geography, geology, and so forth that could dramatically impact upon the relationships suggested here must be recognized.

Further, however, one must recognize that the physical environment is only one part of an overall environment. Accordingly, it is important to acknowledge that individual transaction cognitions exist within a social web of institutions that will shape and constrain them. Thus, while it is possible to assert that transaction cognitions can have an impact on institutions through what is now becoming known as institutional entrepreneurship (Garud, Jain, & Kumaraswamy, 2002), it should be recognized that the institutions existing at a point in time form the context within which transaction cognitions must operate. Institutions, and therefore contexts of operation, vary. Taking such variability into account in boundary setting is critical in the case of a theory such as transaction cognition theory, which has helping to explain global entrepreneurship as a goal.

⁶ One exception is the exploratory application of transaction cognition theory in the political realm by my son Rob, in his integrated studies thesis (Mitchell, 2001a).

2.4.2 Composition

I first investigated the composition of new venture formation expertise in my dissertation (Mitchell, 1994). The three-factor structure that emerged from that research has since been confirmed with multiple-country samples in several follow-on studies (e.g., Mitchell et al, 2000, 2002). Within this chapter, I have argued that there is a fundamental theoretical reason for the continued emergence of these three factors in empirical research: i.e., that the constructs/ variables that result from empirical work in fact tap into an underlying cognitive map that is based in the three-element structure of the transaction itself, and thus arise from the actual existence of planning, promise, and competition cognitions in the empirical world. The propositions advanced here represent this thesis. However, it is important to remember, that to my knowledge only Proposition 2 has any empirically based validation (previously noted) at the time of this writing (Fall 2002). Thus, although transaction cognition theory can provide a likely argument for the levels of individual entrepreneurial employment, new venture formation, and entrepreneurship within a society, it still requires extensive further testing for the limits of its external validity to be established.

2.4.3 Classification

Underlying the assertion that the effective level of transaction cognitions is related to levels of individual employment (Proposition 1), venture creation (Proposition 2), and entrepreneurship within a society (Proposition 3) is the idea of a cognitively based classification that distinguishes between entrepreneurs and nonentrepreneurs on the basis of the notion that entrepreneurs are more “expert” than nonentrepreneurs (Mitchell, 1994). Fundamentally, this assertion involves making between-groups distinctions that are based upon individual possession of higher or lower levels of transaction cognitions.

As Figure 6 illustrates, however, within-group distinctions are also likely to exist.

{Insert Figure 6 about here }

I have given extensive attention to the between-group theoretical case, but the theoretical development of reasoning for the within-group case is just beginning (e.g., Mitchell et al., 2002). Researchers should therefore take care to clearly specify the conditions under which transaction cognition theory is to be used in the within-group case. It is key that the likely sources of variance be taken into account; these are unknown at this point but might include cultural values and cognitive biases (e.g., Busenitz & Lau, 1996) and might be of vast and material concern. It is obvious, I think, that this is a likely avenue for extensive future research.

2.4.4 Creation

The idea that transaction cognitions affect social structure, which in turn affects transaction costs and thereby economic opportunity, is a nontraditional use of the principles of transaction cost economics (Schure, 2002, personal communication). However, as the theory is developed and elaborated, the reader will, I hope, see a theoretically sound justification for a nurture versus nature approach to entrepreneurship: a proactive effort to create entrepreneurs. But limits to the extension of this thesis should be noted.

For example, while transaction cognition theory advances a global (universal) model of entrepreneurship—i.e. to explain after over 200 years of unsuccessful research . . . why an entrepreneur might appear and/or engage in entrepreneurship (Bull & Willard, 1993: 183)—it

nevertheless does not explain global entrepreneurship—e.g., how to start or to build a global firm (Oviatt & McDougall, 1995). Further, as noted above, it is as yet unknown what impact canceling and other alternative socioeconomic cognitions (Gurnell, 2000) might have on transaction cognitions, and thus on transaction-cognition-theory-based explanations for global entrepreneurship. Thus, transaction cognition theory offers a cross-border model for the existence of entrepreneurship where it is found, but it does not purport to state that having transaction cognitions is a sufficient condition for the creation of entrepreneurs, ventures, or entrepreneurship within a given society. Further research might fruitfully explore the additional elements required in each of these cases.

Concluding Thoughts

The objective of this article has been to investigate and identify a theory of global entrepreneurship that crosses borders—an economic parallel to physics’ planetary model and genetics’ double helix—that uses composition theory, and produces basic concepts that can provide common denominators for understanding global entrepreneurship. In this chapter, I have defined global entrepreneurship as the creation of new (value-adding) transactions or transaction streams anywhere on the globe. This phenomenon has an ever-more important place in the world.

At the World Economic Forum held in Davos, Switzerland in January 1999, UN Secretary General Kofi Annan focused the attention of the world on the possibilities for global entrepreneurship by stating:

Let us choose to unite the power of markets with the authority of universal ideals. Let us choose to reconcile the creative forces of private entrepreneurship with the needs of the disadvantaged and the requirements of future generations.

This call, at this point in time, is important, because the second wave of globalization is now sweeping across the planet (Friedman, 2000). The first wave (from the mid 1800s to the late 1920s) was driven by the drop in the cost of transporting physical goods following the invention of steamships, railroads, and automobiles. The second wave, which began in the 1980s, is driven by the dramatic reduction in telecommunications costs—the ease of moving ideas from mind to mind via microchips, satellites, fiber optics, and the Internet (2000: xviii). The first wave of globalization created economic shifts that stimulated boom (1920’s) and bust (the Great Depression). First wave-globalization also led to inequities in distribution of the new industrial-revolution-and-globalization-created wealth that polarized discussion predominantly around distribution issues (Marx & Engels, 1848) with scant attention to addressing production issues in tandem. Furthermore, first wave-globalization gave rise to class-struggle-based revolutions that effectively shut down Globalization 1 as a system, and replaced it with a Cold War System (Friedman, 2000: 7). But neither the first globalization system nor the Cold War system has produced satisfactory global economic results. In fact, the reverse has been true.⁷

The first wave of globalization entailed the creation of wealth from new methods for the production and distribution of industrial products, but the Cold War distorted the development of this

⁷ Some authors interpret the increase in global GNP from \$1.3 trillion in 1960 to almost \$30 trillion in the late 1990s, the doubling of world trade between 1987 and 1997, and the fact that the number of overweight people on the planet today has caught up with the number of underweight people to mean that “the last half of the 20th Century has brought unequalled prosperity and a better standard of living to most of the world’s population” (LaChance, 2000: 82, 85). To some? Perhaps. To more people than ever? Certainly, due to population growth. An accomplishment? Definitely. Enough? In my view, not even close.

new wealth production process early in its evolution, yielding a warped and misshapen economic world that has not fully, as yet, addressed problems of global wealth production and distribution. The legacy of the Cold War is a new planet wide patchwork of partitions, because during the Cold War, “both your threats and opportunities ... tended to grow out of who you were divided from” (Friedman, 2000: 8). And thus the global community is left with unfair production and distribution of wealth worldwide, such that 5 billion people presently exist in second, third, and fourth economic tiers, with fewer than 1 billion people in the first tier producing and distributing a majority of the wealth (Mitchell, 2001b: 346-348; Prahalad & Hart, 1999). This state of affairs raises serious questions about the wisdom of our approach—as a global community—to value creation and value sharing, both of which, I believe, are essential to truly achieving high-performance economic results.

In his Ruffin Lecture on stakeholder value and the entrepreneurial process, Professor S. Venkataraman asserted that the foregoing two processes, value creation, and value sharing, are common ground for both the fields of business ethics and entrepreneurship (Venkataraman, 1999). This observation echoes the writings of Victor Hugo, who in the 19th century offered his opinion that the two main problems of society were (1) the production of wealth (value creation) and (2) its distribution (value sharing) (Hugo, 1982/1862: 722, parentheses added). The connections between transaction cognition theory and the stakeholder concept relate to both the production and the distribution of wealth in society (Mitchell, 2002).

This is important, I think, because the second wave of globalization is now beginning to generate the capability to produce vast new reservoirs of wealth that is generated from information. I cannot help but wonder about the outcome of “globalization 2” if—as in the case of “globalization 1”—discussion becomes polarized around only the distribution of wealth. Can we expect a second wave of revolutions? A second Cold War? Or should we instead try to produce a better set of results? The evidence suggests that it is time to fully understand and engage global entrepreneurship, and the UN Secretary General has issued a call to do just that. But what might this in fact mean?

First of all, because new wealth creation is based upon bringing “on line” the talents and capabilities of at least 3–5 billion presently under-engaged minds, functional “economic” literacy must be discussed and understood as a necessary condition. Seen through the transaction cognition theory lens, it might be viewed that the real enemy of economic development is ignorance—the LACK of transaction cognitions. In this chapter I have argued that the possession of three possibly universal subsets of knowledge liberates the creative forces that are at the foundation of functional economic literacy for everyone; these subsets of knowledge are (of course) planning, promise, and competition cognitions. Transaction cognition theory suggests that desired economic results can be achieved through accurate economic thought and thus, that those who possess effective levels of these three universal subsets of knowledge are “functionally” economically literate and therefore can enact successful new transactions anywhere on the globe, regardless of culture or political system.

At present, functional literacy is defined as the ability of individuals to use reading, writing and computational skills in everyday life (Tharoor, 2002). Thus, to repair past economic damage and to establish a sound foundation for future economic development and entrepreneurship, I suggest that, to the present functional literacy list that normally includes: (1) reading, (2) writing, and (3) computational skills (Tharoor, 2002), should be added (4) economic thinking skills—in the form of transaction cognitions. Research, in as many countries around the world as have been so studied, has found that wealth creation, represented, for example, by the venture creation decision, is related to certain transaction cognitions (e.g., Mitchell, et al., 2000, 2002). As of this printing, data have been collected and analyzed from Australia, Belarus, Canada, Chile, China, Czech Republic, France,

Germany, Italy, Japan, Mexico, Russia, the United Kingdom, and the United States of America. I believe that as research continues, it will also be shown that poverty results at least in part, from the absence of key transaction cognitions (the confirmation of which is a likely extension of the foregoing research).

Second, understanding and engaging global entrepreneurship might mean that our present new source of value creation (information-based value) provides an opportunity to revisit our conceptions of value creation and value sharing. I do not believe that the revenue model for the information age (i.e., who makes money from information, who should make money from information, and how can money be made from information) is yet fully understood. Thus, so-called “irrational exuberance” in the stock market of the late 1990’s (Shiller, 2000) conjured trillions of dollars in e-stock market value, value that subsequently vanished for lack of a full understanding of how, for example, the information technology of the web would lead to investor returns (Will, 2001). And consequently, because the information age is still lacking a fully developed revenue model, there presently appears to be a significant opportunity to redefine the wealth distribution process, as linked through IT, to wealth creation. To further illustrate this point, I’ll develop this line of reasoning briefly in the following paragraphs.

In both West and East, there is evidence that a myopic focus upon distribution only—through the creation of a variety of redistributive institutions—has been insufficient to create a high-performance economic world for the majority. Societies have experimented extensively with the idea of compulsory redistribution of wealth, and they continue to experiment. But after all of this trying, the idea of forced wealth redistribution has not yet succeeded in creating widespread prosperity within target groups, despite its egalitarian appeal. It seems that money can be redistributed, but not prosperity. So what if, instead of continuing down a problematic old road, the global community were to take the new opportunity offered by the emergence of the information-driven wealth creation possibilities⁸ of the second wave of globalization? What if we were to construct a global entrepreneurship model that is based upon *both* value creation and value sharing: production *and* distribution? The logic for one such argument follows.

It is well known that to make money from information, one must be able to exclude others from it (Casson, 1982). But because information technology makes it virtually impossible over the long run to exclude people from information, the present pre-information age methods for excluding others (borders, locks, copyrights, etc.), are no longer very effective. It possibly is for this reason that the lack of a revenue model has been a problem for the valuation of dot.com companies in the stock market in recent years. However, what if we looked at this problem counterintuitively? What if we considered that the very absence of such a revenue model might be signaling an opportunity for more effectively producing and distributing wealth? What might be envisioned then, are new combinations that arise to reorganize socioeconomic relationships in the same way that Schumpeter (1934) envisioned new combinations reorganizing industry relationships to create new value. What might such new combinations look like?

In the past (as noted), the separation of the production and the distribution of wealth was accepted as the natural state of affairs (Hugo, 1982/1862: 722). In the information age, this

⁸ This argument does not diminish the value of “such cutting edge industries as brick, carpet, insulation, and paint” (Buffet, 2000) or other basic businesses, which arguably work better with improved information. Rather, it suggests that a possible information age revenue model should more closely align the value creation and value distribution.

separation need no longer be the case, because—owing to the communications revolution—production and distribution are, or can be, much more closely connected. Thus we can speculate: What if every producer (individual who creates a work for other persons) could acquire functional economic literacy: a fundamental understanding of effective planning, promise, and competition cognitions as they apply within their industry and society? The information revolution would then offer new wealth creation/ distribution opportunities for people to apply information to transform problems that are based on social friction and transaction costs (the problems that I have called “slippage” and “drag”), into the opportunities of “glide” and “traction,” (Mitchell, 2001b) which are also based on social friction and transaction costs. For example, why couldn’t a producer of IT-based intellectual property in Chengdu or Chittagong offer it for sale (an individual, produces a work, for other persons) in a global IP (intellectual property) “E-Bay”-type auction? And why couldn’t the created value—in a currency of choice—be credited to a bank account electronically immediately upon the completion of the transaction? Can we not therefore envision an IT-based production and distribution stream? And if we can, what would it take to make such a thing, and other such things, possible? These, and questions of like kind, motivate continuing research effort, with the transaction cognition approach offering possibilities.

In conclusion, I should note that in addition to the specific limitations presented earlier, the foregoing presentation and analysis in this chapter is also limited by the typical disabilities of cross-disciplinary (Freeman, 1986) and cross-level (Rousseau, 1985) analysis. Further, the analysis presented in this chapter generates claims and in some instances propositions that have yet to be subjected to tests. However, I hope that this chapter offers sufficient evidence, argumentation, and perhaps imagination, that the additional work needed to elaborate the theory, and to refine it as needed, will be seen to be a worthy undertaking. It is to this task, and to the possibility that undertaking it will move the field of global entrepreneurship forward toward a complete entrepreneurship paradigm, that attention should now turn. I look forward to the dialogue that I hope these ideas will generate.

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TABLE 1
Some Attributes of the Contracting Process (Williamson, 1985: 31)

<i>Behavioral Assumption</i>			
<i>Bounded Rationality</i>	<i>Opportunism</i>	<i>Asset Specificity</i>	<i>Implied Contracting Process</i>
0	+	+	Planning
+	0	+	Promise
+	+	0	Competition
+	+	+	Governance*

0 = absence; + = presence

(*Note: Williamson’s insight that “governance” results when all three conditions exist provides a foundation for further elaboration of transaction cognition theory that is beyond the scope of this chapter but is discussed thoroughly elsewhere (Mitchell, 2001b)).

TABLE 2
Proposed Relationships between Planning, Promise, and Competition Cognitions and Transaction Costs due to Bounded Rationality, Opportunism, and Specificity, as Defined

Cognition Constructs	Relationship	Transaction Costs due to the Sources of Market Imperfection
<p><i>Planning Cognitions:</i></p> <p>Mental models (Arthur, 1994) that assist in developing analytical structures and courses of action to solve previously unstructured market problems that relate to the production and delivery of the Work to Other Persons.</p>	<p>(-)</p>	<p><i>Bounded Rationality:</i></p> <p>Behavior that is intendedly rational, but limitedly so (Simon, 1979; Williamson, 1985).</p>
<p><i>Promise Cognitions:</i></p> <p>Mental models that help in identifying and prioritizing other parties to economic relationships, and in building the mutual trust in economic relationships needed to effect an agreement between the Individual transaction creator(s) and Other Persons.</p>	<p>(-)</p>	<p><i>Opportunism:</i></p> <p>Self interest seeking with guile (Williamson, 1985).</p>
<p><i>Competition Cognitions:</i></p> <p>Mental models that can create competitive bargaining positions (i.e. some Work to offer that can be created by Individual transaction creator(s)).</p>	<p>(-)</p>	<p><i>Specificity:</i></p> <p>The nonredeployability of assets (Williamson, 1985).</p>

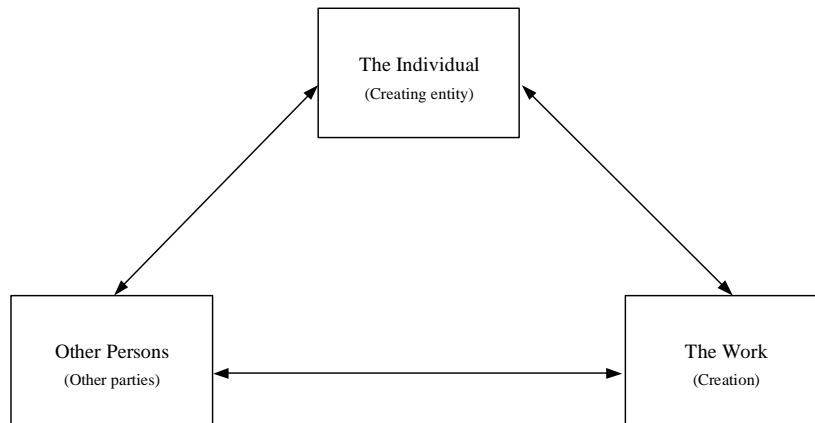
TABLE 3
Transaction Cognition Theory Explanations of Some Observed Phenomena

Theory	Findings	Transaction Cognition Theory Explanation
• Part 1: The Individual (Entrepreneur)		
<i>Age.</i> Self-employment is related to age (Evans & Leighton, 1986).	Supported. The young are less likely to become entrepreneurs: time in labor force increases reputation, funding, and good will (Aronson, 1991).	Cognitive models can be created in young or old; mental models v. age are the key variable (Ericsson & Charness, 1994; Gardner, 1983).
<i>Education.</i> Self-employment relates to education: strongly for women; weakly for men (Evans & Leighton, 1986).	Supported. The educated are more likely to start businesses (Reynolds, 1991).	Type of education matters (Chandler & Jansen, 1992; Vesper, 1996); knowledge gains can be accelerated (Glaser, 1984).
<i>Gender.</i> Gender affects likelihood of entrepreneurship (Hisrich & Brush, 1986).	Mixed. Lower: due to fewer assets (Cromie & Birley, 1991) and less access (Brush, 1992); No effect: (Buttner & Rosen, 1989; Sexton & Bowman-Upton, 1990).	Choice of entrepreneurship by men/women depends upon cognitive maps (Carter, Williams, & Reynolds, 1997; Walsh & Fahey, 1986).
<i>Immigration.</i> Immigrants are more likely to become entrepreneurs (Bonachich, 1973).	Supported. Immigrants create social networks v. rely on distant family (Aldrich & Zimmer, 1986); entrepreneurship substitutes for social mobility (Waldinger, Aldrich, & Ward, 1990).	Promise-based mental models build social networks, which decrease venturing transaction costs, as argued herein.
<i>Locus of Control.</i> Entrepreneurship is related to locus of control (Berlew, 1975).	Contradictory. Self-employed workers have higher locus of control; higher locus of control likely to prompt self-employment (Evans & Leighton, 1986); locus of control does NOT distinguish entrepreneurs (Brockhaus & Nord, 1979; Hull, Bosley, & Udell, 1982).	Cognitions affect self-efficacy (belief in orchestration capacity) (Bandura, 1986; Gist & Mitchell, 1992), which affects perceptions of risk (Krueger & Dickson, 1994; Krueger & Dickson, 1993) and intention to venture (Krueger & Carsrud, 1993).
<i>Need for Achievement.</i> Men with high need for achievement are more likely to enter entrepreneurship (McClelland, 1961; McClelland, 1965).	Contradictory. Supported, cross-sectionally and longitudinally (McClelland, 1961; McClelland, 1965); but can't distinguish from managers (Brockhaus & Horowitz, 1986).	Effective use of transaction cognitions satisfies achievement needs (Arthur, 1994).
<i>Religion.</i> The Protestant ethic encourages entrepreneurship (Weber, 1985 (1930)).	Supported. Protestants more likely to be self employed than non-Protestants (Carroll, 1965; Jeremy, 1984; Singh, 1985).	Religion as social learning affects cognitions (VanLehn, 1989). Cognition variance explains outcome variance (Arthur, 1994; Gist & Mitchell, 1992).
<i>Risk-taking Propensity.</i> Entrepreneurs are more risk taking than the general population (Hull et al., 1982).	Contradictory. High growth entrepreneurs less risk avoiding than managers (Miner, 1990); risk-taking propensity not distinguishing of entrepreneurs (Brockhaus, 1980).	Level of cognitive competence (expertise) affects risk taking (Heath & Tversky, 1991), because uncertainty is reduced (Krueger, 1993).
<i>Social Learning.</i> Social learning and genetics lead to variance in traits, which leads to variance in venturing (McClelland, 1975).	Supported. Heredity (Gardner, 1983), early experiences (Walters & Gardner, 1986), demographics (Csikszentmihalyi, 1988), and use of information processing strategies (Siegler & Shrager, 1984) affect traits.	Performance comes from cognitions created through deliberate practice (Ericsson, Krampe, & Tesch-Romer, 1993), which depends upon individuals' endowments (Ericsson & Charness, 1994; Gardner, 1983; Gardner, 1993).

TABLE 3 (continued)

Theory	Findings	Transaction Cognition Theory Explanation
• Part 2: The Work (Firm)		
<p>Characteristics of the Venture. Venture characteristics affect performance (Stuart & Abetti, 1990).</p> <p>Environment. Environmental factors are associated with venture performance (Cooper, 1993; Gartner, 1985).</p> <p>Rate of Entrepreneurship. Low numbers of ventures created discourage subsequent organizational formation (Aldrich, 1990, and others).</p> <p>Venture Strategy. V-strategy affects performance (Sandberg, 1986).</p>	<p>Some support. The management team, stage of venture, type of product, etc. affect VC financing (Hall & Hofer, 1993).</p> <p>Supported. Industry structure, not personal characteristics affects venture performance (Kunkel, 1991; Sandberg, 1986).</p> <p>Supported (Shane, 1996).</p> <p>Supported (Kunkel, 1991; McDougall, 1987; McDougall, Robinson, & DeNisi, 1992).</p>	<p>Pattern recognition cognitions affect performance (Arthur, 1994); venture patterns can be standardized (Mitchell, 1998b).</p> <p>Cognition-based skill and skill propensity (Herron, 1990), and venture expertise (Mitchell, 1994) related to performance.</p> <p>Domain experience improves cognitions through feedback (Ericsson et al., 1993); venture exposure affects feasibility perceptions (Krueger, 1993).</p> <p>Competition mental models affect venture success as argued herein.</p>
• Part 3: Other Persons (The Economy)		
<p>Change. Entrepreneurship increases in times of technological change (Schumpeter, 1939).</p> <p>Demand. Changes in demand influence rates of entrepreneurship (Stinchcombe, 1965).</p> <p>Failure Rates. New business failure rates influence rates of entrepreneurship (Stinchcombe, 1965; Venkataraman, Van de Ven, Buckeye, & Hudson, 1990).</p> <p>Interest Rates. The relationship between interest rates and rates of entrepreneurship over time will be negative and significant (Shane, 1996).</p> <p>Political Change. Entrepreneurship is associated with political change (Aldrich, 1979; Stinchcombe, 1965).</p> <p>Unemployment. People are pushed into self-employment by unemployment (Oxenfeldt, 1943; Phillips, 1962; Steinmetz & Wright, 1989).</p> <p>Wealth. Entrepreneurship is associated with societal (Stinchcombe, 1965) and personal (Evans & Leighton, 1986) wealth.</p>	<p>Supported (Shane, 1996).</p> <p>Supported. Demand growth and self-employment are significantly and positively related (Aronson, 1991; Evans & Leighton, 1986).</p> <p>Contradictory. Failures create floating resources for ventures, but also signal trouble (Delacroix & Carroll, 1983).</p> <p>Supported (Shane, 1996).</p> <p>Supported. Political turmoil enhances formation rates (Carroll & Hannan, 1989, and others).</p> <p>Supported. (Hamilton, 1989, and others).</p> <p>Supported. Economic development is associated with entrepreneurship (Wilken, 1979) and entrepreneurship is associated with personal savings (Evans & Jovanovic, 1989).</p>	<p>Security seeking and thereby, security seeking cognitions increase during times of change (Durant, 1935).</p> <p>The need for economic security (provisions in store) affects individual cognitions, which lead to need satisfaction behavior (Mitchell, 1998a).</p> <p>Failure is a specialized experience that provides critical knowledge that increases expert cognitions (Malone, 1997); those with expertise perceive lower risks (Krueger & Dickson, 1993)</p> <p>Interest rates reflect risk—one way of conceptualizing the cost of failed transactions (Venkataraman et al., 1990) as it impacts upon cognitions in the economy. Cognition-based expertise affects risk taking (Heath & Tversky, 1991), because uncertainty is reduced (Krueger, 1993).</p> <p>As the need for economic security increases during times of turmoil, venturing cognitions are invoked and updated (Arthur, 1994) along with security seeking behaviors.</p> <p>The need for economic security creates a demand for cognitions to meet that need (Arthur, 1994), which are created according to the theory described later herein</p> <p>Planning scripts lead to venturing arrangements (Leddo & Abelson, 1986) such as access to and assembly of resources, which enable the application of expertise (Mitchell, Smith, Seawright, & Morse, 1998)</p>

FIGURE 1
The Elements of a Basic Transaction

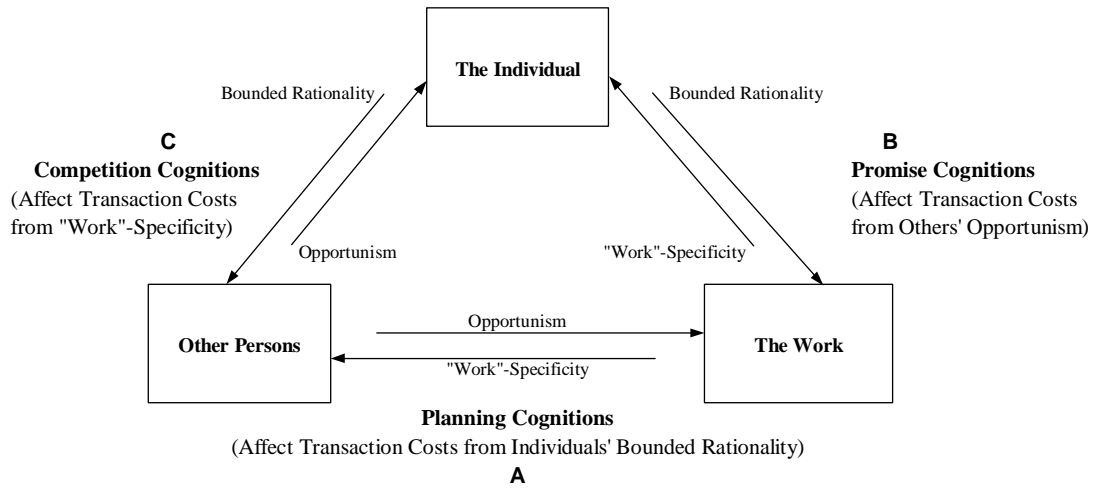


Based on Csikszentmihalyi (1988); Gardner (1993)

FIGURE 2
The Effects of Friction

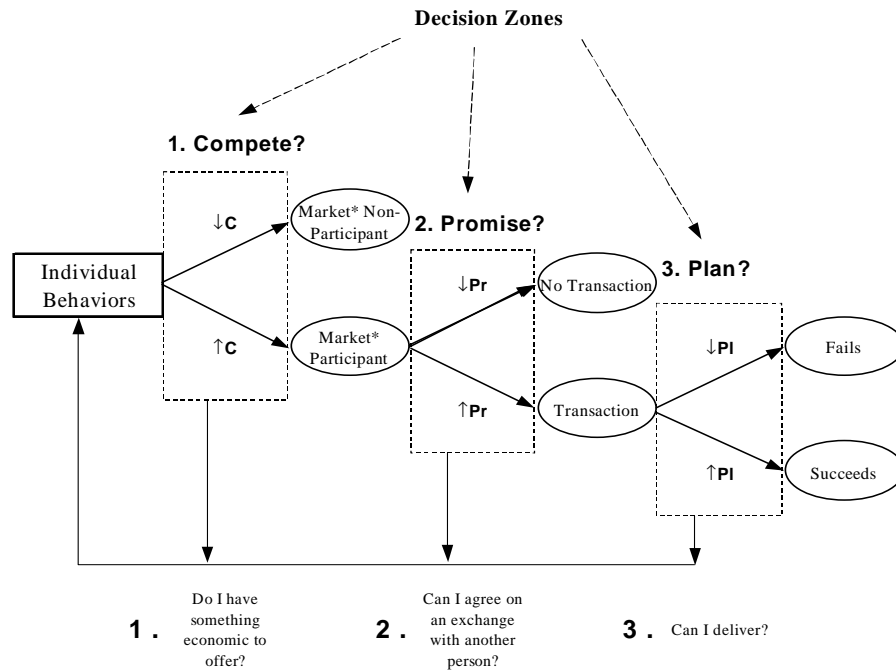
		Level of Friction Present	
		LOW FRICTION	HIGH FRICTION
Effects of Friction	HELPS	1. Glide	2. Traction
	HINDERS	3. Slippage	4. Drag

FIGURE 3
The Transaction Cognition Model



Based on Gardner (1993); Williamson (1985)

FIGURE 4
A Transaction Cognition Theory Model of
Individual Economic Decision-Making Behavior



Cognitions:

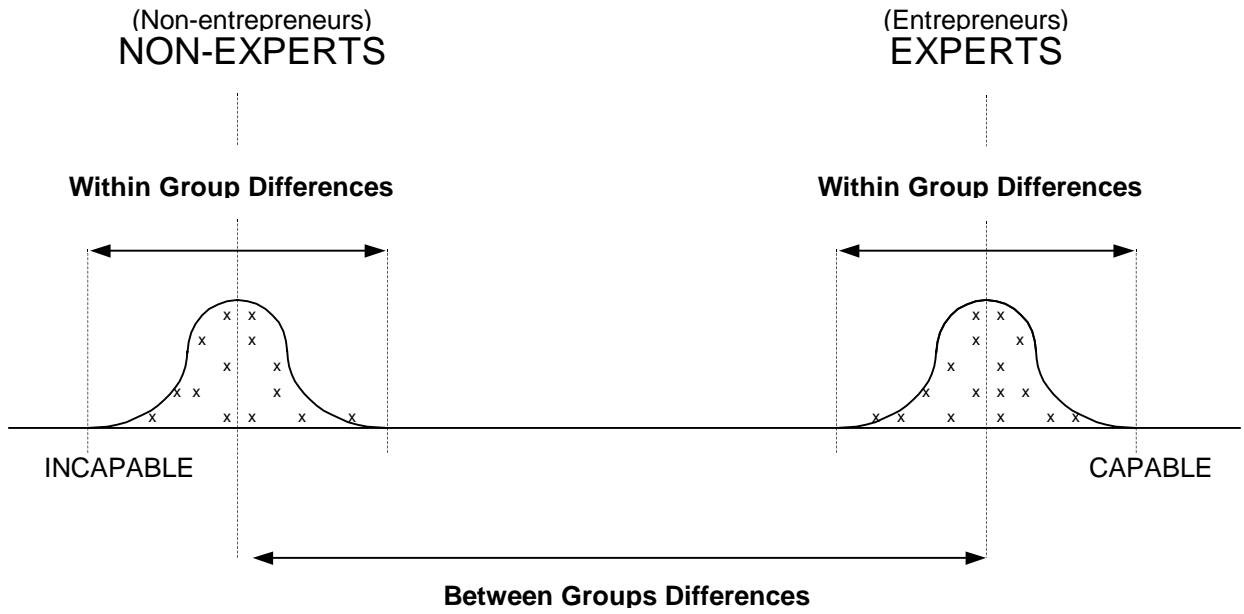
1. **C**ompetition
2. **P**romise
3. **P**lanning

* Note: "Market" = market OR hierarchy

FIGURE 5
Credibility and Tests of Theory
 (Stinchcombe, 1968)

SITUATION I	SITUATION II	SITUATION III	SITUATION IV
$A \Rightarrow B$	$A \Rightarrow B$	$A \Rightarrow B_1, B_2, B_3$	$A \Rightarrow B_1, B_2, B_3$
<u>B false</u>	<u>B true</u>	<u>B_1, B_2, B_3 similar</u>	<u>B_1, B_2, B_3 different</u>
A false	A more credible	A substantially more credible	A much more credible

Figure 6
TCT-based Classification Differences



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ABOUT THE AUTHOR

Professor **Ronald K. Mitchell**, holder of the Francis G. Winspear Chair in Public Policy and Business at the University of Victoria, and also of a joint appointment in the Department of Strategy and Public Policy at the Guanghua School of Management at Peking University, Beijing, PRC, received his Ph.D. from the University of Utah in 1994. His research interests focus on increasing economic well being in society—both domestically and internationally—through the study of entrepreneurs, and the development of transaction cognition theory.

He has articles in *Academy of Management Journal*, *Academy of Management Review*, *Entrepreneurship Theory & Practice*, *The Journal of Business Venturing*, and other leading journals. His article (with Bradley R. Agle and Donna J. Wood) *Toward a theory of stakeholder identification and salience . . .*, won the 1999 International Association for Business and Society (IABS) Best Article Award, sponsored by the *California Management Review*. In the field of international entrepreneurship he is the lead author of *Cross-cultural cognitions and the venture creation decision*, published in the *Academy of Management Journal Special Edition on International Entrepreneurship* October, 2000. He won the 1995 Heizer Award for his entrepreneurship dissertation: *The composition, classification, and creation of new venture formation expertise*.

Ron is the lead editor of the *Entrepreneurship Theory & Practice* Special Issue on Information Processing and Entrepreneurial Cognition. He is co designer of the transaction cognition-based University of Victoria entrepreneurship program, which has won both the AOM Entrepreneurship Division's "Innovation in Pedagogy Award 1999," and the US Association of Small Business and Entrepreneurship (USASBE) "Model Undergraduate Program Award 2000." He also recently designed the UVic MBA 3-course module in Global Entrepreneurship, and has introduced (March-April 2002) a Global Entrepreneurship course into the IMBA curriculum of Peking University, Beijing, PRC.

Additional information is available at www.ronaldmitchell.org.